



**AQAR 2023-24**

**1.1. Curriculum Design & Development**

**1.1.2. Focus on Courses (EM/EN/SD)**

# **47<sup>th</sup> ACADEMIC COUNCIL MEETING**

**8<sup>th</sup> August 2023**

**Rev. Dr. M. Arockiasamy Xavier, SJ**  
**Chairman**  
**Academic Council**

**Volume 1**



**St. JOSEPH'S COLLEGE (AUTONOMOUS)**

*Special Heritage Status awarded by UGC*  
*Accredited at A<sup>++</sup> Grade (4<sup>th</sup> Cycle) by NAAC*  
*College with Potential for Excellence by UGC*  
*DBT-STAR & DST-FIST Sponsored College*  
**TIRUCHIRAPPALLI – 620 002**

## **AGENDA**

- 47:1. Passing of the minutes of the previous Academic Council meeting held on 22<sup>nd</sup> June 2022
- 47:2. Passing of the minutes of various Boards of Studies
- 47:3. Matters related to the Controller of Examinations
- 47:4. Ratification of Certificate & Value Added Courses
- 47:5. Approval of various Committees for 2023-2024
- 47:6. Academic Activities 2022-23
- 47:7. Feedback Analysis



## **MEMBERS OF THE ACADEMIC COUNCIL**

### **Chairman**

Rev. Dr. M. Arockiasamy Xavier  
SJ, Principal, St. Joseph's College (Autonomous)  
Tiruchirappalli – 2.

### **Vice Chairman**

Rev. Dr. Pavulraj Michael, SJ  
Rector, St. Joseph's College (Autonomous)  
Tiruchirappalli-2.

### **Secretary**

Rev. Dr. K. Amal, SJ  
St. Joseph's College (Autonomous)  
Tiruchirappalli-2

### **Tamil Nadu State Government Representative**

Dr. A. Gunasekaran  
Regional Joint Director of Collegiate Education  
Tiruchirappalli Region  
Tiruchirappalli – 620023

### **University Representatives**

Dr. R. Thirumurugan  
Professor  
Department of Animal Science  
School of Life Sciences,  
Bharathidasan University, Tiruchirappalli - 620024

Dr. K. Thamaraiselvi  
Professor and Head  
Department of Environmental Biotechnology  
Bharathidasan University, Tiruchirappalli - 620024

Dr. U. Alibava  
Professor & Head  
Department of Tamil Studies  
Bharathidasan University, Tiruchirappalli - 620024

Dr. V. Rajesh Kannan  
Director-CCCD  
Bharathidasan University, Tiruchirappalli- 620024

### **External Experts**

Dr. R. Karvembu  
Professor  
Department of Chemistry,  
National Institute of Technology,  
Tiruchirappalli - 620015

Mr. SenthilParamasivam  
CEO, Nallas Software Solutions Private Limited  
Saravanampatti, Coimbatore - 641035

### **Administrators**

Dr. P. Rajendran, Deputy Principal  
Rev. Dr. L. John Peter Arulanandam, SJ, Vice-Principal (Administration)  
Dr. D. Ravindran, Vice Principal (Academic)  
Dr. G. Iruthayaraj, Vice Principal  
Mr. S. Dominique, VicePrincipal (Infrastructure)  
Ms. S. Backya Selva Rathi, Vice Principal, Shift II  
Dr. B. Augustine Arockiaraj, Vice Principal, Shift II

### **Deans**

Dr. A. Rose Venis, Dean – IQAC  
Dr. R. Qurshid Begum, Additional Dean – IQAC  
Rev. Dr. Pavulraj Michael, SJ, Dean – School of Human Excellence  
Dr. A. Egbert Selwin Rose, Dean – School of Biological Sciences  
Dr. A. Anthony Eldred, Dean – School of Computing Sciences  
Dr. J. John Love Joy, Dean – School of Languages & Culture

Dr. M. Julias Ceasar, Dean – School of Management Studies

Dr. J. Charles, Dean – School of Physical Sciences

### **Officials**

Dr. K. Alex, Controller of Examinations

Rev. Dr. P. Paulraj, SJ, Director - MBA, (JIM)

Rev. Dr. T. Sahayaraj, SJ, Director - SHEPHERD

Rev. Fr. M. Berchmans, SJ, Director - Sports and Games

Rev. Dr. Emmanuel Arockiam, SJ, Director - Library

Dr. A. Joseph Sahayaraj, President, Teaching Staff Association

Mr. N.M. Pushparaj, Superintendent

### **Department Representatives**

Biochemistry	-	Mr. Benno Susai Vijayakumar
Biotechnology	-	Dr. A. Edward
Botany	-	Dr. S.R. Senthil Kumar
Business Administration	-	Ms. C. F. Octovia Antony Sessammal
Chemistry	-	Dr. S. Joseph Selvaraj
Commerce & BCom Honours	-	Dr. F.R. Alexander Pravin Durai
Commerce with Computer Applications	-	Dr. N. Maheswari
Computer Science	-	Mr. A. Charles
Counselling Psychology	-	Rev. Dr. Emmanuel Arockiam, SJ
Data Science	-	Dr. L. Arockiam
Economics	-	Dr. M. Suvakkin
Electronics	-	Dr. B. Kanickairaj
English	-	Dr. V.L. Jayapaul
French	-	Prof. M. Mohanalakshmi
Hindi	-	Dr. S. Sreedevi
History	-	Dr. J. Santhosh Kumar
Human Excellence	-	Rev. Dr. S. Paul Pragash, SJ
Human Resource Management	-	Dr. G. Louis Victor
Information Technology	-	Dr. P. Joseph Charles
Management Studies	-	Dr. Albin D Robert Lawrence
Mathematics	-	Dr. M. Thiagarajan

Physical Education	-	Dr. A. Prem Edwin
Physics	-	Dr. I. Johnson
Sanskrit	-	Dr. M.S. Madhavachari
Statistics	-	Dr. R. Vijayakumar
Tamil	-	Dr. G. Beschi
B.Sc. Visual Communication &		
B.Voc.Visual Communication Tech.	-	Dr. S. Tamilarasi
B.Voc.Software Dev. & System Admn.	-	Dr. George Gabriel Richard Roy

### **Staff Representatives**

Dr. K. Rajan

Dr. J. Wilfred Angello Gerald

### **Student Representative**

J. Movin Jeeva Sudhan

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## **MINUTES OF THE 46<sup>th</sup> ACADEMIC COUNCIL MEETING**

**HELD ON 22<sup>nd</sup> JUNE 2022**

### **Agenda**

1. Passing of the minutes of the previous Academic Council meeting held on 30th June 2021
2. Passing of the minutes of various Boards of Studies of the academic year 2021–2022
3. Ratification on academic matters
4. Any other academic matters

### **Members Present**

#### **Chairman**

Rev. Dr. M. Arockiasamy Xavier, SJ, Principal, St. Joseph's College (Autonomous), Tiruchirappalli

#### **Secretary**

Rev. Dr. K. Amal, SJ, St. Joseph's College (Autonomous), Tiruchirappalli

#### **Tamil Nadu State Government Representative**

Dr. A. Megala, Regional Joint Director of Collegiate Education, Tiruchirappalli Region, Tiruchirappalli

#### **University Representatives**

Dr. R. Thirumurugan, Professor, Department of Animal Science, School of Life Sciences, Bharathidasan University, Tiruchirappalli

Dr. K. Thamaraiselvi, Professor, Department of Environmental Biotechnology, Bharathidasan University, Tiruchirappalli

Dr. V. Rajesh Kannan, Director, Council for College & Curriculum Development,  
Bharathidasan University, Tiruchirappalli

### **External Expert**

Rev. Sr. Dr. A. Christina Bridget, Principal, Holy Cross College (Autonomous),  
Tiruchirappalli

### **Administrators**

Dr. V. Alex Ramani, Deputy Principal, Shift II

Rev. Dr. L. John Peter Arulanandam, SJ, Vice-Principal (Administration)

Dr. K. Alex, Vice-Principal (Academic)

Prof. S. Dominique, Vice-Principal (Infrastructure)

Rev. Dr. S. Santiago, SJ, Vice Principal, Shift II

Dr B. Augustine Arockiaraj, Vice Principal, Shift II

Dr. A. Rose Venis, Dean – IQAC

Dr. R. Qurshid Begum, Additional Dean – IQAC

Dr. S. Sahaya Sathish, Dean – School of Biological Sciences

Dr. Y. Dominic, Dean – School of Computing Sciences

Dr. V. Francis, Dean – School of Languages and Culture

Dr. G. John, Dean – School of Management Studies

Dr. A.N. Paul Angelo, Dean – School of Physical Sciences

Dr. S. Alfred Cecil Raj, Controller of Examinations

Rev. Fr. M. Berchmans, SJ, Director, SHEPHERD, Sports and Games

Rev. Dr. Emmanuel Arockiam, SJ, Director, Library

Prof. V. S. Joe Irudayaraj, President, Staff Association

Mr. N. M. Pushparaj, Superintendent



## **Department Representatives**

Biochemistry	- Prof. T. Antony Diwakar Chandran
Biotechnology	- Dr. A. Edward
Botany	- Dr. S.R. Senthil Kumar
Business Administration	- Prof. C. F. Octovia Antony Sessammal
Chemistry	- Dr. S. Joseph Selvaraj
Commerce	- Dr. F.R. Alexander Pravin Durai
Commerce with Computer Applications	- Dr. J. Rajees
Computer Science	- Prof. A. Charles
Counseling Psychology	- Rev. Dr. Emmanuel Arockiam, SJ
Data Science	- Dr. J. Priya Stella Mary
Economics	- Dr. G. Iruthayaraj
Electronics	
B.Sc. Visual Communication and	
B.Voc. Visual Communication Tech.	- Dr. B. Kanickairaj
English	- Dr. V. L. Jayapaul
Human Excellence	- Rev. Dr. S. Paul Prakash, SJ
French	- Prof. M. Mohanalakshmi
Hindi	- Dr. S. Sreedevi
History	- Dr. S. Manikandan
Human Resource Management	- Dr. J. Wilfred Angello Gerald
Information Technology	- Dr. P. Joseph Charles
Management Studies	- Dr. P. Jega Patrick
Mathematics	- Dr. T. Rajaretnam

Physical Education	- Dr. A. Prem Edwin
Physics	- Dr. N. Ravi
Sanskrit	- Dr. M.S. Madhavachari
Statistics	- Dr. Lilly George
Tamil	- Dr. G. Beschi
B.Voc. Software Dev. & System Admn.	- Dr. George Gabriel Richard Roy

### **Staff Representatives**

Dr. N. Ravi

Mr. V. Joe Irudayaraj

The 46<sup>th</sup> Academic Council Meeting was held on 22<sup>nd</sup> June 2022 at 11.00 am in Toulouse Hall. The meeting began with a prayer song. Rev. Fr. Principal, the Chairman of the Academic Council welcomed the members. In a special way, he welcomed and introduced Rev. Dr. K. Amal, the new Secretary of the College to the members of the Academic Council. He also thanked the outgoing members of the 45<sup>th</sup> Academic Council and introduced the new members to the August gathering.

Rev. Fr. Principal highlighted the agenda of the Academic Council Meeting and appreciated Dr. Y. Dominic, Dean, School of Computing Sciences for his meticulous planning and conduct of the 46<sup>th</sup> Academic Council Meeting.

**Agenda 1:****Passing of the Minutes of the 45<sup>th</sup> meeting of the Academic Council held on 30<sup>th</sup> June, 2021**

Dr. Y. Dominic, Dean, School of Computing Sciences presented the minutes of the 45<sup>th</sup> meeting of the Academic Council held on 30<sup>th</sup> June, 2021. It was approved and passed by the members.

**Agenda 2:****Passing of the Minutes of Various Boards of Studies of the Academic Year 2021-2022**

Rev. Fr. Principal asked the department representatives to present the minutes of the Board of Studies of their respective departments. He requested them to highlight the important and major changes or revisions done in the syllabus.

**School of Biological Sciences**

Prof. T. Antony Diwakar Chandran, Head of the Department of Biochemistry presented the minutes of the Department of Bio-Chemistry. Dr. A. Edward, Head of the Department of Biotechnology presented the minutes of his department. Dr. V. Rajesh Kannan, Director of CCCD, Bharathidasan University, Tiruchirappalli suggested highlighting the titles of non-major electives in the syllabus. The Minutes of the Department of Botany was presented by Dr. S. R. Senthil Kumar, Head, Department of Botany. Dr. R. Thirumurugan, Professor of Animal Science, Bharathidasan University, Tiruchirappalli

enquired whether 20% change was carried out in the syllabus revision. Rev. Fr. Principal responded by stating that the major revision was done last year during the framing of LOCF syllabus and only minor changes were carried out this academic year. The minutes of the School of Biological Sciences were approved and passed.

### **School of Computing Sciences**

The minutes of the Department of Computer Science was presented by its Head, Prof. A. Charles. Dr J. Priya Stella Mary presented the minutes of the Department of Data Science. Dr. P. Joseph Charles, Head, Department of Information Technology presented the minutes of his department. Dr. T. Rajaretnam, Head, Department of Mathematics presented the minutes of the Department of Mathematics. Dr. Lilly George, Head of the Department of Statistics, presented the minutes of the Statistics department.

Dr. V. Rajesh Kannan suggested including papers on value education and gender studies in the UG syllabus as it is mandatory as per UGC norms. Rev. Fr. Principal responded that value education and gender studies are there in the existing syllabus with different names. Dr S. Sahaya Sathish, Dean, School of Biological Studies replied that the Value Education course was offered to the students with the subtitle “Essentials of Humanity”.

### **School of Languages and Culture**

Rev. Fr. Principal called upon the Heads of School of Languages and Culture to present the minutes of their departments. Dr V. L. Jayapaul, Head, Department of English presented the minutes of his department. He highlighted the teaching methodology and

evaluation pattern for the paper “Research Methodology and Project Work” meant for II MA English students. Prof. M. Mohanalakshmi, Head, Department of French presented the minutes of her department. Minutes of the Department of Hindi was presented by Dr. S. Sreedevi, Head, Department of Hindi. The minutes of the Department of History was presented by Dr. S. Manikandan. Dr. M.S. Madhavachari, Head, Department of Sanskrit presented the minutes of his department and Dr. G. Beschi, Head, Department of Tamil presented the minutes of his department. The minutes of the School of Languages and Culture were approved and passed.

### **School of Management Studies**

Prof. C. F. Octovia Antony Sessammal, Head of the Department of BBA presented the minutes of the department of BBA. She highlighted a minor change that was done in the question paper pattern for quantitative courses. Minutes of B.Com and B.Com (Hons) were presented by Dr. F. R. Alexander Pravin Durai, Head, Department of Commerce. He highlighted that the AECC:II Environmental Studies for B.Com (Hons.) is shifted to the second semester from the third semester in order to align with the common curriculum of the College. He also mentioned a few corrections made with regard to the hours and credits in two courses. Dr. J. Rajees, Head of the Department of Commerce Computer Application read out a few minor changes made in the syllabus of his Department. Dr. G. Iruthayaraj, Head of the Department of Economics presented the minutes of the Department of Economics. Minutes of the Department of Human Resource Management was presented by its Head, Dr. J. Wilfred Angello Gerald. He pointed out a few minor changes made in the syllabus. The minutes of various BoS of School of Management Studies were approved by the members.

### **School of Physical Sciences**

Dr. S. Joseph Selvaraj, Head of the Department of Chemistry presented the minutes of his department. Dr. B. Kanickairaj, Head of the Department of Electronics presented the minutes of the Department of Electronics. He mentioned that the course pattern for PG Electronics was revamped and the latest textbooks for the same had been included. Dr. V. Alex Ramani, Deputy Principal pointed out that the semester titles were missing in the PG syllabus. The head of the Department of Physics, Dr. N. Ravi, presented the minutes highlighting the minor corrections carried out in the syllabus. The minutes of the departments belonging to the School of Physical Sciences were approved.

### **Other Departments**

Rev. Dr Emmanuel Arockiam, Head, Department of Counselling Psychology presented the minutes of the Department of Counselling Psychology. He mentioned that based on the recommendation of Bharathidasan University, the degree is officially changed from M.A. Counselling Psychology to M. Sc. Counselling Psychology. Dr B. Kanickairaj presented the minutes of B. Sc. Visual Communication and B. Voc. Visual Communication Technology. He stated that the department replaced the course titled “Online Journalism” with “Visual Art”. He also noted that the unit on ‘Product Photography’ from the “Photography” was redone. Dr George Gabriel Richard Roy read out the minutes of the Department of B. Voc. Software Development and System Administration.

Dr Jega Patrick presented the minutes of the Department of Management Studies. Major revision was carried out in the syllabus of MBA programme. The department decided to conduct preparatory courses for 21 days for twenty days in the first semester instead of the usual bridge course which runs for 3 to 4 days. This was done with the objective of handholding the students who came from diverse backgrounds; from history to physical sciences to commerce etc. The total credits for the MBA programme had been decreased from 120 to 103 doing away with courses which does not add much value to the programme.

The project and dissertation have been shifted to VI semester in order to enable the students to find placement in the same companies where they do their projects. The following suggestions were made regarding the revision of the syllabus for MBA: Dr S. Alfred Cecil Raj, Controller of Examinations suggested to change the credits given in integers into round numbers and pointed out some mismatch between the hours and credits with regard to courses with 1.5 credits. Dr. P. Jega Patrick explained that for 3 credit courses it is 30 sessions and for 1.5 credits - a workshop mode was adopted for 3 days for 15 sessions.

Dr V. Alex Ramani, Deputy Principal suggested the department to design a separate syllabus for the preparatory course and assign some credits for the same, for which Dr. Jega Patrick explained that it was a preparatory course and hence need not carry any credit. All these courses were intended to familiarise the students with different areas made mandatory for the MBA students. Dr V. Rajesh Kannan informed that according to AICTE norms, the credits for MBA course can be up to 120. He suggested increasing

the number of credits wherever applicable. Dr. Shaya Satish opined to allocate more weeks for the project and dissertation for which Dr. Jega Patrick said that he would revert after discussing with the Board of Studies, JIM. Dr. Jega Patrick also mentioned that the examination pattern was still being discussed and requested the Principal to give BoS, JIM more time to finalise the same. The Principal also asked the department to look into the suggestions given by the members.

The minutes of the departments of Counselling Psychology, B. Sc. Visual Communication, B.Voc. Visual Communication Technology, B. Voc. Software Development and System Administration and MBA were approved and passed by the Academic Council.

Dr R. Thirumurugan pointed out the equal weightage of marks given for CIA and Semester Examinations. He suggested that more weightage be given to the Semester Examination as that of TANSCH. Dr A. Megala, Regional Joint Director of Collegiate Education stated that according to UGC norms, the maximum hours for a course should not exceed six. Dr V. Rajesh Kannan also pointed out the same and he further added that autonomous colleges could make changes to suit their requirements.

### **Agenda 3: Ratification**

The next agenda of the meeting was the ratification of academic matters for 2021-2022. Dr. A.N. Paul Angelo, Dean, School of Physical Sciences placed the following ratification for approval:



- a) Knowledge levels for assessment of outcomes based on Blooms Taxonomy
- b) Weightage given to K – Levels in LOCF question paper
- c) Pattern and mark allotment for Continuous Internal Assessment
- d) Question paper pattern for Mid-Semester Test, End-Semester Test and Semester Examinations

He also placed the Self-Paced courses of the I PG programmes launched on JosTEL for ratification. Both the ratifications were approved and passed by the Academic Council.

#### **Agenda 4: Any other Academic Matter**

Dr. A.N. Paul Angelo, Dean, School of Physical Sciences briefed on the modalities of certificate courses that are going to be started from the next academic year.

Dr N. Ravi, Head, Department of Physics asked the rationale behind the change of question paper pattern in the department of BBA. Dr. Y. Dominic replied that the suggested pattern was already in practice.

Dr V. Alex Ramani, Deputy Principal suggested following Blooms Taxonomy while giving weightage to the assessment.

Dr S. Sahaya Sathish, Dean, School of Biological Science made his remark on the major changes made in the syllabus by certain departments. Whereas, the Botany department strictly followed the rule and did not make any change in the content. Rev. Fr Principal replied that the changes were done only after informing them.

Dr. S. R. Senthil Kumar appreciated the college for securing the best new NPTEL local chapter and congratulated Dr A. N. Paul Angelo for his strenuous efforts for the same.

Dr V. Francis, Dean, School of Languages and Culture proposed the resolution of thanking the outgoing members of the academic council.

The Principal, in his concluding remark,

- highlighted the efforts taken by the college to improve the academic and discipline of the students after the pandemic.
- pointed out the works carried out in connection with the implementation of LOCF.
- appreciated the academic initiatives carried out by the departments.
- lauded the efforts taken to launch JosTEL, an online learning portal.
- appreciated the departments for conducting remedial coaching for the slow learners.
- recognized all the small initiatives on the campus.
- complimented Dr S.R. Senthil Kumar for obtaining four patents.
- emphasized the vital role played by St. Joseph's College in nation-building.

The meeting came to an end at 12.50 pm with the formal vote of thanks proposed by Dr. G. John, Dean, School of Management Studies.

School of

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**BIOLOGICAL SCIENCES**

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## DEPARTMENT OF BIOCHEMISTRY

St. JOSEPH'S COLLEGE (Autonomous)

Accredited at A++ Grade (Cycle IV) by NAAC Special Heritage Status awarded by UGC  
College with Potential for Excellence by UGC DBT-STAR & DST-FIST sponsored College

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Phone : 0431 - 4226521, 4226386, Fax : 0431 - 2701501

Website : www.sjctni.edu

### Minutes of the Biochemistry Board of Studies meeting held on 21 JULY 2023


The board of studies meeting was held on 21 July 2023 at 11:30 AM in the Lab I AC room of Biochemistry department. The Head of the department welcome the university representative Dr.J.Sugunabai, Head, Department of Biochemistry, Seethalakshmi Ramasamy College, Tiruchirappalli, Dr.Karthik Mohan, Assistant Professor, Department of Biochemistry, EGS Pillai College, Nagapattinam, Mr.Dharmadurai, Senior analyst, Kuwait Saudi Pharmaceutical Industries (connected online through Whatsapp video call) and the faculty members of the department. Then the Head of the department presented the syllabus for the I semester, formulated by the TANSCHS to the board. The following are the points discussed and approved by the board.

- In semester I, in the paper entitled, Basics of Biochemistry, some portions of Unit III is taken and added to Unit IV, so that there is equal partitioning of the portions in these two units.
- The syllabus for all other papers was approved by the board.
- The question pattern for the CIA and semester examination fixed by the examination committee of St.Joseph's College, is accepted and approved by the board.
- The question paper pattern for the Ability Enhancement Course formulated by the Biochemistry department is approved by the board. The following is the question pattern for the AEC:

CIA (50)	SEMESTER (50)
Assignment ; 10	Open choice: Descriptive
Test I : 20	5 out of 8 questions.
Test II : 20	So 5x10=50

The Head of the department thanked the members of the board. The meeting came to the end by 1:30 PM



  
**A.BENNO SUSAI VIJAYAKUMAR,**  
M.Sc., SET, PGDMET.,  
Head, Dept. of Biochemistry  
St. Joseph's College (Autonomous)  
Tiruchirappalli-620 002



## DEPARTMENT OF BIOCHEMISTRY

### St. JOSEPH'S COLLEGE (Autonomous)

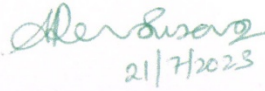
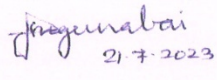
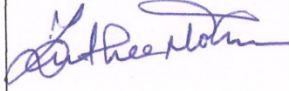


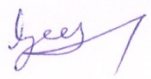
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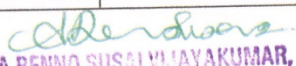
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Website : www.sjctni.edu

#### Members present during the BOS meeting held on 21 JULY 2023:

S.NO	Name and Address	Designation	Signature
1.	Prof.A. Benno Susai Vijayakumar Head, Department of Biochemistry, SJC,Tiruchirappalli	Chairman	 21/7/2023
2.	Dr.J.Sugunabai Associate Professor Department of Biochemistry Seethalakshmi Ramasamy College, Tiruchirappalli	University Representative	 21.7.2023
3.	Dr.Karthik Mohan Assistant Professor Department of Biochemistry EGS Pillai Arts and Science College, Nagapattinam	Subject Expert	
4.	Mr.Dharmadurai Senior analyst, Kuwait Saudi Pharmaceutical Industries, Kuwait	Industrialist (Connected through Whatsapp video call)	for 
5.	Prof.T.Antony Diwakar Chandran, Dept of Biochemistry, SJC,Tiruchirappalli	Member	
6.	Dr.P.G.Geegi Department Biochemistry, SJC,Tiruchirappalli	Member	



  
A.BENNO SUSAI VIJAYAKUMAR,  
M.Sc.,SET, PGDMIT.,  
Head, Dept. of Biochemistry  
St. Joseph's College (Autonomous)

<b>PROGRAMME PATTERN</b>			
<b>M.Sc. BIOCHEMISTRY</b>			
<b>Course Code</b>	<b>Title of the Course</b>	<b>Hours</b>	<b>Credits</b>
23PBI1CC01	<b>Core Course - 1:</b> Basics of Biochemistry	6	5
23PBI1CC02	<b>Core Course - 2:</b> Biochemical and Molecular Techniques	6	5
23PBI1CP01	<b>Core Practical - 1:</b> Biomolecules and Biochemical Techniques	6	4
23PBI1ES01	<b>Elective - 1:</b> Microbiology and Immunology	5	3
23PBI1ES02	<b>Elective - 2:</b> Energy and Drug Metabolism	5	3
23PBI1AE01	<b>Ability Enhancement Course:</b> Herbal Technology	2	1
	<b>Total</b>	<b>30</b>	<b>21</b>

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23PBI1CC01	Core Course - 1: Basics of Biochemistry	6	5

Course Objectives
Students will be introduced to the structure of biomolecules.
The significance of carbohydrates in biological processes will be understood.
The structure, properties and biological significance of lipids in the biological system will be studied
Students will learn about the concepts of protein structure and their significance in biological processes and creatively comprehend the role of membrane components with their biological significance.
Students will gain knowledge about the structures and functional roles of nucleic acids in the biological system.
The students will study the integration of metabolism of various metabolites like carbohydrates, proteins and nucleic acids.

### UNIT I: Carbohydrates

(18 Hours)

Carbohydrates- Classification, structure (configurations and conformations, anomeric forms), function and properties of monosaccharides, mutarotation, Disaccharides and oligosaccharides with suitable examples. Polysaccharides - Homopolysaccharides (starch, glycogen, cellulose, inulin, dextrin, agar, pectin, dextran). Heteropolysaccharides - Glycosaminoglycans– source, structure, functions of hyaluronic acid, chondroitin sulphates, heparin, keratan sulphate, Glycoproteins - proteoglycans. O- Linked and N-linked glycoproteins. Biological significance of glycan. Blood group polysaccharides. Bacterial cell wall (peptidoglycans, teichoic acid) and plant cell wall carbohydrates.

### UNIT II: Lipids

(18 Hours)

Lipids – Classification of lipids, structure, properties and functions of fatty acids, triacylglycerols, phospholipids, glycolipids, sphingolipids and steroids – Biological importance. Eicosanoids- classification, structure and functions of prostaglandins, thromboxanes, leukotrienes. Lipoproteins – Classification, structure, transport (endogenous and exogenous Pathway) and their biological significance.

### UNIT III: Amino Acids

(18 Hours)

Overview of Amino acids - classification, structure and properties of amino acids, biological role. Non-Protein amino acids and their biological significance. Proteins – classification based on composition, structure and functions. Primary, secondary, super secondary (motifs) (Helix-turn –helix, helix-loop-helix, Beta-alpha-beta motif, Rosemann Rossmann fold, Greek key), tertiary and quaternary structure of proteins.



**UNIT IV: Membrane Proteins****(18 Hours)**

Membrane structure-fluid mosaic model. Membrane Proteins - Types and their significance. Cytoskeleton proteins - actin, tubulin, intermediate filaments. Biological role of cytoskeletal proteins. Structural characteristics of collagen and hemoglobin. Determination of amino acid sequence. Chemical synthesis of a peptide, Forces involved in stabilization of protein structure. Ramachandran plot. Folding of proteins. Molecular chaperons – Hsp 70 and Hsp 90 - biological role.

**UNIT V: Nucleic Acids****(18 Hours)**

Nucleic acids – types and forms (A, B, C and Z) of DNA. Watson-Crick model-Primary, secondary and tertiary structures of DNA. Triple helix and quadruplex DNA. Mitochondrial and chloroplast DNA. DNA super coiling (calculation of Writhe, linking and twist number). Determination of nucleic acid sequences by Maxam Gilbert and Sanger's methods. Forces stabilizing nucleic acid structure. Properties of DNA and RNA. C-value, C-value paradox, Cot curve. Structure and role of nucleotides in cellular communications. Major and minor classes of RNA, their structure and biological functions.

**Teaching methodology**

Videos, PPT, Demonstration and Creation of models

**Books for Study:**

1. Murray, R. K. & et al. (2000). *Harper's biochemistry*. Appleton and Lange Stanford Publishers, Connecticut.
2. Lehninger, A. L. & et al. (1993). *Principles of biochemistry*. Worth Publishers. Inc.
3. Rawn, J.D. (1989). *Biochemistry*. Neil Patterson Publ.

**Books for Reference**

1. Stryer, I. (1988). *Biochemistry* (2<sup>nd</sup> ed.). W.H. Freeman & Co., New York.
2. White, A. & et al. (1959). *Principles of biochemistry*. McGraw Hill Book Co., New York.
3. Voet, D. & Voet, J. G. (2011). *Biochemistry* (4<sup>th</sup> ed.). John Wiley and Sons, New York.

**Web Sources**

1. [https://bio.libretexts.org/Bookshelves/Biochemistry/Book%3A\\_Biochemistry\\_Online\\_\(Jakubowski\)](https://bio.libretexts.org/Bookshelves/Biochemistry/Book%3A_Biochemistry_Online_(Jakubowski))
2. <https://www.thermofisher.com/in/en/home/life-science/protein-biology/protein-biology-learning-center/protein-biology-resource-library/pierce-protein-methods/protein-glycosylation.html>
3. <https://ocw.mit.edu/courses/biology/7-88j-protein-folding-and-human-disease-spring-2015/study-materials/>
4. <https://www.open.edu/openlearn/science-maths-technology/science/biology/nucleic-acids-and-chromatin/content-section-3.4.2>
5. <https://www.genome.gov/genetics-glossary/Cell-Membrane>
6. <https://nptel.ac.in/content/storage2/courses/102103012/pdf/mod3.pdf>



Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	explain the chemical structure and functions of carbohydrates	K1
CO2	using the knowledge of lipid structure and function	K2
CO3	describe the various levels of structural organization of proteins and the role of proteins in biological system	K3
CO4	apply the knowledge of proteins in cell-cell interactions	K4
CO5	applying the knowledge of nucleic acid sequencing in research and diagnosis	K5
CO6	integrate the metabolic pathways of different metabolites	K6

Relationship Matrix												
Semester	Course code		Title of the Course								Hours	Credits
1	23PBI1CC01		Core Course - 1: Basics of Biochemistry								6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	2	2	3	2	1	2	3	2	2	1	2.0	
CO2	1	2	2	2	1	2	2	3	2	1	1.9	
CO3	2	2	3	2	1	2	3	3	2	1	2.1	
CO4	3	1	3	2	1	2	2	3	2	1	2.0	
CO5	2	3	3	2	1	2	3	1	3	1	2.1	
CO6	3	2	2	3	1	2	3	1	3	1	2.1	
Mean overall Score											2.03 (High)	

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23PBI1CC02	Core Course - 2: Biochemical and Molecular Techniques	6	5

Course Objectives
To understand the various techniques used in biochemical investigation and microscopy.
To explain chromatographic techniques.\ and their applications
To explain electrophoretic techniques.
To comprehend the spectroscopic techniques and demonstrate their applications in biochemical investigations.
To acquire knowledge of radio labeling techniques and centrifugation.
To apply the knowledge to biomedical research

### **UNIT I: General Approaches in Research and Microscopy (18 Hours)**

General approaches to biochemical investigation, cell culture techniques and microscopic techniques. Organ and tissue slice technique, cell distribution and homogenization techniques, cell sorting, and cell counting, tissue Culture techniques. Cryopreservation, Biosensors-principle and applications. Principle, working and applications of light microscope, dark field, phase contrast and fluorescent microscope. Electron microscope- Principle, instrumentation of TEM and SEM, Specimen preparation and applications-shadow casting, negative staining and freeze fracturing.

### **UNIT II: Chromatographic Techniques (18 Hours)**

Basic principles of chromatography- adsorption and partition techniques. Chiral Chromatography and counter current Chromatography. Adsorption Chromatography – Hydroxy apatite chromatography and hydrophobic interaction Chromatography. Affinity chromatography. Gas liquid chromatography- principle, instrumentation, column development, detectors and applications. Low pressure column chromatography – principle, instrumentation, column packing, detection, quantitation and column efficiency, High pressure liquid chromatography- principle, instrumentation, delivery pump, sample injection unit, column packing, development, detection and application. Reverse HPLC, capillary electro chromatography and perfusion chromatography.

### **UNIT III: Electrophoretic Techniques (18 Hours)**

General principles of electrophoresis, supporting medium, factors affecting electrophoresis, Isoelectric focusing-principle, ampholyte, development of pH gradient and application. PAGE-gel casting-horizontal, vertical, slab gels, sample application, detection-staining using CBB, silver, fluorescent stains. SDS PAGE-principle and application in molecular weight determination principle of disc gel electrophoresis ,2D PAGE. Electrophoresis of nucleic acids-agarose gel electrophoresis of DNA, pulsed field gel electrophoresis- principle, apparatus, application. Electrophoresis of RNA, curve. Microchip electrophoresis and 2D electrophoresis, Capillary electrophoresis.

#### UNIT IV: Spectroscopic Techniques

(18 Hours)

Basic laws of light absorption- principle, instrumentation and applications of UV-Visible, IR, ESR, NMR, Mass spectroscopy, Turbidimetry and Nephelometry. Luminometry (Luciferase system, chemiluminescence). X - ray diffraction. Atomic absorption spectroscopy - principle and applications - Determination of trace elements

#### UNIT V: Radiolabeling Techniques and Centrifugation

(18 Hours)

Nature of radioactivity-detection and measurement of radioactivity, methods based upon ionisation (GM counter) and excitation (scintillation counter), autoradiography and applications of radioactive isotopes, biological hazards of radiation and safety measures in handling radioactive isotopes.

Basic principles of Centrifugation. Preparative ultracentrifugation - Differential centrifugation, Density gradient centrifugation. Analytical ultracentrifugation - Molecular weight determination.

<b>Teaching methodology</b>	Videos, PPT, Demonstration and Creation of models
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#### Books for Study

1. Upadhyay, A., Upadhyay, K., & Nath, N. (2014). *Biophysical chemistry principles and techniques* (4<sup>th</sup> ed.). Himalaya Publishing House.
2. Kothari, C.R. (2004). *Research methodology, methods and techniques* (2<sup>nd</sup> ed.). New Age International Publishers.
3. Freifelder, D. M. (1982). *Physical biochemistry: Applications to biochemistry and molecular biology*. W.H.Freeman.
4. Boyer, R. F. (2012). *Biochemistry laboratory: Modern theory and techniques* (2<sup>nd</sup> ed.). Prentice Hall.
5. Rajan, K. (2011). *Analytical techniques in biochemistry and molecular biology*, Springer.
6. Segel, I.H. (1976). *Biochemical calculations* (2<sup>nd</sup> ed.). John Wiley and Sons.
7. Robyt, J. F. (2015). *Biochemical techniques: Theory and practice* (1<sup>st</sup> ed.). CBS Publishers & Distributors.

#### Books for References

1. Daniel, W. W. (2006). *Biostatistics: A foundation for analysis in the health sciences* (9<sup>th</sup> ed.). John Willey and Sons Inc.
2. Attwood, T. K., & Parry-Smith, D.J. (1999). *Introduction to bioinformatics*. Pearson Education Ltd.
3. Boyer, R. F. (1993). *Modern experimental biochemistry* (2<sup>nd</sup> ed.), Benjamin- Cummings Publishing, Redwood City, CA.

#### Web Sources

1. Principles and techniques of biochemistry and molecular biology:  
[https://www.kau.edu.sa/Files/0017514/Subjects/principals%20and%20techniques%20of%20biochemistry%20and%20molecular%20biology%207th%20ed%](https://www.kau.edu.sa/Files/0017514/Subjects/principals%20and%20techniques%20of%20biochemistry%20and%20molecular%20biology%207th%20ed%20)

<b>Course Outcomes</b>
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CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	attain good knowledge in modern used in biochemical investigation and microscopy and apply the experimental protocols to plan and carry out simple investigations in biological research	K1
CO2	demonstrate knowledge to implement the theoretical basis of chromatography in upcoming practical course work	K2
CO3	demonstrate knowledge to implement the theoretical basis of electrophoretic techniques in research work	K3
CO4	tackle more advanced and specialized spectroscopic techniques that are pertinent to research	K4
CO5	tackle more advanced and specialized radioisotope and centrifugation techniques that are pertinent to research work	K5
CO6	apply the knowledge in biomedical research	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PBI1CC02		Core Course - 2: Biochemical and Molecular Techniques							6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	3	2	1	2	3	2	2	1	2.0
CO2	1	2	3	2	1	2	2	3	2	1	2.0
CO3	2	2	3	2	1	2	3	3	2	1	2.1
CO4	3	2	3	2	1	2	3	3	2	1	2.2
CO5	2	3	3	2	1	2	3	1	3	1	2.1
CO6	3	3	3	2	1	2	3	1	3	1	2.2
Mean overall Score											2.1 (High)

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23PBI1CP01	<b>Core Practical - 1:</b> Biomolecules and Biochemical Techniques	6	4

Course Objectives
To instill skill in students enabling them to apprehend the wider knowledge about principles and techniques to be employed for the biomolecules under investigation.
To inculcate the knowledge of various isolation and purification techniques of macromolecules like DNA, RNA, Glycogen and Starch,
To perform colorimetric estimations to quantify important metabolites like lactate and tryptophan and minerals like calcium and iron from various sources.
To achieve training in subcellular fractionation and to identify them by markers.
To achieve training in various chromatographic techniques.
To perform the isolation and identification of the organelles of a cell using differential centrifugation.
To perform phytochemical screening and quantification enabling them to give an insight on phytochemicals this will be useful for future research.

#### **UNIT I: Biochemical Studies and Estimation of Macromolecules**

1. Isolation and estimation of glycogen from liver.
2. Isolation and estimation of DNA from animal tissue.
3. Isolation and estimation of RNA from yeast.
4. Purification of Polysaccharides –Starch and assessment of its purity<sup>9</sup>

#### **UNIT II: UV Absorption**

1. Denaturation of DNA and absorption studies at 260 nm.
2. Denaturation of Protein and absorption studies at 280 nm.

#### **UNIT III: Colorimetric estimations**

1. Estimation of Pyruvate
2. Estimation of tryptophan.

#### **UNIT IV: Estimation of Minerals**

1. Estimation of calcium
2. Estimation of iron

## UNIT V: Plant Biochemistry

1. Qualitative analysis Phytochemical screening
2. Estimation of Flavonoids -Quantitative analysis

## UNIT VI: Group Experiments

1. Fractionation of sub-cellular organelles by differential centrifugation-Mitochondria and nucleus
2. Identification of the separated sub-cellular fractions using marker enzymes (any one)
3. Separation of identification of lipids by thin layer chromatography.
4. Separation of plant pigments from leaves by column chromatography
5. Identification of Sugars by Paper Chromatography
6. Identification of Amino acids by Paper Chromatography

## Books for Study

1. Godkar, P. B. (2014). *Text book of medical laboratory technology* (3<sup>rd</sup> ed., Vol I and II). Bhalani Publishing house.
2. Gowenlock, Alan H. (2002). *Varley's practical clinical biochemistry* (6<sup>th</sup> ed.). CBS publishers.
3. Sadasivam, S. & Manickam, A. (2010). *Biochemical methods* (3<sup>rd</sup> ed.). New Age International (P) Ltd.
4. David T. Plummer. (1988). *Practical biochemistry* (3<sup>rd</sup> ed.). Tata McGraw Hill Publishers.

## Books for Reference

1. Plummer, D. (2001). *An introduction to practical biochemistry* (3<sup>rd</sup> ed.). McGraw Hill Education (India) Private Ltd.
2. Jayaraman, J. (2011). *Laboratory manual in biochemistry*. New age publishers.
3. Varley, H. (2006). *Practical clinical biochemistry* (6<sup>th</sup> ed.). CBS Publishers.
4. Debiyi, O. & Sofowora, F. A. (1978). *Phytochemical screening of medical plants*. (vol. 3). Iloyidia.
5. Chavhan, S. A. & Shinde S. A. (2019). *A guide to chromatography techniques* (1<sup>st</sup> ed.).
6. Katoch, R. (2011). *Analytical techniques in biochemistry and molecular biology*. Springer.

## Web Sources

1. [https://www.researchgate.net/publication/313745155\\_Practical Biochemistry\\_A\\_Student\\_Companion](https://www.researchgate.net/publication/313745155_Practical_Biochemistry_A_Student_Companion)
2. <https://doi.org/10.1186/s13020-018-0177-x>
3. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5368116/>
4. <https://www.life.illinois.edu/biochem/455/Lab%20exercises/2Photometry/spectrophotometry.pdf>
5. <https://ijpsr.com/bft-article/determination-of-total-flavonoid-and-phenol-content-in-mimusops-elengi-linn/?view=fulltext>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	acquire knowledge and skill in the techniques used in the isolation, purification and estimation of different biomolecules that are widely employed in research	K1
CO2	get acquainted with Principle, Instrumentation and method of Performing UV absorption studies of DNA, Protein and interpreting the alteration occurred during the process of denaturation	K2
CO3	be fine-tune in handling the instruments like colorimeter, spectrophotometer and will be able to estimate the biomolecules and minerals from the given samples	K3
CO4	in addition to acquiring skill in performing various biochemical techniques can also learn to detect presence of phytochemicals and quantify them in the plant sample	K4
CO5	develop skill in analytical techniques like subcellular fractionation, Paper, Column and Thin layer Chromatography and the group experiments will enable them to build learning skills like team work, Problem solving, Communication ability	K5
CO6	perform phytochemical screening and quantification enabling them to give an insight on phytochemicals this will be useful for future research	K6

Relationship Matrix												
Semester	Course code		Title of the Course								Hours	Credits
1	23PBI1CP01		Core Practical - 1: Biomolecules and Biochemical Techniques								6	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	3	3	3	1	2	2	2	2	2	2.4	
CO2	2	3	2	3	1	2	2	2	2	2	2.1	
CO3	2	2	2	3	1	2	2	1	2	1	1.8	
CO4	3	2	3	3	1	2	2	1	2	1	2.0	
CO5	2	3	3	2	1	2	3	1	3	1	2.1	
CO6	3	2	3	2	1	3	2	1	3	2	2.2	
Mean overall Score											2.11 (High)	

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PBI1ES01	Elective - 1: Microbiology and Immunology	5	3

Course Objectives
To appreciate the classification of microorganisms based on their structure, size, and shape with an insight into the ancient scriptures about microbes
To understand the role of microorganisms in environment and to learn the culture conditions
To recognize the possible contamination of foods by microorganisms, to learn about counteracting preservative measures and to know about probiotic nature of microorganisms
To gain knowledge on pathogenic mediation by microorganisms and preventive measures as well
To comprehend the features of antimicrobial agents, their mechanism of action along with the side effects and to explore natural remedial measures against microbes
To be able to exploit the various features of microorganisms for the beneficial industrial production

#### **UNIT I: Taxonomy (18 Hours)**

Taxonomical classification - bacteria, viruses (DNA, RNA), algae, fungi and protozoa. Distribution and role of microorganisms in soil, water and air. Charaka's classification of microbes, lytic cycle and lysogeny. Types of culture media, isolation of pure culture, growth curve and the measurement of microbial growth.

#### **UNIT II: Food Spoilage (18 Hours)**

Contamination and spoilage of foods – cereals, cereal products, fruits, vegetables, meat, fish, poultry, eggs, milk, and milk products. General principles of traditional and modern methods of food preservation - Removal or inactivation of microorganisms, boiling, steaming, curing, pasteurization, cold processing, freeze drying, irradiation, vacuum packing, control of oxygen and enzymes. Microbes involved in preparation of fermented foods - cheese, yoghurt, curd, pickles, rice pan cake, appam, ragi porridge (கேழ்வரகு கூழ்) and bread.

#### **UNIT III: Food Poisoning (18 Hours)**

Food poisoning- bacterial food poisoning, Salmonella, Clostridium botulinum (botulism), Staphylococcus aureus, fungal food poisoning – aflatoxin, food infection – Clostridium, Staphylococcus and Salmonella. Pathogenic microorganisms, E. coli, Pseudomonas, Klebsilla, Streptococcus, Haemophilus, & Mycobacterium, causes, control, prevention, cure and safety. Food microbiological screening- Real time PCR, ELISA, Aerobic and anaerobic Plate Count, dye reduction method, anaerobic lactic acid bacteria, anaerobic sporeformers, Hazard analysis critical control point (HACCP)



**UNIT IV: Chemotherapy****(18 Hours)**

Antimicrobial chemotherapy, General characteristics of antimicrobial agents. Mechanism of action – sulfonamides, sulphones, and PAS. Penicillin, streptomycin- spectra of activity, mode of administration, mode of action, adverse effects, and sensitivity test., Antiviral and antiretroviral agents, Antiviral RNA interference, natural intervention (Natural immunomodulators routinely used in Indian medical philosophy).

**UNIT V: Immune System****(18 Hours)**

Immune system- definition and properties. Cells of the immune system – neutrophils, eosinophils, basophils, mast cells, monocytes, macrophages, dendritic cells, natural killer cells, and lymphocytes (B cells and T cells). Lymphoid organs- Primary and Secondary; structure and functions. Antigens and Complement System: definition, properties- antigenicity and immunogenicity, antigenic determinants and haptens. Antigen - antibody interactions - molecular mechanism of binding. Affinity, avidity, valency, cross reactivity and multivalent binding. Immunoglobulins & Immune Response: Structure, classes and distribution of antibodies. Antibody diversity. Immune system in health & disease, Transplantation immunology- graft rejection and HLA antigens. Immunological techniques, Flow cytometry and its application.

<b>Teaching Methodology</b>	Videos, PPT, Demonstration and Creation of models
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**Books for Study**

1. Ananthanarayan, R. and Jayaram Paniker, C.K. (2007). *Text book of microbiology* (7<sup>th</sup> ed.). Orient Longman Ltd.
2. Prescott, L. M., Harley J. P., and Klein, D. A. (2007). *Microbiology* (7<sup>th</sup> Edition). Mc Graw Hill.

**Books for Reference**

1. Michael J. Pelczar Jr.(2001). *Microbiology* (5<sup>th</sup> ed.). McGraw Hill Education (India) Private Limited.
2. Frazier, W. C., Westhoff, D. C., & Vanitha, N. M. (2010). *Food microbiology* (5<sup>th</sup> ed.). McGraw Hill Education (India) Private Limited.
3. Willey, J., & Sherwood, L. (2011). *Prescott's microbiology* (8<sup>th</sup> ed.). McGraw Hill Education.
4. Ananthanarayanan, Paniker & Kapil, A. (2013). *Textbook of microbiology* (9<sup>th</sup> ed.). Orient Black Swan.
5. Owen, J. , Kuby, J. P. (2013). *Immunology (Kindt, Kuby immunology)* (7<sup>th</sup> ed.). W.H. Freeman & Co.
6. Brooks, G.F., & Carroll, K. C. (2013). *Jawetz Melnick & Adelbergs medical microbiology* (26<sup>th</sup> ed.). McGraw Hill Education.
7. Greenwood, D. (2012). *Medical microbiology*. Elsevier Health.

## Web Sources

1. <https://www.ijam.co.in/index.php/ijam/article/view/1326> (Krumi (Microorganisms) in Ayurveda- a critical review)
2. Virtual Lectures in Microbiology and Immunology, University of Rochester
3. <https://www.frontiersin.org/articles/10.3389/fphar.2020.578970/full#h9>
4. <https://www.frontiersin.org/articles/10.3389/fmicb.2018.02151/full>
5. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7559905/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	classify (by both ancient and modern modes) different types of microorganisms and explain life cycle of the microbes	K1
CO2	recognize the microorganisms involved in decay of foods and will be able to apply various counteracting measures. The students also will be able to relate the role of certain beneficial microbes in day-to- day's food consumption.	K2
CO3	understand the common pathogenic bacterial and fungi that cause toxic effects and will be able to employ curative measures	K3
CO4	analyse various features of wide variety of antimicrobial agents along with their mode of action, in addition, being able to apprehend the valuable potentials of traditional and easily available herbs	K4
CO5	apply knowledge gained in production of industrially important products as both pharmaceutical and nutraceutical	K5
CO6	apply the knowledge of immunology in daily life	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PB11ES01		Elective - 1: Microbiology and Immunology							5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	3	2	1	2	3	2	2	1	2.0
CO2	2	2	3	2	1	2	3	3	2	1	2.2
CO3	2	2	3	2	1	2	3	3	2	1	2.1
CO4	3	2	3	2	1	2	3	3	2	1	2.2
CO5	2	3	3	2	1	2	3	1	3	1	2.1
CO6	3	2	3	2	1	2	3	2	3	1	2.2
Mean overall Score											2.13 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PBI1ES02	Elective - 2: Energy and Drug Metabolism	5	3

Course Objectives
Familiarize on concepts of enthalpy, entropy, free energy, redox system, biological oxidation, and high energy compounds
Provide an insight into the relationship between electron flow and phosphorylation
Inculcate knowledge on processes involved in converting light energy to chemical energy and associated food production by autotrophs.
Provide a platform to understand the versatile role of Krebs cycle, transport of NADH across mitochondrial membrane and energetics
Educate on the various phase I and II reactions.
Mode of transformation of xenobiotics and endobiotics.

#### UNIT I: Thermodynamics

(18 Hours)

Thermodynamic- principles in biology- Concept of entropy, enthalpy and free energy change. Redox systems. Redox potential and calculation of free energy. Biological oxidation – Oxidases, dehydrogenases, hydroperoxidases, oxygenases. Energy rich compounds – phosphorylated and non-phosphorylated. High energy linkages.

#### UNIT II: Electron Transport Chain

(18 Hours)

Electron transport chain-various complexes of ETC, Q-cycle. Inhibitors of ETC. Oxidative phosphorylation-P/O ratio, chemiosmotic theory. Mechanism of ATP synthesis - role of F<sub>0</sub>-F<sub>1</sub> ATPase, ATP-ADP cycle. Inhibitors of oxidative phosphorylation ionophores, protonophores. Regulation of oxidative phosphorylation

#### UNIT III: Photosynthesis and Dark Reactions

(18 Hours)

Light reaction-Hills reaction, absorption of light, photochemical event. Photo ETC-cyclic and non-cyclic electron flow. Photophosphorylation-role of CF<sub>0</sub>-CF<sub>1</sub> ATPase. Dark reaction-Calvin cycle, control of C<sub>3</sub> pathway, and Hatch-Slack pathway (C<sub>4</sub> pathway), Photorespiration. Synthesis and degradation of starch.

#### UNIT IV: Metabolic Pathways

(18 Hours)

Interconversion of major food stuffs. Energy sources of brain, muscle, liver, kidney and adipose tissue. Amphibolic nature of Citric acid cycle. Anaplerotic reaction. Krebs cycle, Inhibitors and regulation of TCA cycle. Transport of extra mitochondrial NADH – Glycerophosphate shuttle, malate aspartate shuttle. Energetics of metabolic pathways – glycolysis, (aerobic and anaerobic), citric acid cycle, beta oxidation

**UNIT V: Detoxification****(18 Hours)**

Activation of sulphate ions – PAPS, APS, SAM and their biological role. Metabolism of xenobiotics – Phase I reactions – hydroxylation, oxidation and reduction. Phase II reactions – glucuronidation, sulphonation, glutathione conjugation, acetylation and methylation. Mode of action and factors affecting the activities of xenobiotic enzymes.

<b>Teaching methodology</b>	Videos, PPT, Demonstration and Creation of models
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**Books for Study**

1. Tripathi, K. D. (2010). *Essentials of medical pharmacology* (7<sup>th</sup> ed.). Jaypee Publishers.
2. Ghosh, J. (2010). *A textbook of pharmaceutical chemistry* (3<sup>rd</sup> ed.). S. Chand & Company Ltd., New Delhi.

**Books for Reference**

1. Nelson, D. L., & Cox, M. M. (2012). *Lehninger principles of biochemistry* (6<sup>th</sup> ed.). W. H. Freeman.
2. Murray, R. K., Granner, R. K., Mayes, P. A. & Rodwell, V. W. (2012). *Harper's illustrated biochemistry* (29<sup>th</sup> ed.). McGraw-Hill Medical.
3. Metzler, D.E. (2003). *The chemical reactions of living cells* (2<sup>nd</sup> ed.), Academic Press.
4. Zubay, G.L. (1999). *Biochemistry* (4<sup>th</sup> ed.). Mc Graw-Hill.
5. Devlin, R. M. (1983). *Plant physiology* (4<sup>th</sup> ed.). PWS publishers.
6. Taiz, L., & Zeiger, E. (2010). *Plant physiology* (5<sup>th</sup> ed.). Sinauer Associates, Inc.

**Web Sources**

1. <https://chemed.chem.purdue.edu/genchem/topicreview/bp/ch21/gibbs.php>
2. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7767752/#:~:text=The%20mitochondrial%20electron%20transport%20chain,cellular%20ATP%20through%20oxidative%20phosphorylation.>
3. [https://www.researchgate.net/figure/Oxidative-phosphorylation-in-mitochondrial-electron-transport-chain-ETC-and-proton\\_fig1\\_230798915](https://www.researchgate.net/figure/Oxidative-phosphorylation-in-mitochondrial-electron-transport-chain-ETC-and-proton_fig1_230798915)
4. <https://www.lyndhurstschools.net/userfiles/84/Classes/851/photosynthesis%20light%20&%20dark%20reactions%20ppt.pdf?id=560837>
5. <https://bajan.files.wordpress.com/2010/05/amphibolic-nature-of-krebs-cycle.pdf>
6. <https://www.sciencedirect.com/topics/medicine-and-dentistry/xenobiotic-metabolism#:~:text=Xenobiotic%20metabolism%20can%20be%20defined,more%20readily%20excreted%20hydrophili>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	appreciate the relationship between free energy and redox potential and will be able to justify the role of biological oxidation and energy rich compounds in maintaining the energy level of the system	K1
CO2	gain knowledge on role of mitochondria in the production of energy currency of the cell	K2
CO3	acquaint with the process of photosynthesis	K3
CO4	comprehend on the diverse role of TCA cycle and the energy obtained on complete oxidation of glucose and fatty acid	K4
CO5	correlate the phase I and phase II reactions to metabolize the xenobiotics	K5
CO6	apply the knowledge in the transformation of xenobiotics and endobiotics	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PB11ES02		Elective - 2: Energy and Drug Metabolism							5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	3	2	1	2	3	2	2	1	2.0
CO2	2	3	2	2	1	2	3	2	3	1	2.2
CO3	2	2	3	2	1	2	3	3	2	1	2.1
CO4	2	3	3	2	1	2	3	2	3	1	2.2
CO5	2	3	3	2	1	2	3	1	3	1	2.1
CO6	2	3	3	2	1	2	3	3	3	1	2.3
Mean overall Score											2.15 (High)

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23PBI1AE01	Ability Enhancement Course (AEC) - HERBAL TECHNOLOGY	2	2

Course Objectives
Familiarize the indigenous systems of medicines like Ayurveda, Siddha, Unani, Homeopathy and Yoga
Study the types and formulations of drugs
Identify the active principles of Phytomedicine and their screening methods

## UNIT I

**Introduction:** Herbal medicines: history and scope - definition of medical terms - role of medicinal plants in Indian systems of medicine; Ayurveda, Yoga, Siddha, Unani and Homeo.

**Pharmacognosy:** Drug Formulations- Types, Advantages and Disadvantages. Drug adulteration - types, methods of drug evaluation.

## UNIT II

**Phytochemistry:** Active principles and methods of their testing - identification and utilization of the medicinal herbs; *Catharanthus roseus* (cardiotonic). Biological testing of herbal drugs-Screening tests for secondary metabolites (alkaloids, flavonoids, steroids, triterpenoids, phenolic compounds). **Conservation of herbs:** Medicinal plant banks micro propagation of important species (*Withania somnifera*).

### Books for Study

1. Glossary of Indian medicinal plants, R.N. Chopra, S.L. Nayar and I.C. Chopra, 1956. C.S.I.R
2. The indigenous drugs of India, Kanny, Lall, Dey and Raj Bahadur, 1984. International Book Distributors.

### Books for Reference

1. Herbal plants and Drugs Agnes Arber, 1999. Mangal Deep Publications.
2. Ayurvedic drugs and their plant source. V.V. Sivarajan and Balachandran Indra 1994. Oxford IBH publishing Co.
3. Ayurveda and Aromatherapy. Miller, Light and Miller, Bryan, 1998. Banarsidass, Delhi.
4. Principles of Ayurveda, Anne Green, 2000. Thomsons.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K – Level)
	On successful completion of this course, students will be able to	
<b>CO1</b>	Comprehend on indigenous system of medicine in their day to day life	<b>K4</b>
<b>CO2</b>	Correlate the medicinal uses with their formulations	<b>K5</b>
<b>CO3</b>	Isolate and prepare medicines from natural sources	<b>K6</b>

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PBI1AE01		Ability Enhancement Course (AEC) - HERBAL TECHNOLOGY							2	2
Course Outcomes	Programme Outcomes (Pos)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	3	2	1	2	3	2	2	1	2.0
CO2	2	3	2	2	1	2	3	2	3	1	2.2
CO3	2	2	3	2	1	2	3	3	2	1	2.1
Mean overall Score											2.1 (High)



## DEPARTMENT OF BIOTECHNOLOGY St. JOSEPH'S COLLEGE (Autonomous)

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21 JULY 2023

### MINUTES OF THE BOARD OF STUDIES MEETING

The Board of Studies meeting was held on 21/07/23 at 11.30 am in the Department of Biotechnology. The chairman welcomed the board members. The University Nominee, Dr. V. Rajesh Kannan, Associate Professor, Department of Microbiology, Bharathidasan University, Trichy was absent; Dr. V. Ramesh Kumar, Associate Professor, Department of Biotechnology, Sathyabama Institute of Science and Technology, Chennai was absent; Mr. Sasi Varier, K.S Varier's Ashtanga Ayurvedics, Thogamalai Road, Tiruchirappalli was present; The faculty members of the Biotechnology Department attended the meeting.

The Meeting was convened to discuss the papers and its evaluation pattern in the Semester I of TANSCHS Syllabus. The following agenda were discussed:

- 1) TANSCHS Syllabus : The Stake Holders has unanimously accepted and approved the TANSCHS syllabus for Semester I with the inclusion of two core papers titled "Biochemistry" and "Molecular Cell Biology", One Core Practical Paper titled "Practical – I (Biochemistry, Molecular Genetics and Molecular Cell Biology)", Two Elective papers titled "Bioinstrumentation" and "Biostatistics" with one Ability Enhancement Course (AEC) titled "Entrepreneurship skills for Biotechnology" respectively.
- 2) The syllabus contents of the above mentioned papers in TANSCHS syllabus of Semester I has been accepted without any changes except the AEC paper that are newly prepared with the inclusion of two units from previous LOCF syllabus.
- 3) The Title of the selected papers in Semester I of TANSCHS Syllabus were retained as such, accepted and approved unanimously.
- 4) The Evaluation pattern for the Papers in Semester I of TANSCHS syllabus was accepted and approved unanimously. The Evaluation Pattern for the courses are provided below:

  
Dr. A. EDWARD  
Head

Department of Biotechnology  
St. Joseph's College (Autonomous)  
Tiruchirappalli-620 002, Tamil Nadu.



**For Mid and End Semester (Papers except AEC Paper)**

- |  |               |
|--|---------------|
| (1) Section A Answer ALL the questions:                        | (7 x 1 = 7)   |
| (2) Section B Answer ALL the questions                         | (5 x 3 = 15)  |
| (3) Section C Answer ALL the questions by choosing either / or | (3 x 6 = 18)  |
| (4) Section D Answer any TWO out of three questions            | (2 x 10 = 20) |
| <b>TOTAL (A) = 60 Marks</b>                                    |               |
| (5) Component I - Assignment                                   | 10 Marks      |
| (6) Component II - Seminar                                     | 10 Marks      |
| (7) Component III - Online Tests                               | 15 Marks      |
| (8) Library Marks  | 5 Marks       |

**TOTAL FOR COMPONENTS (B) = 40 Marks**

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**GRAND TOTAL (A + B) = 100 Marks**

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**For Semester Examination (Papers except AEC Paper)**

- |   |               |
|---|---------------|
| (1) Section A Answer ALL the questions                          | (10 x 1 = 10) |
| (2) Section B Answer ALL the questions                          | (10 x 3 = 30) |
| (3) Section C Answer ALL the questions by choosing either / or: | (5 x 6 = 30)  |
| (4) Section D Answer any THREE out of FIVE questions            | (3 x 10 = 30) |
| <b>TOTAL = 100 Marks</b>  |               |

The Evaluation pattern for Ability Enhancement course (AEC) is CIA Internal (50 Marks) and External (50 Marks), total of 100 Marks. The External question setting and evaluation of AEC paper will be done the Faculty members of Biotechnology Department. The Evaluation Pattern for AEC Paper is provided below:

**CIA Internal (Ability Enhancement Course) – 50 Marks**

- (1) Assignment – 10 Marks;
- (2) Seminar – 20 Marks;
- (3) Online MCQ Test – 20 Marks

  
**Dr. A. EDWARD**  
Head  
Department of Biotechnology  
St. Joseph's College (Autonomous)  
Tiruchirappalli-620 002, Tamil Nadu.

**External (Ability Enhancement Course) – 50 Marks**

The questions are of descriptive type and written based. Students should answer 5 questions out of 7. Each question carries 10 marks. Hence five questions total 50 Marks.

The syllabus is modified as per the discussions made, circulated among the board members and approved.

Finally, the chairman proposed vote of thanks and the meeting came to an end at 1:00 pm.

(1) Dr. A. Edward – Head & Chairman

(2) Dr. V. Rajesh Kannan,  
Associate Professor,  
Department of Microbiology,  
Bharathidasan University, Tiruchirappalli – 620 024

(3) Dr. V. Ramesh Kumar,  
Associate Professor,  
Department of Biotechnology,  
Sathyabama Institute of Science and Technology,  
Chennai – 600 119

(4) Mr. Sasi Varier  
Varier's Ashtanga Ayurvedics,  
2/564, Thogamalai Road,  
Tiruchirappalli – 620 102

For K.S. VARIER'S  
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EXECUTIVE DIRECTOR

**Department Staff Members**

1. Dr. A. Asha Monica, Assistant Professor
2. Dr. J. Arutchelvi, Assistant Professor
3. Dr. V. Swabna, Assistant Professor

*A. Asha Monica*  
*Arutchelvi*  
*Swabna*

Based on the suggestions given by the stake holders, the syllabus (Course titles and code numbers) and its evaluation pattern were accepted and approved.

*Dr. A. Edward*  
Dr. A. EDWARD  
Head  
Department of Biotechnology  
St. Joseph's College (Autonomous)  
Tiruchirappalli-620 002, Tamil Nadu.

<b>PROGRAMME PATTERN</b>			
<b>M.Sc. BIOTECHNOLOGY</b>			
<b>Course Code</b>	<b>Title of the Course</b>	<b>Hours</b>	<b>Credits</b>
23PBT1CC01	<b>Core Course - 1:</b> Biochemistry	6	5
23PBT1CC02	<b>Core Course - 2:</b> Molecular Cell Biology	6	5
23PBT1CP01	<b>Core Practical - 1:</b> Biochemistry, Molecular Genetics and Molecular Cell Biology	6	4
23PBT1ES01	<b>Elective - 1:</b> Bioinstrumentation	5	3
23PBT1ES02	<b>Elective - 2:</b> Biostatistics	5	3
23PBT1AE01	<b>Ability Enhancement Course:</b> Entrepreneurship Skills for Biotechnology	2	1
	<b>Total</b>	<b>30</b>	<b>21</b>

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23PBT1CC01	Core Course 1: Biochemistry	6	5

Course Objectives
To understand the basics of pH and related principles and carbohydrates.
To provide the basic knowledge about lipid metabolism and its related significance.
To enlighten on bio-energetics and biological oxidation pathways.
To update the knowledge on amino acids and proteins.
To assess and appraise the role of nucleic acids.

### UNIT I: Electrochemistry and Carbohydrates (18 hours)

pH, pK. acid, base. Buffers - Henderson- Haselbach equation, biological buffer system – Phosphate buffer system, protein buffer system, bicarbonate buffer system, amino acid buffer system and Hb buffer system. Water, Carbohydrates: Nomenclature, classification, structure, chemical and physical properties of carbohydrates. Metabolisms: glycogenesis, glycogenolysis, gluconeogenesis, pentose phosphate pathway.

### UNIT II: Lipids (18 hours)

Nomenclature, classification, structure, chemical and physical properties of fatty acids. Metabolisms: biosynthesis of fatty acids, triglycerides, phospholipids, glycol lipids. Cholesterol biosynthesis, bile acids and salt formation. Eicosanoids, sphingolipids and steroids.

### UNIT III: Bioenergetics (18 hours)

Concept of energy, Principle of thermodynamics, Relationship between standard free energy and Equilibrium constant, ATP as universal unit of free energy in biological systems. Biological oxidation: Electron transport chain, oxidative phosphorylation, glycolysis, citric acid cycle, Cori cycle, glyoxylate pathway. Oxidation of fatty acids- mitochondria and peroxisomes,  $\alpha$  and  $\beta$ -oxidation, oxidation of unsaturated and odd chain fatty acids, ketone bodies. Photosynthesis, urea cycle, hormonal regulation of fatty acids.

### UNIT IV: Proteins (18 hours)

Amino acids and Protein: Nomenclature, Classification, structure, chemical and physical properties of amino acids and proteins. Metabolisms: Biosynthesis of amino acids. Degradation of proteins, nitrogen metabolisms and carbon skeleton of amino acids.

### UNIT V: Nucleic Acids (18 hours)

Nucleic acids: Nomenclature, Classification, structure, chemical and physical properties of purine and pyrimidines. In de novo and salvage synthesis of purines, pyrimidine bases, nucleosides and nucleotides. Catabolism of purines and pyrimidines bases.

<b>Teaching Methods</b>	PPT, Chalk and Talk & Animation videos
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### Books for Study

1. Nelson, et al. (2021). *Lehninger principles of biochemistry* (8<sup>th</sup> ed.) Macmillan Learning.
2. Stryer, L. (2015). *Biochemistry* (7<sup>th</sup> ed.). W.H. Freeman & Co.
3. Murray, R.K., Granner, B.K., Mayes, P.A., & Rodwell, V.W. (2012). *Harper's Biochemistry* (29<sup>th</sup> ed.). Prentice Hall International.

### Books for References

1. Kuchel, P., Easterbrook-Smith, S. Gysbers, V. and Matthew, J. M. (2011). *Schaums Outline of Biochemistry* (3<sup>rd</sup> ed.). McGraw-Hill.
2. Sathyanarayana, U. & Chakrapani. U. (2011). *Biochemistry*, Books and Allied private limited.
3. Berg, J.M., Tymoczko, J.L., & Stryer, L. (2010). *Biochemistry* (6<sup>th</sup> ed.). W. H. Freeman.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	identify the structure of fundamental monosaccharides and polysaccharides.	K1
CO2	provide basic knowledge about lipid metabolism and its related significance.	K2
CO3	illustrate the synthesis of biomolecules, its role in metabolic pathways and regulation.	K3
CO4	infer the concept of energy and about the principles of thermodynamics.	K4
CO5	assess the amino acids structures, chemical properties and their organization into polypeptides.	K5
CO6	explain the importance and role of nucleic acids.	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PBT1CC01		Core Course 1: Biochemistry							6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	2	2	2	3	2	2	2	2	2.1
CO2	3	3	3	2	3	2	3	2	3	2	2.6
CO3	3	3	2	2	2	2	2	3	2	3	2.4
CO4	3	1	2	2	3	2	3	3	2	2	2.3
CO5	3	2	2	2	3	2	3	2	3	2	2.4
CO6	2	2	3	1	2	1	2	2	2	1	1.8
Mean overall Score											2.27 (High)

Semester	Course Code	Title of the Course	Hours	Credits
1	23PBT1CC02	Core Course - 2: Molecular Cell Biology	6	5

Course Objectives
To understand the molecular machinery of living cells and the principles that govern the structures of macromolecules and their participation in molecular recognition.
To identify the structures and purposes of basic components in prokaryotic and eukaryotic cells & their molecular mechanisms.
To demonstrate the mechanisms of nuclear envelope and its functions.
To evaluate the basic knowledge in the components of main signaling pathways and their functional properties.
To plan the appropriate diagnostic method for the detection of cancer.

### UNIT I: Introduction to Cell Biology

(18 Hours)

Basic properties of cells - Cellular dimension - Size of cells and their composition - Cell origin and Evolution (Endosymbiotic theory) – Microscopy - Light Microscopy, Electron Microscopy, Application of Electron Microscopy in cell biology, Phase Contrast Microscopy, Fluorescence Microscopy, Flow Cytometry and FRET .Organelles of the eukaryotic cell and its functions; Bio membranes - structural organization, transport across membrane (Passive, Active and Bulk transport); Cell-Cell adhesion- Cell junctions (Tight junctions, Gap junctions, Desmosomes, Adherens); Extra cellular matrix (ECM)- components.

### UNIT II: Genome Organization and Protein sorting

(18 Hours)

Genome organization in Eukaryotes, DNA Replication, Transcription, Translation and Post Translational Modification. Synthesis, Sorting and trafficking of proteins: site of synthesis of organelle and membrane proteins – transport of secretory and membrane proteins across Endoplasmic Reticulum (ER) – post-translational modification in RER – transport to mitochondria, nucleus, chloroplast and peroxisome - protein glycosylation – mechanism and regulation of vesicular transport – Golgi and post-Golgi sorting and processing – receptor mediated endocytosis.

### UNIT III: Nucleus

(18 Hours)

Nuclear envelope – Nuclear pore complexes-nuclear matrix – organization of chromatin – supercoiling, linking number, twist - nucleosome and high order of folding and organization of chromosome (Solenoid and Zigzag model)-Global structure of chromosome – (Lamp brush and Polytene chromosomes).

**UNIT IV: Cell Signaling****(18 Hours)**

Molecular basis of eukaryotic cell cycle, Regulation and cell cycle check points; Programmed cell death (Apoptosis); Cell-Cell signaling - signaling molecules, types of signaling, Signal transduction pathways (GPCR-cAMP, IP3, RTK, MAP Kinase, JAK-STAT, Wnt).

**UNIT V: Cancer Biology****(18 Hours)**

Cancer Biology: Multistage cancer development Mitogens, carcinogens, oncogenes and proto-oncogenes, tumor suppressor genes - Rb, p53, Apoptosis and significance of apoptosis.

<b>Teaching Methodology</b>	PPT, Chalk and Talk, Animation Videos
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**Books for Study**

1. Watson J. D. et al. (2006). *Molecular biology of the gene* (5<sup>th</sup> ed.). Pearson Education Inc. London. (Unit 1 and Unit 2)
2. Cooper, J.M. and Hausman, R.E. (2000). *The cell: A molecular approach* (4<sup>th</sup> ed.). ASM Press. (Unit 3 and Unit 4)
3. Stickberger, M.W. et al. (2008). *Genetics* (3<sup>rd</sup> ed). Macmillan and Company. (Unit 5)

**Books for References**

1. Freifelder, D. (2008). *Molecular biology* (2<sup>nd</sup> ed.). Narosa Publications.
2. Alberts, B. et al. (2015). *Molecular biology of cell* (6<sup>th</sup> ed.), Taylor and Francis Group, Garland Science.
3. Karp, G. (2008). *Cell and molecular biology* (5<sup>th</sup> ed.). John Wiley and Sons.
4. Paul, A. (2011). *Textbook of cell and molecular biology*, Books and Allied Ltd.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful completion of this course, Students will be able to	
CO1	identify the major organelles within a cell and their associated functions.	K1
CO2	interpret and analyze data related to cellular and molecular processes.	K2
CO3	apply knowledge of cell and molecular biology to solve practical problems or scenarios.	K3
CO4	analyze and evaluate different cellular and molecular processes.	K4
CO5	assess the validity and reliability of scientific research in the field of cell and molecular biology.	K5
CO6	develop new hypotheses or theories based on existing knowledge in the field.	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PBT1CC02		Core Course - 2: Molecular Cell Biology							6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	1	2	3	3	1	3	2	2	2.1
CO2	3	3	2	3	3	2	2	3	3	2	2.6
CO3	3	2	2	3	2	2	3	3	2	2	2.4
CO4	3	2	2	2	2	2	3	3	2	2	2.3
CO5	3	2	2	4	3	2	3	2	3	2	2.6
CO6	2	2	3	1	2	1	2	1	2	1	1.7
Mean overall Score											2.28 (High)



Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PBT1CP01	<b>Core Practical - 1:</b> Biochemistry, Molecular Genetics and Molecular Cell Biology	6	4

Course Objectives
To illustrate the basic biochemistry procedures.
To isolate & analyze DNA, RNA & proteins from both prokaryotic and eukaryotic cells.
To critically analyze isolated biomolecules.
To evaluate the quality and purity of DNA, RNA & Proteins.
To study the inner contents of cells through staining.

#### **(A) Biochemistry - Practical**

1. Basic calculations in Biochemistry - Normality, Molarity, Molality percent solutions (v/v, w/v).
2. Calibration of pH meter
3. Transition interval of commonly used pH indicators
4. Preparation of biological buffer - phosphate buffer
- 5a. Extraction of Proteins from biological materials
- 5b. Protein separation methods –Ammonium sulphate Precipitation,
- 5c. Membrane Dialysis,
- 5d. SDS PAGE
6. Urea-SDS PAGE for separation of low molecular weight proteins
7. Estimation of Proteins by Lowry's method
8. Estimation of Proteins by Biuret method
9. Estimation of Proteins by Bradford method
10. Estimation of RNA by orcinol method
11. Estimation of DNA by diphenylamine method
12. Estimation of Carbohydrate by Anthrone method
13. Purity check of DNA & RNA by UV Spectrometry - A<sub>260</sub>/A<sub>280</sub>
14. Separation of amino acids by Paper Chromatography
15. Separation of sugars by Paper Chromatography
16. Separation of amino acids by Thin Layer Chromatography

#### **(B) Molecular Genetics - Practical**

1. Isolation of DNA from bacteria
2. Isolation of DNA from plants
3. Isolation of DNA from animal tissue

4. Isolation of DNA from blood
5. Plasmid DNA isolation.
6. Agarose gel electrophoresis of DNA
7. Transfer of DNA from gel – Southern Blotting
8. Isolation of RNA
9. Glyoxal denatured Agarose gel electrophoresis of RNA
10. Formaldehyde denatured Agarose gel electrophoresis of RNA
11. Urea denatured Agarose gel electrophoresis of RNA
12. Transfer of RNA from gel – Northern Blotting
13. Restriction digestion of DNA
14. Radiation induced genetic damage assessment
15. Chemical induced genetic damage

### **(C) Molecular Cell Biology -Practical**

1. Introduction to Microtome and types
2. Microtomy - Fixation of tissue
3. Microtomy - Embedding
4. Microtomy - Sectioning of tissue
5. H&E Staining of tissues
6. Histochemical staining to localize proteins
7. Histochemical staining to localize carbohydrates
8. Histochemical staining to localize lipids.
9. Subcellular fractionation and marker enzyme detection (mitochondria).
10. Giant chromosome studies in Chironomous Larvae.
11. Meiotic study in flower buds and cockroach or grasshopper.
12. Preparation of tissue culture medium and membrane filtration
13. Preparation of single cell suspension from spleen and thymus;
14. Cell counting and cell viability;

<b>Teaching Methods</b>	Demonstration of practical methodologies and hands on training experience.
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Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, the students will be able to	
CO1	recall the basic principles of molecular biology techniques	K1
CO2	explain the basic operating procedure in handling different chromatographic techniques	K2
CO3	apply and separate the proteins by its molecular weight	K3
CO4	investigate cell morphology by staining techniques	K4
CO5	evaluate the concentration of DNA/RNA and design a protocol for the isolation of plasmid DNA, Genomic DNA and RNA respectively	K5
CO6	design a protocol to inspect various aspects of enzymology	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PBT1CP01		Core Practical - 1: Biochemistry, Molecular Genetics and Molecular Cell Biology							6	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	2	2	2	3	2	2	3	2	2.2
CO2	2	3	2	3	3	2	3	2	2	2	2.4
CO3	3	3	2	2	2	2	3	2	3	2	2.4
CO4	3	3	3	2	2	2	3	2	3	2	2.5
CO5	3	2	2	2	2	2	3	2	2	3	2.3
CO6	3	2	2	3	1	2	3	1	2	1	2
Mean overall Score											2.30 (High)

Semester	Course Code	Title of the Course	Hours	Credits
1	23PBT1ES01	Elective - 1: Bioinstrumentation	5	3

Course Objectives
To introduce principle and applications of various types of microscopic techniques
To impart understanding on different separation and purification techniques and its applications
To provide knowledge on various electrophoretic techniques and its applications in separation of biomolecules
To elucidate the theory and applications of various spectroscopic techniques in characterization of the biomolecules
To acquaint with principle and applications of different radio-isotopic techniques in revealing biochemical reactions

#### **UNIT I: Microscopic Techniques (15 Hours)**

Principles and Applications: Compound, Light, Stereo, Phase Contrast, Fluorescent Microscopy, Scanning and Transmission Electron Microscopy, Scanning Electron Microscopy, Atomic Force Microscopy, Confocal Microscopy, FRET.

#### **UNIT II: Centrifugation (15 Hours)**

Principle and Applications of various types of centrifugations, Sedimentation Coefficient, Svedberg unit, RCF, Density Gradient Centrifugation. Chromatography Techniques: Principle and Application of Paper Chromatography, TLC, Gel Filtration chromatography, Ion Exchange Chromatography, Affinity Chromatography, GC.

#### **UNIT III: Electrophoretic Techniques (15 Hours)**

Principle and Application of Agarose Gel Electrophoresis, 2D- gel Electrophoresis, PAGE- NATIVE & SDS PAGE, Iso-electric Focusing, High resolution Electrophoresis, Immuno Electrophoresis (Immunofixation EP), ELISA, RIA, Southern, Northern and Western Blotting. Electro blotting, PCR and RT-PCR, Microarray (DNA, Proteins).

#### **UNIT IV: Spectroscopic Techniques (15 Hours)**

Theory and Application of UV and Visible Spectroscopy, Fluorescence Spectroscopy, Mass Spectroscopy, IR Spectroscopy NMR, ESR, Atomic Absorption Spectroscopy, X- ray Spectroscopy, Laser Spectroscopy and Raman Spectroscopy.

#### **UNIT V: Radio-isotopic Techniques (15 Hours)**

Introduction to Radioisotopes, Uses and their Biological Applications, Radioactive Decay Types and Measurement, Principles and Applications of GM Counter, Solid and Liquid Scintillation Counter, Introduction to Radioisotopes, Uses and their Biological Applications,

Radioactive Decay – Types and Measurement, Principles and Applications of GM Counter, Solid and Liquid Scintillation Counter, Autoradiography, RIA.

<b>Teaching Methodology</b>	Chalk and Talk, PPT and Animation Videos
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### Books for Study

1. Braun, R.D. (2016). *Introduction to instrumental analysis* (2<sup>nd</sup> ed.). McGraw Hill.
2. Wilson, K. and Walker, J. (2010). *Principles and techniques of biochemistry and molecular biology* (7<sup>th</sup> ed.). Cambridge University Press.
3. Farrell, S.O. and Ranallo, R.T. (2000). *Experiments in biochemistry: A hands-On approach*. Brooks Cole.
4. Fulekar, M.H. & Pandey, B. (2019). *Bioinstrumentation*. Wiley.
5. Upadhyay, Upadhyay and Nath. (2016). *Biophysical chemistry principles and techniques* (4<sup>th</sup> ed.). Himalaya Publ.

### Books for Reference

1. Nelson, D.L. and Cox, M.M. (2008). *Lehninger principles of biochemistry* (5<sup>th</sup> ed.). W. H. Freeman.
2. Metzler D.E. (2001). *The chemical reactions of living cells*. Academic Press.
3. Stryer, L. (1999), *Biochemistry* (4<sup>th</sup> ed.). W.H. Freeman & Company.
4. Veerakumari, L. (2006) *Bioinstrumentation* (Kindle edition). MJP Publisher.
5. Jefrey. M. and Backer *et al.* (1996). *Biotechnology: A laboratory course*. Academic Press.
6. Holcapek, M. and Byrdwell, Wm. C. (2017). *Handbook of Advanced Chromatography* (1<sup>st</sup> ed.). Elsevier.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	name the appropriate analytical technique that are used to identify and characterize a particular biological system.	K1
CO2	describe the working principles of different analytical techniques used in characterization of the biomolecules.	K2
CO3	interpret, infer the analytical data and conclude the characteristics of the biological system under study.	K3
CO4	differentiate the various types of a particular analytical techniques and thus choose the appropriate technique for the study of interest.	K4
CO5	evaluate the application of a particular analytical technique in elucidating the properties of biomolecules.	K5
CO6	create strategies to understand the various biochemical aspects of the biological system.	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PBT1ES01		Elective - 1: Bioinstrumentation							5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	2	2	2	3	2	2	2	2	2.2
CO2	2	3	3	2	3	2	3	2	3	2	2.5
CO3	3	2	2	2	2	2	2	3	2	3	2.3
CO4	3	2	2	2	2	3	3	3	2	2	2.4
CO5	3	2	2	2	3	2	3	2	3	2	2.4
CO6	2	2	3	2	2	2	2	2	2	1	2
Mean overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours	Credits
1	23PBT1ES02	Elective - 2: Biostatistics	5	3

Course Objectives
To understand the major methods of collection & presentation of data.
To provide basic knowledge about correlation and regression and its use in determining the relationship between two quantitative variables.
To enlighten the students about the methods of setting hypothesis and calculation of errors.
To update the knowledge on Tests of significance for large and small samples.
To introduce students about the use of statistical analysis packages in analysing the biological data.

#### **UNIT I: Introduction to Statistics**

**(15 Hours)**

Statistics – Scope –collection, classification, tabulation of Statistical Data – Diagrammatic representation – graphs – graph drawing – graph paper – plotted curve –Sampling method and standard errors –random sampling – use of random numbers –expectation of sample estimates – means – confidence limits – standard errors – variance. Measures of central tendency – measures of dispersion – skewness, kurtosis.

#### **UNIT II: Correlation, Regression & Probability**

**(15 Hours)**

Correlation and regression – correlation table – coefficient of correlation – Z transformation – regression – relation between regression and correlation. Probability – Markov chains applications – Probability distributions – Binomial (Gaussian distribution) and negative binomial, compound and multinomial.

#### **UNIT III: Normal Distribution & Basis of statistical inference**

**(15 Hours)**

Normal distribution – graphic representation – frequency curve and its characteristics – measures of central value, dispersion, coefficient of variation and methods of computation – Basis of Statistical Inference – Sampling Distribution – Standard error – Testing of hypothesis – Null Hypothesis –Type I and Type II errors.

#### **UNIT IV: Tests of Significance for large and small samples**

**(15 Hours)**

Tests of significance for large and small samples based on Normal, t, z distributions with regard to mean, variance, proportions and correlation coefficient – chi-square test of goodness of fit – contingency tables – c<sup>2</sup> test for independence of two attributes – Fisher and Behrens 'd' test – 2×2 table – testing heterogeneity – r X c table – chi- square test in genetic experiments – partition X<sup>2</sup>.

**UNIT V: Data Entry and Statistical Analysis Package****(15 Hours)**

Tests of significance – t tests – F tests – Analysis of variance – one way classification – Two-way classification, CRD, RBD, LSD. Spreadsheets – Data entry – mathematical functions – statistical function – Graphics display – printing spreadsheets – use as a database word processes – databases – statistical analysis packages.

<b>Teaching Methodology</b>	Black board and chalk, PPT and Softwares.
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**Books for Study**

1. Daniel, W.W. and Cross. C.L. (2014). *Biostatistics: Basic concepts and methodology for the health sciences* (10<sup>th</sup> ed.). Wiley Press.
2. Rosner, B. (2010), *Fundamentals of biostatistics* (7<sup>th</sup> ed.). Cengage Learning, Inc.
3. Rastogi, V.B. (2011). *Fundamentals of biostatistics*. Ane books Pvt Ltd, Chennai.

**Books for Reference**

1. Warren, J., Gregory, E. and Grant, R. (2004), *Statistical methods in bioinformatics* (1<sup>st</sup> ed.). Springer.
2. Milton, J.S. (1992). *Statistical methods in the biological and health science* (2<sup>nd</sup> ed.). McGraw Hill.
3. Sundar Rao, P. S.S., Jesudian, G. and Richard, J. (1987). *An introduction to biostatistics* (2<sup>nd</sup> ed.). Prestographik.
4. Zar, J.H. (1984). *Bio statistical methods* (2<sup>nd</sup> ed.). Prentice Hall.



Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	define different statistical parameters and classify the data.	K1
CO2	demonstrate proficiency in analysing data using various methods.	K2
CO3	apply the appropriate statistical method to establish a relationship between two variables.	K3
CO4	interpret the results obtained using various statistical tools and conclude.	K4
CO5	determine the accuracy and precision of the experimental method.	K5
CO6	create a model for a particular biological phenomenon based on the statistical analysis.	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PBT1ES02		Elective - 2: Biostatistics							5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO 2	PSO3	PSO4	PSO5	
CO1	2	2	2	2	2	3	2	2	2	2	2.1
CO2	2	3	2	2	3	2	3	2	3	2	2.4
CO3	3	3	2	2	2	2	3	3	2	3	2.5
CO4	3	2	2	2	2	3	3	2	2	2	2.3
CO5	3	2	2	2	2	2	3	2	3	2	2.3
CO6	2	1	3	2	2	2	2	2	2	1	1.9
Mean overall Score											2.25 (High)

Semester	Course Code	Title of the Course	Hour	Credits
1	23PBT1AE01	<b>Ability Enhancement Course:</b> Entrepreneurship Skills for Biotechnology	2	1

Course Objectives
To critically analyze and evaluate different aspects of biotechnology entrepreneurship.
To assess and evaluate the success and viability of biotechnology entrepreneurship ventures.
To generate original ideas and solutions in the field of biotechnology entrepreneurship.

### **UNIT I: Entrepreneurship & Horticulture (6 Hours)**

Meaning, Needs and Importance of Entrepreneurship, Fundamentals of horticulture, Ornamental horticulture, Commercial floriculture, Processing of horticulture crops, Horticulture business management.

### **UNIT II: Mushroom Cultivation & Apiculture (6 Hours)**

Mushrooms - Morphology, Classification, edibility and poisonous properties. Culturing conditions for tropical and temperate climates. Introduction and Importance of apiculture. Different species of honey bees. Beekeeping equipment. Collection and preservation of bee pasture. Seasonal management. Familiarization with bee enemies and diseases and their control. Handling of bee colonies and manipulation for honey production.

#### **Books for Study**

1. Jaiswal, A.G. (2019). *Practical hand book of apiculture*. Lulu Publications.
2. Bird, C. (2014). *The fundamentals of horticulture*. Royal Horticulture Society.

#### **Books for References**

1. Rahman, A. (2017). *Apiculture in India*. ICAR.
2. Lynch, T. (2018). *Mushroom cultivation: An illustrated guide to growing your own mushrooms at home* (3<sup>rd</sup> ed.). Quarry Books.
3. Vashney, G.K. (2019). *Fundamentals of entrepreneurship*. Sahitya Bhawan Publications.

<b>Teaching Methodology</b>	Demonstration of practical methodologies and hands on training experience.
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Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful completion of this course, the students will be able to	
CO1	explore and figure out the ideal environmental conditions required for mushroom cultivation in tropical and temperate climates.	K4
CO2	summarize the concept of bee pasture and its significance in honey bee nutrition.	K5
CO3	develop strategies to start a biotech business using the learnt entrepreneurial skills.	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PBT1AE01		Ability Enhancement Course: Entrepreneurship Skills for Biotechnology							2	1
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO 2	PSO3	PSO4	PSO5	
CO1	3	2	3	3	2	2	3	3	2	2	2.5
CO2	2	3	3	2	2	2	3	3	2	2	2.4
CO3	2	2	3	2	2	2	2	3	3	2	2.3
Mean overall Score											2.4 (High)



## DEPARTMENT OF BOTANY St. JOSEPH'S COLLEGE (Autonomous)

Special Heritage Status awarded by UGC Accredited at A Grade (3<sup>rd</sup> Cycle) by NAAC  
College with Potential for Excellence by UGC DBT-STAR & DST-FIST sponsored College

TIRUCHIRAPPALLI - 620 002.

Phone : 0431 - 4226389, 2700320, Fax : 0431 - 2701501

Website : www.sjctni.edu

21-07-2023

### Minutes of the Meeting – Board of Studies

Time: 11:30 am.

Venue: Balam Hall

Meeting started with a silent prayer. Mr. T. R. Sasi Varier (Industrial Expert) and all the faculty members except Dr. H. David Raja (OD) were present. Dr. V. Anand Gideon (University Representative) and Dr. T. Parimelalaghan (Subject Expert) were not present. HoD presented the I UG and I PG Course pattern along with its syllabi.

#### I UG (Semester I):

1. Plant Diversity – I: Few aspects were included in Unit I. Other courses were retained as such given by TANSCHÉ.
2. Lab Course – I: Economic importance of Algae was removed.
3. Allied Zoology – I: Rat and Fish were removed from Unit 5 and retained Rabbit and Prawn as such.
4. Allied Zoology – I (Practical): Learning Objectives and Course Outcomes were framed and included.

#### I PG (Semester I):

1. Plant Diversity – I: M.O.P Iyengar was included and V.S. Sundaralingam was removed from the Indian Phycologists in Unit I. Rearrangement of classes of Bryophytes was suggested in Unit IV.
2. Lab Course – I: Unit I – *Caulerpa* and *Gracillaria* were included instead of *Scytonema* and *Gelidium*; Unit II – Lichens: Genera *Usnea* included instead of *Parmelia*.
3. Elective – I: Microbiology, Immunology and Plant Pathology: Unit I: Methods of preservation of bacterial cultures were included. Unit III: Contents irrelevant to the unit title were removed (Soil Microbiology)
4. Elective – 2: Herbal Technology: Appropriate titles for each unit have been given.
5. AEC: Nursery and Gardening: Content of the syllabus was retained as per TANSCHÉ.

Dr. T. Parimelazhagan (Subject Expert) strongly recommended the framed syllabus of UG (Semester I) and PG (Semester I) was communicated through email.

J. Jeyaraj

Head

Department of Botany  
St. Joseph's College (Autonomous)  
Tiruchirappalli - 620 002.



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Evaluation pattern for the following courses were approved in the meeting as follows:

Paper	Internal (50)	External (50)
FC: Basics of Botany (I UG)	Assignment: 10 + Test: 20 + Activity: 20	Descriptive questions
SEC (NME): Organic Farming (I UG)	Assignment: 10 + Test: 20 + Activity: 20	Evaluation: 25 + <i>Viva-Voce</i> : 25
AEC: Nursery and Gardening (I PG)	Assignment: 10 + Test: 20 + Activity: 20	Evaluation: 25 + <i>Viva-Voce</i> : 25

The question paper setting and viva voce for External examination will be assigned by the course in-charge. The final mark will be entered to the CoE portal by the course in-charge.

The board unanimously accepted the formative and summative question patterns given by the examinations reform committee for both UG and PG.

The meeting came to an end at 1.10 PM.

Dr. V. Anand Gideon  
(University Representative)

Not Present

Dr. T. Parimelazhagan  
(Subject Expert)

Not Present

Mr. T.R. Sasi Varier  
(Industrial Expert)

Dr. S. Sahaya Sathish

Dr. K. Dr. K. Rajan

Dr. A. Egbert Selwin Rose

Dr. S. Soosairaj

Dr. T. Francis Xavier

Dr. M. Francis Sathiyaseelan

Dr. L. John Peter Arulanandam, SJ.


Dr. H. David Raja

OD

Dr. A. Johny Kumar Tagore

Dr. S. Anusuya

Dr. M. Bastin Churchill

  
Dr. S.R. Senthilkumar  
Head of the Department  
**Head**  
**Department of Botany**  
**St. Joseph's College (Autonomous)**  
**Tiruchirappalli - 620 002.**

PROGRAMME PATTERN				
B.Sc. BOTANY				
Part	Course Code	Title of the Course	Hours	Credits
<b>I</b>	23UTA11GL01A	General Tamil- 1 தமிழ் இலக்கிய வரலாறு - 1	5	3
	23UFR11GL01	French-1		
	23UHI11GL01	Hindi-1		
	23USA11GL01	Sanskrit-1		
<b>II</b>	23UEN12GE01	General English-1	5	3
<b>III</b>	23UBO13CC01	<b>Core Course - 1:</b> Plant Diversity – 1(Algae)	5	5
	23UBO13CP01	<b>Core Practical - 1:</b> Algae	3	3
	23UBO13AC01	<b>Allied Course - 1:</b> Allied Zoology - 1	4	4
	23UBO13AP01	<b>Allied Practical - 1:</b> Invertebrates and Vertebrates	2	1
<b>IV</b>	23UBO14FC01	<b>Foundation Course:</b> Basics of Botany	2	2
	23UBO14SE01	<b>Skill Enhancement Course - 1(Non Major Elective):</b> Organic Farming	2	2
	23UHE14VE01	<b>Value Education:</b> Essentials of Humanity	2	1
<b>Total</b>			<b>30</b>	<b>21</b>

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UBO13CC01	Core Course - 1: Plant Diversity – 1(Algae)	5	5

Course Objectives
To provide a comprehensive knowledge on the biology of algae
To provide a basis for better understanding of the evolution higher of plants
To understand reproductive biology, ecology of plants by studying the simpler systems in algae
To understand the role of algae in ecosystems as primary producers of nutrition
To understand importance of algae to animals and humans

**UNIT I: (15 Hours)**

General characters of Algae: algal distribution; criteria for classification; classification of Algae(Fritsch-1935-1945).

**UNIT II: (15 Hours)**

Thallus organization (unicellular-Chlorella, Diatoms, colonial-Volvox, filamentous-Anabaena, Oedogonium, siphonous-Caulerpa, parenchymatous- Sargassum, Gracilaria).

**UNIT III: (15 Hours)**

Reproduction-Vegetative, asexual, sexual reproduction and life histories (haplontic-Oedogonium and Chara, diplontic-Diatoms and Sargassum, diplohaplontic-Ulva and diplobiontic-Gracilaria).

**UNIT IV: (15 Hours)**

Algal cultivation methods, Algal production systems; indoor cultivation methods and large-scale cultivation of algae, harvesting of algae.

**UNIT V: (15 Hours)**

Algae as food and feed: Agar-agar, Alginic acid and Carrageenan; Diatomite. Resource potential of algae: Application of algae as fuel, agriculture and pharmaceutical. Phycoremediation. Role of algae in CO<sub>2</sub> sequestration, Algae as indicator of water pollution, algal bioinoculants, Bioluminescence.

<b>Teaching Methodology</b>	Chart, PPT, chalk and talk
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**Books for Study**

1. Lee, R.E. (2018). *Phycology* (5<sup>th</sup> ed.). Cambridge University Press.
2. Kumar, H.D. (1999). *Introductory phycology*. Affiliated East-West Press.
3. Singh, V., Pande, P.C & Jain, D.K. (2020). *A textbook of botany* (5<sup>th</sup> ed.). Rastogi Publication.

4. Morris, I. (1977). *An introduction to the algae*. Hutchinson & Co (Publishers) Ltd.

#### **Books for Reference**

1. Das, M.K. (2010). *Algal biotechnology: New vistas*. Daya Publishing House.
2. Chapman, V.J. & Chapman, D.J. (2013). *The algae*. Alpha Numera.
3. Fritsch, F.E. (1945). *The structure and reproduction of the algae*. Cambridge University press.
4. Round, F.E. (1984). *The Ecology of algae*. Cambridge University Press.
5. Lee, R.E. (2008). *Phycology* (4<sup>th</sup> ed.). Cambridge University Press.
6. Bold, H.C & Wynne, M.J. (1978). *Introduction to the algae: Structure and function*. Prentice Hall of India.

#### **Web Sources**

1. <https://www.crcpress.com/Therapeutic-and-Nutritional-Uses-of-Algae/Pereira/p/book/9781498755382>
2. <https://www.crcpress.com/Therapeutic-and-Nutritional-Uses-of-Algae/Pereira/p/book/9781498755382>
3. <https://www.crcpress.com/Algae-Anatomy-Biochemistry-and-Biotechnology-Second-Edition/Barsanti-Gualtieri/p/book/9781439867327>
4. <https://www.crcpress.com/Marine-Algae-Biodiversity-Taxonomy-Environmental-Assessment-and-Biotechnology/Pereira-Neto/p/book/9781466581678>
5. <https://www.kopykitab.com/Botany-For-Degree-Students-ALGAE-by-B-R-Vashishta-Dr-A-K-Sinha-Dr-V-P-Singh>
6. <https://www.wileyindia.com/a-textbook-of-algae.html>
7. <https://www.kobo.com/in/en/ebook/algae-biotechnology>
8. <https://www.ikbooks.com/books/book/life-sciences/botany/a-textbook-algae/9788188237449/>



Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	relate to the structural organization, reproduction and significance of algae.	K1
CO2	demonstrate knowledge in understanding the various life cycle patterns and the fundamental concepts in algal growth	K2
CO3	explain the benefits of various algal technologies on the ecosystem.	K3
CO4	compare and contrast the thallus organization and modes of reproduction in algae.	K4
CO5	determine the emerging areas of Algal Biotechnology for identifying commercial potentials of algal products and their uses.	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UBO13CC01		Core Course - 1: Plant Diversity – 1(Algae)							5	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	3	2	2	3	2	2	3	2	2.4
CO2	2	3	2	3	2	3	2	3	2	1	2.3
CO3	2	2	3	2	1	3	3	2	3	1	2.2
CO4	3	3	2	3	2	3	3	2	3	2	2.6
CO5	2	2	3	2	1	3	2	3	2	1	2.1
Mean overall Score											2.4 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UBO13CP01	Core Practical - 1: Algae	3	3

Course Objectives
To develop skills to identify algae based on habitat, thallus structure and the internal organization
To identify microalgae in a mixture
To develop skills to prepare the microslides of algae
To study the economic importance of few species
To understand importance of algae to animals and humans

### Experiments

1. Micro-preparation of the types prescribed in the syllabus.
2. Identifying the micro slides relevant to the syllabus.
3. Identifying types of algal mixture.
4. Field visit to study fresh water/marine water algal habitats.
5. Visit to nearby industry actively engaged in algal technology.

<b>Teaching Methodology</b>	PPT, microslide preparation, models, chalk and talk, diagrams
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### Books for Study

1. Kumar, H.D. (1999). *Introductory phycology*. Affiliated East-West Press.
2. Bendre, A & Kumar, A. (2020). *A textbook of practical botany-I* (10<sup>th</sup> ed.). Rastogi Publications.
3. Round, F.E. (1984). *The ecology of algae*. Cambridge University Press.
4. Singh, V., Pande, P.C & Jain, D.K. (2020). *A textbook of botany* (5<sup>th</sup> ed.). Rastogi Publication.

### Books for Reference:

1. Serediak, N. & Huynh, M. L. (2011). *Algae identification lab guide: accompanying manual to the algae identification field guide*. Agriculture and Agri-Food.
2. Chapman, V.J & Chapaman, D.J. (1960). *The algae*. ELBS & MacMillan.
3. Lee, R.E. (2008). *Phycology*. (4<sup>th</sup> ed.). Cambridge University Press, New York.
4. Lee, R.E. (2018). *Phycology*. (5<sup>th</sup> ed.). Cambridge University Press, London.

### Web Sources:

1. <https://www.amazon.in/Practical-Manual-Algae-Sundara-Rajan/dp/8126106492>
2. [https://books.google.co.in/books/about/Practical\\_Manual\\_of\\_Algae.html?id=8d5DAAAACAAJ&redir\\_esc=](https://books.google.co.in/books/about/Practical_Manual_of_Algae.html?id=8d5DAAAACAAJ&redir_esc=)

3. [https://freebookcentre.net/biology-books-download/Concepts-of-Botany-Algae-\(PDF-21P\).html](https://freebookcentre.net/biology-books-download/Concepts-of-Botany-Algae-(PDF-21P).html)
4. <https://www.ebooks.com/en-in/book/210152662/algae/sachin-kumar-mandotra/>
5. [https://books.google.co.in/books/about/Algae.html?id=s1P855ZWc0kC&redir\\_esc=y](https://books.google.co.in/books/about/Algae.html?id=s1P855ZWc0kC&redir_esc=y)

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	recall and identify algae using key identification characters.	K1
CO2	demonstrate practical skills in preparation of fresh mount and identification of algal forms from algal mixture.	K2
CO3	describe the internal structure of algae prescribed in the syllabus.	K3
CO4	decipher the algal diversity in fresh/marine water and their economic significance.	K4
CO5	evaluate the various techniques used to culture algae for commercial purposes	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UBO13CP01		Core Practical - 1: Algae							3	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	3	2	2	3	2	2	3	2	2.4
CO2	2	3	2	3	2	3	2	3	2	1	2.3
CO3	2	2	3	2	1	3	3	2	3	1	2.2
CO4	3	3	2	3	2	3	3	2	3	2	2.6
CO5	2	2	3	2	1	3	2	3	2	1	2.1
Mean overall Score											2.4 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UBO13AC01	Allied Course - 1: Allied Zoology - 1	4	4

Course Objectives
To acquire a basic knowledge of diversity and organization of Protozoa, Coelenterata, Helminthes and Annelida
To acquire a basic knowledge of diversity and organization of Arthropoda, Mollusca and Echinodermata
To comprehend the taxonomic position and diversity among Protochordata, Pisces and Amphibia
To comprehend the taxonomic position and diversity among Reptilia, Aves and Mammalia
To acquire detailed knowledge of select invertebrate and chordate forms

#### **UNIT I: Diversity of Invertebrates–I (12 Hours)**

Principles of taxonomy. Criteria for classification – Symmetry and Coelom – Binomial nomenclature. Classification of Protozoa, Coelenterata, Helminthes and Annelida upto classes with two examples.

#### **UNIT II: Diversity of Invertebrates–II (12 Hours)**

Classification of Arthropoda, Mollusca and Echinodermata up to class level with examples.

#### **UNIT III: Diversity of Chordates–I (12 Hours)**

Classification of Prochordata, Pisces and Amphibia up to orders giving two examples.

#### **UNIT IV: Diversity of Chordates–II (12 Hours)**

Classification of Reptilia, Aves and Mammalia up to orders giving two examples.

#### **UNIT V: Animal organisation (12 Hours)**

Structure and organization of (i)Earthworm (ii)Rabbit(iii)Prawn

<b>Teaching Methodology</b>	PPT, videos, demonstration using specimens, models and charts.
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#### **Books for Study**

1. Ayyar, M.E. (1972). *Outlines of zoology*. Viswanathan Publication.

**Books for Reference:**

1. Ayyar, M.E. & Ananthakrishnan, T.N. (1991). *A manual of zoology: Invertebrata* (Vol. 1). Viswanathan Publishers.
2. Ayyar, M.E. & Ananthakrishnan, T.N. (1992). *A manual of zoology: Invertebrata* (Vol. 2). Viswanathan Publishers.
3. Ayyar, M.E. & Ananthakrishnan, T.N. (1981). *A manual of zoology: Chordata*. Viswanathan Publishers.
4. Jordan, E.L. & Verma, P.S. (2015). *Invertebrate zoology*, S. Chand & Co.

**Web Sources:**

1. <https://www.sanctuaryasia.com>
2. <https://www.iaszoology.com>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	recall the characteristic features invertebrates and chordates.	K1
CO2	classify invertebrates up to class level and chordates up to order level.	K2
CO3	explain and discuss the structural and functional organisation of some invertebrates and chordates.	K3
CO4	relate the adaptations and habits of animals to their habitat.	K4
CO5	analyse the taxonomic position, structure and organisation of animals.	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UB013AC01		Allied Course - 1: Allied Zoology - 1							4	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	3	2	2	3	2	2	3	2	2.4
CO2	2	3	2	3	2	3	2	3	2	1	2.3
CO3	2	2	3	2	1	3	3	2	3	1	2.2
CO4	3	3	2	3	2	3	3	2	3	2	2.6
CO5	2	2	3	2	1	3	2	3	2	1	2.1
Mean overall Score											2.4 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UBO13AP01	Allied Practical - 1: Invertebrates and Vertebrates	2	1

Course Objectives
To understand the concept of taxonomy and systematic position of selected invertebrates
To understand the feeding behaviour of different insects with reference to their mouth parts
To prepare mounting of body and penial setae in earthworm and different appendages of prawn
To acquire skill in dissection and displaying the different system in earthworm and cockroach
To identify the campus fauna and apply the knowledge to classify them

### Experiments

1. **Earthworm**: External features and dissection of digestive and nervous systems; Mounting of body and Penial setae, Ovary and Spermatheca
2. **Cockroach** :External features and dissection of digestive system, nervous system and Reproductive system.
3. **Spotters**: NN Representative animal for each class in vertebrate and invertebrate phyla.
4. Temporary mounting of Mouth parts of Cockroach, House fly and mosquito.
5. Temporary mounting of Prawn appendages
6. Campus fauna identification.
7. Visit to a vermi-compost farm / sericulture research station and submission of report.

Teaching Methodology	Charts, slides, specimens, models and mounting dissection.
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### Books for Study

1. Wallace, R.L., Taylor, W.K. & Beck, D.E. (2004). *Invertebrate zoology: a laboratory manual* (5<sup>th</sup> ed)
2. Verma, P.S. & Agarwal, V.K. (2003). *A manual of practical zoology* (6<sup>th</sup> ed.). S. Chand Publication.

### Books for Reference:

1. Lal, S.S. (2015). *A text book of practical zoology – Vertebrate*. Oscar Publication.
2. Jordan, E.L. & Verma, P.S. (1995). *Chordata zoology and elements of animal physiology*. S. Chand and Co.
3. Ayyar, M.E. & Ananthakrishnan, T.N. (1992). *A manual of zoology: Invertebrata* (Vol. 1, Part 1). Viswanathan Publishers.

- Kotpal, R.L. (1992). *Animal diversity* (Protozoa, Porifera, Coelenterata, Helminthes, Arthropoda, Molluscs, Echinodermata). Rastogi Publications.

#### Web Sources:

- <https://www.biodiversitylibrary.org/item/63900>
- <https://fordham.libguides.com/Biology/Zoology>
- <https://www.austincc.edu /sziser/ Zoology Lab>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	identify and draw the external features of selected invertebrates and vertebrates.	K1
CO2	prepare the temporary mounting of mouth parts of insects and appendages of prawn.	K2
CO3	illustrate and labelling the digestive, nervous and reproductive system of dissected animals.	K3
CO4	dissect and identify different systems in earthworm and cockroach.	K4
CO5	explore the biological role of earthworm and silkworm from the field exposure.	K5

Relationship Matrix												
Semester	Course code		Title of the Course								Hours	Credits
1	23UBO13AP01		Allied Practical - 1: Invertebrates and Vertebrates								2	1
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO 2	PSO3	PSO4	PSO5		
CO1	3	2	3	2	2	3	2	2	3	2	2.4	
CO2	2	3	2	3	2	3	2	3	2	1	2.3	
CO3	2	2	3	2	1	3	3	2	3	1	2.2	
CO4	3	3	2	3	2	3	3	2	3	2	2.6	
CO5	2	2	3	2	1	3	2	3	2	1	2.1	
Mean overall Score											2.4 (High)	

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UBO14FC01	Foundation Course: Basics of Botany	2	2

Course Objectives
To learn about the classification, distinguishing traits, geographic distribution, and reproductive cycle of algae, fungi, lichens, and bryophytes
To understand the biodiversity by describing and explaining the morphology and reproductive processes of algae, fungi, bryophytes and microorganisms
To investigate the classification, distinctive traits, distribution and reproduction and life history of the various classes and major types of Pteridophytes and Gymnosperms
Enable to learn various cell structures and functions of prokaryotes and eukaryotes and understand the salient features and functions of cellular organelles
Understanding of laws of inheritance, genetic basis of loci and alleles

#### **UNIT I: Biodiversity (6 Hours)**

Systematics: Two Kingdom and Five Kingdom systems - Salient features of various Plant Groups: Algae, Fungi, Bryophytes, Pteridophytes and Gymnosperms- Viruses - Bacteria.

#### **UNIT II: Cell Biology (6 Hours)**

Cell as the basic unit of life - Prokaryotic and Eukaryotic Cell (Plant Cell) - Light Microscope and Electron Microscope Ultra Structure of Prokaryotic and Eukaryotic Cells - Cell Wall - Cell Membrane Plastids, Ribosomes.

#### **UNIT III: Plant Morphology (6 Hours)**

Structure and Modification of Root, Stem and Leaf - Structure and Types of Inflorescences - Structure and Types of Flowers, Fruits and Seeds.

#### **UNIT IV: Genetics (6 Hours)**

Concept of Heredity and Variation - Mendel's Laws of Inheritance.

#### **UNIT V: Plant Physiology (6 Hours)**

Cell as a Physiological Unit: Water relations -Absorption and movement: Diffusion, Osmosis, Plasmolysis, Imbibition -Permeability, Water Potential - Transpiration - Movement - Mineral Nutrition.

<b>Teaching Methodology</b>	Charts, PPT, chalk and talk.
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### Books for Study

1. Singh, V., Pande, P.C & Jain, D.K. (2021). *A textbook of botany*. Rastogi Publications.
2. Bhatnagar, S.P & Moitra, A. (2020). *Gymnosperms*. New Age International (P) Ltd.
3. Sharma, O.P. (2017). *Bryophyta*, MacMillan India Ltd.
4. Lee, R.E. (2008). *Phycology*. (4<sup>th</sup> ed.). Cambridge University Press.
5. Pandey, B.P. (1986). *Textbook of botany (College Botany)* (vols.: 1-2). S. Chand and Co.
6. Rao, K., Krishnamurthy, K.V. & Rao, G.S. (1979). *Ancillary botany*. S. Viswanathan Pvt. Ltd.

### Books for Reference:

1. Parihar, N.S. (2012). *An introduction to embryophyta –Pteridophytes*. Surjeet Publications.
2. Alexopoulos, C.J. (2013). *Introduction to mycology*. Willey Eastern Pvt. Ltd.
3. Vashishta, P.C. (2014). *Botany for degree students: Gymnosperms*. Chand & Company Ltd.
4. Coulter, M. J. (2014). *Morphology of gymnosperms*. Surjeet Publications.
5. Vashishta, P.C. (2014). *Botany for degree students: Algae*. Chand & Company Ltd.
6. Parihar, N.S. (2013). *An introduction to embryophyta –Bryophytes*. Surjeet Publications.

### Web Sources:

1. <https://www.kobo.com/us/en/ebook/the-algae-world>
2. [http://www.freebookcentre.net/biology-books-download/Fungi-\(PDF-15P\).html](http://www.freebookcentre.net/biology-books-download/Fungi-(PDF-15P).html)
3. <http://scitec.uwichill.edu.bb/bcs/bl14apl/bryo1.htm>
4. <https://www.toppr.com/guides/biology/plant-kingdom/pteridophytes/>
5. <https://arboretum.harvard.edu/wp-content/uploads/2013-70-4-beyond-pine-cones-an-introduction-to-gymnosperms.pdf>
6. <https://www.us.elsevierhealth.com/medicine/cell-biology>
7. <https://www.us.elsevierhealth.com/medicine/genetics>
8. <https://www.kobo.com/us/en/ebook/plant-biotechnology-1>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	increase the awareness and appreciation of human friendly algae and their economic importance.	K1
CO2	develop an understanding of microbes and fungi and appreciate their adaptive strategies	K2
CO3	develop critical understanding on morphology, anatomy and reproduction of Bryophytes, Pteridophytes and Gymnosperms.	K3

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23UBO14FC01	Foundation Course: Basics of Botany								2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	3	2	2	3	2	2	3	2	2.4
CO2	2	3	2	3	2	3	2	3	2	1	2.3
CO3	2	2	3	2	1	3	3	2	3	1	2.2
Mean overall Score											2.32 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UBO14SE01	Skill Enhancement Course - 1(Non Major Elective): Organic Farming	2	2

Course Objectives
To enable students to gain knowledge on the scope and significances of organic farming
To impart practical insights sustainable agriculture, green manuring, recycling and composting
To understand the physical and chemical properties of soil
To study sustainable agriculture
To know about the importance of biofertilizers

**UNIT I: (6 Hours)**

Soil – physical, chemical properties. Soil pollution – oil, chemicals –fertilizers, pesticide and herbicide, non-degradable solids, biomagnification, consequences of land pollution – damage to soil and crops.

**UNIT II: (6 Hours)**

Organic farming – definition, basic concept of organic farming, integrated plant nutrient supply management, integrated insect pest and disease management, integrated soil and water management. Sustainable agriculture practices-crop rotation, mixed cropping.

**UNIT III: (6 Hours)**

Management of organic wastes and green manures: Farm manures, Composts, Mulches and pest control, importance of organic manure and green manure, crops of green manure, oil cake. Animal based organic manure–cow dung, vermicompost-methods, production and utilization.

**UNIT IV: (6 Hours)**

Biofertilizers–classification, nitrogen fixers–*Rhizobium*, Cyanobacteria, *Azolla* and Vesicular Arbuscular Mycorrhiza.

**UNIT V: (6 Hours)**

Recycling of bio-degradable municipal, agricultural and Industrial wastes – biocompost making methods.

<b>Teaching Methodology</b>	Charts, PPT, chalk and talk.
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### Books for Study

1. NIIR Board. (2012). *The complete technology book on biofertilizer and organic farming* (2<sup>nd</sup> ed.). NIIR Project Consultancy Services.
2. Sathe, T.V. (2004). *Vermiculture and organic farming*. Daya publishers.
3. Rao N.S.S. (2017). *Biofertilizers in agriculture and forestry* (4<sup>th</sup> ed.). Medtech.
4. Vayas, S.C., Vayas, S. & Modi, H.A. (1998). *Bio-fertilizers and organic farming*. Akta Prakashan.
5. Dongarjal, R.P & Zade, S.B. (2019). *Insect ecology and integrated pest management*. Akinik Publications.

### Books for Reference:

1. Vayas, S.C., Vayas, S. & Modi, H.A. (1998). *Bio-fertilizers and organic farming*. Akta Prakashan.
2. Sathe, T.V. (2004). *Vermiculture and organic farming*. Daya publishers.
3. Rao, N.S.S. (2000). *Soil microbiology*. Oxford & IBH Publishers.
4. Reddy, S.R. (2019). *Fundamentals of agronomy*. Kalyani Publications.
5. Tolanur, S. (2018). *Fundamentals of soil science* (2<sup>nd</sup> ed.). CBS Publishers.

### Web Sources

1. <https://www.amazon.com/Beginners-Practical-botanical-horticulture-landscape-ebook/dp/B00MOURUNY><https://www.e-booksdirectory.com/listing.php?category=323>
2. <http://www.freebookcentre.net/Biology/Agriculture-Books.html>
3. <https://casfs.ucsc.edu/about/publications/Teaching-Organic-Farming/PDF-downloads/TOFG-all.pdf>
4. [https://www.amazon.in/s?k=the+organic+farming+manual&hvadid=72636563575133&hvbmt=bb&hvdev=c&hvqmt=b&tag=msndeskstdin-21&ref=pd\\_sl\\_6sbff0qtxcy\\_b](https://www.amazon.in/s?k=the+organic+farming+manual&hvadid=72636563575133&hvbmt=bb&hvdev=c&hvqmt=b&tag=msndeskstdin-21&ref=pd_sl_6sbff0qtxcy_b)

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	apply techniques for synthesizing green manure and develop strategies to increase crop yield.	K3
CO2	analyze and decipher the significance of biofertilizers in soil fertility.	K4
CO3	develop new strategies to enhance soil fertility, crop yields with minimum cost and sustainable utilization of various biodegradable wastes.	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UBO14SE01		Skill Enhancement Course - 1(Non Major Elective): Organic Farming							2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	3	2	1	3	3	2	3	1	2.2
CO2	3	3	2	3	2	3	3	2	3	2	2.6
CO3	2	2	3	2	1	3	2	3	2	1	2.1
Mean overall Score											2.3 (High)

<b>PROGRAMME PATTERN</b>			
<b>M.Sc. BOTANY</b>			
<b>Course Code</b>	<b>Title of the Course</b>	<b>Hours</b>	<b>Credits</b>
23PBO1CC01	<b>Core Course - 1:</b> Plant Diversity – 1(Algae, Fungi, Lichens & Bryophytes)	6	5
23PBO1CC02	<b>Core Course - 2:</b> Plant Diversity – 2 (Pteridophytes, Gymnosperms and Paleobotany)	6	5
23PBO1CP01	<b>Core Practical - 1:</b> Plant Diversity -1 and 2	6	4
23PBO1ES01	<b>Elective - 1:</b> Microbiology, Immunology and Plant Pathology	5	3
23PBO1ES02	<b>Elective - 2:</b> Herbal Technology	5	3
23PBO1AE01	<b>Ability Enhancement Course:</b> Nursery and Gardening	2	1
	<b>Total</b>	<b>30</b>	<b>21</b>

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PBO1CC01	Core Course - 1: Plant Diversity – 1(Algae, Fungi, Lichens & Bryophytes)	6	5

Course Objectives
To learn about the classification, distinguishing traits, geographic distribution, and reproductive cycle of algae, fungi, lichens, and bryophytes
To gain knowledge about the ecological and economic importance of algae, fungi, lichens and bryophytes
To spark interest in the evolutionary roots of plant development
To study the biodiversity by describing and explaining the morphology and reproductive processes of algae, fungi, bryophytes and microorganisms
To expose the beneficial and harmful viewpoint

### UNIT I: Algae

(18 Hours)

General account of algology, Contributions of Indian Phycologist (M.O.P. Iyanger, T.V.Desikachary and V.Krishnamurthy), Classification of algae by F.E. Fritsch (1935-45) & Silva (1982). Salient features of major classes: Cyanophyceae, Chlorophyceae, Xanthophyceae, Chrysophyceae, Cryptophyceae, Dinophyceae, Chloromonadineae, Euglenophyceae, Charophyceae, Bacillariophyceae, Phaeophyceae and Rhodophyceae. Range of thallus organization, algae of diverse habitats, reproduction (vegetative, asexual and sexual) and life cycles. Phylogeny and inter-relationships of algae, origin and evolution of sex in algae. Structure, reproduction and life histories of the following genera: *Oscillatoria*, *Scytonema*, *Ulva*, *Codium*, Diatoms, *Dictyota* and *Gelidium*.

### UNIT II: Fungi

(18 Hours)

General Characteristics, occurrence and distribution. Mode of nutrition in fungi. Contributions of Indian Mycologists (C.V.Subramanian), Classification of Fungi by G.C. Ainsworth (1973) and Alexopoulos and Mims (1983) Phylogeny and inter-relationships of major groups of fungi. General characters of major classes: Mastigomycotina, Zygomycotina, Ascomycotina, Basidiomycotina and Deuteromycotina. Heterothallism in fungi, Para sexuality, sex hormones in fungi. Structure and reproduction of the following: Mastigomycotina -*Albugo*; Zygomycotina -*Rhizopus*; Ascomycotina -*Saccharomyces*; Basidiomycotina -*Puccinia*; Deuteromycotina -*Cercospora*.

### UNIT III: Lichens

(18 Hours)

Introduction and Classification (Hale, 1969). Occurrence and inter-relationship of phycobionts and mycobionts, structure and reproduction in Ascolichens, Basidiolichens and Deuterolichens.

**UNIT IV: Bryophytes****(18 Hours)**

General characters and Classification of Bryophytes by Watson (1971). Distribution, structural variations and evolution of gametophytes and sporophytes in Hepaticopsida, Anthocerotopsida and Bryopsida. General characters of major groups - Marchantiales, Jungermaniales, Anthocerotales, Sphagnales, Funariales and Polytrichales. Reproduction – Vegetative, asexual and sexual, spore dispersal mechanisms in bryophytes, spore germination patterns in bryophytes. Structure, reproduction and life histories of the following genera: *Marchantia*, *Porella*, *Anthoceros*, and *Polytrichum*.

**UNIT V: Economic Importance****(18 Hours)**

Algae - Economic importance in Food and feed - Single cell protein, Industrial products (Agar-Agar, Carrageenan, Alginic acid, Iodine, biofertilizers, Vitamins and biofuel), Medicinal value and Diatomaceous earth. Fungi – Economic importance in food, industries and medicine. Culturing and cultivation of mushrooms (*Pleurotus*). Lichen – Ecological and economic importance. Bryophytes – Ecological and economic importance – industry, horticulture and medicine.

<b>Teaching Methodology</b>	Chalk and talk, PPT, charts, Video
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**Books for Study**

1. Kumar, H.D. (1999). *Introductory phycology*. Affiliated East-West Press.
2. Barsanti, L. & Guadtieri, P. (2014). *Algae: anatomy, biochemistry and biotechnology* (2<sup>nd</sup> ed.). CRC Press.
3. Sharma, O.P. (2011). *Fungi and allied microorganisms*. McGraw Hill.
4. Kavanagh, K. (2018). *Fungi biology and applications* (3<sup>rd</sup> ed). Wiley Blackwell.
5. Pandey, P.B. (2014). *College Botany 1: Including algae, fungi, lichens, bacteria, viruses, plant pathology, industrial microbiology and bryophyta*. Chand Publishing.
6. Singh, V., Pande, P.C & Jain, D.K. (2020). *A textbook of botany* (5<sup>th</sup> ed.). Rastogi Publications.
7. Sharma, O.P. (2014). *Bryophyta*. McGraw Hill.

**Books for Reference**

1. Sundaralingam, V. (1991). *Marine algae*. Bishen Singh and Mahendra Pal Singh Publishers, Dehradun.
2. Lee, R.E. (2018). *Phycology* (5<sup>th</sup> ed.). Cambridge University Press, London.
3. Nash, T.H. (2008). *Lichen biology*. Cambridge University press.
4. Johri, R.M., Lata, S. & Tyagi, K. (2012). *A textbook of bryophyta*. Dominant Publishers & Distributors Pvt., Ltd.,
5. Alexopoulos, C.J. & Mims, M. (2007). *Introductory mycology* (4<sup>th</sup> ed.). Wiley Publishers.

**Web Sources**

1. <https://www.britannica.com/science/algae>
2. <https://en.wikipedia.org/wiki/Bryophyte>
3. <https://www.britannica.com/plant/bryophyte/Ecology-and-habits>
4. <https://www.livescience.com/53618-fungus.html>
5. [http://www.uobabylon.edu.iq/eprints/paper\\_11\\_20160\\_754.pdf](http://www.uobabylon.edu.iq/eprints/paper_11_20160_754.pdf)
6. <https://www.youtube.com/watch?v=vcYPI6y-Udo>



7. [https://www.youtube.com/watch?v=XQ\\_ZY57MY64](https://www.youtube.com/watch?v=XQ_ZY57MY64)
8. <http://www-plb.ucdavis.edu/courses/bis/1c/text/Chapter22nf.pdf>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	relate to the structural organizations of algae, fungi, lichens and Bryophytes.	K1
CO2	demonstrate both the theoretical and practical knowledge understanding the diversity of basic life forms and their importance.	K2
CO3	explain life cycle patterns in algae, fungi, lichens and Bryophytes.	K3
CO4	compare and contrast the mode of reproduction in diverse groups basic plant forms.	K4
CO5	discuss and develop skills for effective conservation and utilization of lower plant forms.	K5
CO6	develop entrepreneurship skill through industrially important organisms	K6

Relationship Matrix												
Semester	Course code		Title of the Course								Hours	Credits
1	23PBO1CC01		Core Course - 1: Plant Diversity – I (Algae, Fungi, Lichens & Bryophytes)								6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	2	3	2	2	3	2	2	3	2	2.4	
CO2	2	3	2	3	2	3	2	3	2	1	2.3	
CO3	2	2	3	2	1	3	3	2	3	1	2.2	
CO4	3	3	2	3	2	3	3	2	3	2	2.6	
CO5	2	2	3	2	1	3	2	3	2	1	2.1	
CO6	2	1	2	2	1	2	3	2	3	2	2.0	
Mean overall Score											2.3 (High)	

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PBO1CC02	<b>Core Course - 2:</b> Plant Diversity – 2 (Pteridophytes, Gymnosperms and Paleobotany)	6	5

Course Objectives
To investigate the classification, distinctive traits, distribution and reproduction and life history of the various classes and major types of Pteridophytes and Gymnosperms
To identify and characterize diversity of lower vascular plants in order to comprehend the dynamics of diversity to realize the importance of diversity
To research the classification, phylogeny and economic importance of Pteridophytes and Gymnosperms
To study and understand the phylogeny and Palaeontology of Pteridophytes and Gymnosperms
To learn about the concept of fossils and process of fossilization; distinctive characteristics of fossil records of Pteridophytes and Gymnosperms

#### UNIT I: Pteridophytes

(18 Hours)

General characteristics and classification (Reimer, 1954). Range of structure, reproduction and evolution of the gametophytes, Gametophyte types – sex organs. Apogamy and Apospory. Life cycles. Stellar evolution. Heterospory and seed habit, Telome theory, morphogenesis, Economic importance of Pteridophytes.

#### UNIT II: Pteridophytes

(18 Hours)

Structure, anatomy, reproduction and life histories of the following genera: *Isoetes*, *Equisetum*, *Angiopteris*, *Osmunda*, *Pteris* and *Azolla*.

#### UNIT III: Gymnosperms

(18 Hours)

General characters - A general account of distribution of Gymnosperms. Morphology, anatomy, reproduction, phylogeny and classification (K.R.Sporne, 1965). Economic importance of Gymnosperms.

#### UNIT IV: Gymnosperms

(18 Hours)

Structure (Exomorphic and endomorphic), anatomy, reproduction and life histories of the following genera: *Cycas*, *Pinus*, *Araucaria*, *Podocarpus*, *Gnetum* and *Ephedra*.

#### UNIT V: Paleobotany

(18 Hours)

Geological Scale; Radiocarbon dating; Contribution of Birbal Sahni to Paleobotany. Gondwana flora of India. Study of fossils in understanding evolution. Fossilization and fossil types. Economic importance of fossils – fossil fuels and industrial raw materials and uses. Study of organ genera: *Rhynia*, *Lepidocarpon*, *Calamites*, *Cordaites* and *Lyginopteris*.

**Books for Study**

1. Vashishta, P.C., Sinha, A.K & Kumar, A. (2016). *Botany for degree students - Gymnosperms*. S. Chand and Company Ltd.
2. Singh, V., Pande, P.C & Jain, D.K. (2021). *A textbook of botany*. Rastogi Publications.
3. Bhatnagar, S.P. & Moitra, A. (2020). *Gymnosperms*. New Age International (P) Ltd.
4. Sharma, O.P. (2017). *Pteridophyta*. McGraw Hill Education.
5. Vashishta, P.C., A.K. Sinha & Kumar, A. (2018). *Botany for degree students - Gymnosperms*. S. Chand and Company Ltd.
6. Johri, R.M., Lata, S., & Tyagi, K. (2005). *A textbook of gymnosperm*. Dominate Publishers and Distributors.

**Books for Reference**

1. Parihar, N.S. (2019). *An introduction to embryophyta: Pteridophytes* (5<sup>th</sup> ed.). Surjeet Publications, Delhi.
2. Pandey, S.N & Trivedi, P.S. (2015). *A textbook of botany* (Vol. 2) (12<sup>th</sup> ed.) (Paperback). Vikas Publishing.
3. Rashid, A. (2013). *An introduction to pteridophyta – diversity, development and differentiation* (2<sup>nd</sup> ed.). Vikas Publications.
4. Arnold A.C. (2005). *An introduction to paleobotany*. Agrobios (India). Jodhpur.
5. Sporne, K.R. (2017). *The morphology of pteridophytes (The structure of ferns and allied plants)* (Paperback). Andesite Press.
6. Sporne, K.R. (1967). *The morphology of gymnosperms*. Hutchinson & Co., London.
7. Taylor, E., Taylor, T., & Krings, M. (2008). *Paleobotany: The biology and evolution of fossil plants* (2<sup>nd</sup> ed.). Academic Press.

**Web Sources**

1. <https://www.toppr.com/guides/biology/plant-kingdom/pteridophytes/>
2. [http://www.bsienviis.nic.in/Database/Pteridophytes-in-India\\_23432.aspx](http://www.bsienviis.nic.in/Database/Pteridophytes-in-India_23432.aspx)
3. [https://books.google.co.in/books?hl=en&lr=&id=Pn7CAAAQBAJ&oi=fnd&pg=PA1&dq=Introduction+to+Gymnosperms&ots=sfYSzCL02&sig=ysX1KRvetV0bAza4Sq6RWau4XU8&redir\\_esc=y#v=onepage&q=Introduction%20to%20Gymnosperms&f=false](https://books.google.co.in/books?hl=en&lr=&id=Pn7CAAAQBAJ&oi=fnd&pg=PA1&dq=Introduction+to+Gymnosperms&ots=sfYSzCL02&sig=ysX1KRvetV0bAza4Sq6RWau4XU8&redir_esc=y#v=onepage&q=Introduction%20to%20Gymnosperms&f=false)
4. [https://books.google.co.in/books/about/Botany\\_for\\_Degree\\_Gymnosperm\\_Multicolor.html?id=HTdFYFNxnWQC&redir\\_esc=y](https://books.google.co.in/books/about/Botany_for_Degree_Gymnosperm_Multicolor.html?id=HTdFYFNxnWQC&redir_esc=y)
5. <https://books.google.co.in/books/about/Gymnosperms.html?id=4dvyNckni8wC>
6. <https://arboretum.harvard.edu/wp-content/uploads/2013-70-4-beyond-pine-cones-an-introduction-to-gymnosperms.pdf>
7. <https://www.palaeontologyonline.com/>
8. <https://books.google.co.in/books/about/Paleobotany.html?id=HzYUAQAIAAJ>
9. <https://trove.nla.gov.au/work/11471742?q&versionId=46695996>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	recall on classification, recent trends in phylogenetic relationship, general characters of Pteridophytes and Gymnosperms.	K1
CO2	learn the morphological/anatomical organization, life history of major types of Pteridophytes and Gymnosperms.	K2
CO3	comprehend the economic importance of Pteridophytes, Gymnosperms, and fossils.	K3
CO4	understanding the evolutionary relationship of Pteridophytes and Gymnosperms.	K4
CO5	awareness on fossil types, fossilization and fossil records of Pteridophytes and Gymnosperms.	K5
CO6	develop entrepreneurship skill through industrially important organisms.	K6

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23PBO1CC02	Core Course - 2: Plant Diversity – 2 (Pteridophytes, Gymnosperms and Paleobotany)								6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	3	2	2	3	2	2	3	2	2.4
CO2	2	3	2	3	2	3	2	3	2	1	2.3
CO3	2	2	3	2	1	3	3	2	3	1	2.2
CO4	3	3	2	3	2	3	3	2	3	2	2.6
CO5	2	2	3	2	1	3	2	3	2	1	2.1
CO6	2	1	2	2	1	2	3	2	3	2	2.0
Mean overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PBO1CP01	Core Practical - 1: Plant Diversity -1 and 2	6	4

Course Objectives
To learn how to employ the use of instruments, technologies and methodologies related to thallophytes and non-flowering plant groups
To enhance information on the identification of each taxonomical group by developing the skill-based detection of the morphology and microstructure of algae, and fungi
To comprehend the fundamental concepts and methods used to identify Bryophytes, Pteridophytes and Gymnosperms through morphological changes and evolution, anatomy and reproduction
To develop the technical abilities in staining, sectioning, sterilizing, and characterizing. Thallophytes and other varieties of non-flowering plants
To compare the structural diversity of fossil and extant plant species

## Experiments

### UNIT I: Algae

Study of algae in the field and laboratory of the genera included in theory.

External morphology and internal anatomy of the vegetative and reproductive structures of the following living forms: *Oscillatoria*, *Caulerpa*, *Ulva*, *Codium*, Diatoms, *Sargassum* and *Gracillaria* (depending on availability of the specimen).

To record the local algal flora–Study of their morphology and structure.

Identification of algae to species level (at least One).

Preparation of culture media and culture of green algae in the laboratory (Demonstration).

### UNIT II: Fungi

Study of morphological and reproductive structures of the following living forms:

*Plasmodiophora*, *Rhizopus*, *Pilobulus*, *Polyporus* and *Colletotrichum* (depending on availability of the specimen).

Preparation of culture media and culture of fungi in the laboratory.

Isolation and identification of fungi from soil, air, and Baiting method.

**LICHENS:** Study of morphological and reproductive structures of the genera *Usnea*.

### UNIT III: Bryophytes

External morphology and internal anatomy of the vegetative and reproductive organs of the following living forms: *Marchantia*, *Porella*, *Anthoceros* and *Polytrichum* (depending on availability of the specimen).

#### UNIT IV: Pteridophytes

External morphology and internal anatomy of the vegetative and reproductive organs of the following living forms: *Isoetes*, *Equisetum*, *Angiopteris*, *Osmunda*, *Pteris* and *Azolla* (depending on availability of the specimen).

Fossil slides observation: *Rhynia*, *Lepidocarpon*, *Calamites*.

#### UNIT V: Gymnosperms

External morphology and internal anatomy of the vegetative and reproductive organs of the following living forms: *Cycas*, *Pinus*, *Araucaria*, *Podocarpus*, *Gnetum* and *Ephedra* (depending on availability of the specimen).

Fossil slides observation: *Cordaitea* and *Lyginopteris*.

<b>Teaching Methodology</b>	Demonstration, videos, chart, PPT,
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#### Books for Study

1. Kumar, H.D. (1999). *Introductory phycology*. Affiliated East-West Press.
2. Das, S & Saha, R. (2020). *Microbiology practical manual*. CBS Publishers and Distributors (P) Ltd.
3. Sharma, O.P. (2012). *Pteridophyta*. Tata McGraw-Hills Ltd.
4. Sharma O.P & Dixit, S. (2002). *Gymnosperms*. Pragati Prakashan.
5. Johri, R.M., Lata, S., & Tyagi, K. (2005). *A textbook of gymnosperm*. Dominate Publishers and Distributors.

#### Books for Reference

1. Chmielewski, J.G & Kravesky, D. (2013). *General botany laboratory manual*. Author House, Bloomington.
2. Webster, J & Weber, R. (2007). *Introduction to fungi* (3<sup>rd</sup> ed.). Cambridge University Press, Cambridge.
3. Sharma, O.P. (2017). *Bryophyta*, MacMillan India Ltd.
4. Bendre, A. & Kumar, A. (2010). *A textbook of practical botany: algae, fungi, lichen, bryophyta, pteridophyta, gymnosperms and palaeobotany* (Rev. ed.). Revised edition. Rastogi Publications.
5. Gangulee, H.C & Kar, A.K. (2013). *College botany* (5<sup>th</sup> ed.). S. Chand.

#### Web Sources

1. <https://www.frontiersin.org/articles/10.3389/fmicb.2017.00923/full>
2. <https://microbiologyonline.org/file/7926d7789d8a2f7b2075109f68c3175e.pdf>
3. [http://www.cuteri.eu/microbiologia/manuale\\_microbiologia\\_pratica.pdf](http://www.cuteri.eu/microbiologia/manuale_microbiologia_pratica.pdf)
4. <https://www.amazon.in/Manual-Practical-Bryophyta-Suresh-Kumar/dp/B0072GNFX4>
5. <https://www.amazon.in/Practical-Manual-Pteridophyta-Rajan-Sundara/dp/8126106883>
6. <https://www.google.co.in/books/edition/Gymnosperms/3YrT5E3Erm8C?hl=en&gbpv=1&dq=gymnosperms&printsec=frontcover>
7. <https://www.amazon.in/Paleobotany-Biology-Evolution-Fossil-Plants/dp/0123739721>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	recall and applying the basic keys to distinguish at species level identification of important algae and fungi through its structural organizations.	K1
CO2	demonstrate practical skills in thallophytes, Pteridophytes and Gymnosperms.	K2
CO3	describe the structure of algae, fungi, lichens, Bryophytes, Pteridophytes and Gymnosperms.	K3
CO4	determine the importance of structural diversity in the evolution of plant forms.	K4
CO5	formulate techniques to isolate and culture of alga and fungi as well as to understand the diversity of plant forms.	K5
CO6	develop entrepreneurship skill through industrially important organisms.	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PBO1CP01		Core Practical - 1: Plant Diversity -1 and 2							6	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	3	2	2	3	2	2	3	2	2.4
CO2	2	3	2	3	2	3	2	3	2	1	2.3
CO3	2	2	3	2	1	3	3	2	3	1	2.2
CO4	3	3	2	3	2	3	3	2	3	2	2.6
CO5	2	2	3	2	1	3	2	3	2	1	2.1
CO6	2	1	2	2	1	2	3	2	3	2	2.0
Mean overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PBO1ES01	<b>Elective - 1:</b> Microbiology, Immunology and Plant Pathology	5	3

Course Objectives
The goal of the course is to provide students with basic understanding of microbiology, immunology, plant pathology and the etiology of specific plant diseases
To provide comprehensive knowledge about microbes and its effect on man and environment
To provide comparative analysis of major groups of microbes
To study the principles of immune system, immunizing agents like antibodies and vaccines and gene therapy methods
To enhance the knowledge and skills needed for self-employment using the microbial derived products

#### **UNIT I: Bacteria (15 Hours)**

General characteristic of bacteria – Outline classification of Bergey's manual of 9<sup>th</sup> edition. Classification of bacteria based on Morphological, cultural, physiological and molecular characteristics. Bacterial growth – batch culture and continuous culture. Growth Curve. Factors affecting growth, Reproduction: Methods of preservation of Bacterial cultures.

#### **UNIT II: Viruses (15 Hours)**

General characters, Classification, Structure, Multiplication. Overview of Phycoviruses and Mycoviruses. Viruses of Eukaryotes – Animal & Plant viruses. Cultivation of viruses – in embryonated egg and in plants. Control of viral infections. Bacteriophages- classification, replication of DNA and RNA phages -Lytic and Lysogenic cycle. Viroids and prions. Mycoplasma: Structure and classification.

#### **UNIT III: Food Microbiology (15 Hours)**

Beneficial role of microbes – yoghurt, Olives, Cheese, Bread, Wine, Tempeh, Miso and Fermented green tea. Spoilage of fruits, vegetables, meats, poultry, eggs, bakery products and dairy products. Food poisoning and Food borne infections. Methods of food preservation. Soil Microbiology: Importance of Microbial flora of soil and factors affecting the microbial community in soil. Environmental Microbiology: Microbiology of water and air. Water borne diseases: diphtheria, chicken pox. Air borne diseases: Tuberculosis and Swine flu

#### **UNIT IV: Immunology (15 Hours)**

Introduction; Immune System; Types of Immunity - Innate and Acquired. Immune Cells - Hematopoiesis, B and T lymphocytes - Maturation, NK cells. Introduction to inflammation, Adaptive immune system, Innate Immune system. Antigen: Definition, Properties and types. Antibody – Structure, types and function. Generation of antibody diversity. Antigen -



Antibody interactions. Definition, types, Precipitation, Agglutination, Complement fixation. Immune Response – Humoral and Cell Mediated. Vaccines – history, types and recombinant vaccines. Immunodiagnosis – Blood Grouping, Widal test, Enzyme-Linked Immunosorbent Assay (ELISA), Immunoelectrophoresis and Immunodiffusion.

## UNIT V: Plant Pathology

(15 Hours)

Concepts of Plant disease, history and significance of plant pathology. General symptoms and Classification of plant diseases. Pathogenesis: pathogens and their mode of dissemination, pre-penetration, penetration and post penetration changes. Role of Chemical Weapons (Enzymes, Toxins) in disease development. Disease triangle. Defence mechanism in plants – structural and biochemical defences. Important diseases of crop plants in India – yellow vein Mosaic of Bhindi, Bacterial blight of rice, Late blight of potato and Little leaf of Brinjal. Principles of disease management: Cultural practices, physical, chemical and biological methods.

<b>Teaching Methodology</b>	Demonstration, videos, chart, PPT
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### Books for Study

1. Singh, R.S. (2018). *Introduction to principles of plant pathology* (4<sup>th</sup> ed.).
2. Bilgrami, K.S. & Dube, H.C. (2010). *A textbook of modern plant pathology*. Vikas Publishing House (P) Ltd.
3. Mehrotra, R.S. & Aggarwal, A. (2017). *Plant pathology*. McGraw Hill Publisher.
4. Dube, H.C. (2010). *A textbook of fungi, bacteria and viruses* (3<sup>rd</sup> ed.). Agrobios India.
5. Rao, C.V. (2006). *Immunology* (2<sup>nd</sup> ed.). Narosa Publisher.
6. Murphy, K. (2017). *Janeway's immunobiology*. (9<sup>th</sup> ed.). Garland Publisher.
7. Sullia, S.B. & Shantharam, S. (1998). *General microbiology*. Oxford and IBH Publishing Co. Pvt. Ltd.
8. Adams, M.R. & Moss, M.O. (2008). *Food microbiology*. Royal Soc. Chem.

### Books for Reference:

1. Agrios, A.G. (2007). *Plant pathology*, Elsevier.
2. Jeffery, C. & Pommerville. (2014). *Alcamo's fundamentals of microbiology*. (10<sup>th</sup> ed.). Johnsand Bartlett Learning.
3. Pelczar, M. J. (2007). *Microbiology* (35<sup>th</sup> ed.). Tata-McGraw Hill Publications.
4. Ravichandra, N.G. (2013). *Fundamentals of plant pathology*. Phi Learning.
5. Willie, J. & Sherwood, L. (2016). *Prescott's microbiology* (10<sup>th</sup> ed.). McGraw-Hill Education.
6. Chaube, H.S. & Singh, R. (2015). *Introductory plant pathology*. CBS Publishers.
7. Rangasamy, G. (2006). *Disease of crop plants in India* (4<sup>th</sup> ed.). Tata McGraw Hill.
8. Mishra, A., Bohra, A. & Mishra, A. (2011). *Plant pathology-disease and management*. Agro Bios.

### Web Sources:

1. <https://www.wileyindia.com/a-textbook-of-plant-pathology.html>
2. <https://www.britannica.com/science/plant-disease>.
3. <https://www.planetatural.com/pest-problem-solver/plant-disease/>
4. <https://www.elsevier.com/books/plant-pathology/agrios/978-0-08-047378-9>
5. <https://www.elsevier.com/life-sciences/immunology-and-microbiology/books>
6. <https://www.amazon.in/introduction-immunology-rafia-imran-ebook/dp/B09B66SD3J>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	recognize the general characteristics of microbes, plant defense and immune cells.	K1
CO2	explain about the stages in disease development and various defense mechanisms in plants and humans.	K2
CO3	elucidate concepts of microbial interactions with plant and humans.	K3
CO4	analyze the importance of harmful and beneficial microbes and immune system.	K4
CO5	determine and interpret the detection of pathogens and appreciate their adaptive strategies.	K5
CO6	appreciate the role of immune system in conferring disease resistance.	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PBO1ES01		Elective - 1: Microbiology, Immunology and Plant Pathology							5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	3	2	2	3	2	2	3	2	2.4
CO2	2	3	2	3	2	3	2	3	2	1	2.3
CO3	2	2	3	2	1	3	3	2	3	1	2.2
CO4	3	3	2	3	2	3	3	2	3	2	2.6
CO5	2	2	3	2	1	3	2	3	2	1	2.1
CO6	2	1	2	2	1	2	3	2	3	2	2.0
Mean overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PBO1ES02	Elective - 2: Herbal Technology	5	3

Course Objectives
To understand various plants-based drugs used in Ayurveda, Unani, Homeopathy and Siddha
To apply the knowledge to cultivate medical plants
To know the pharmacological importance of medicinal plants
To enlist phytochemicals and secondary metabolites of market and commercial value
To design and develop their own business propositions such as the making of herbal insecticides

### UNIT I: Herbal Medicines and Pharmacognosy (15 Hours)

Definition and importance of Herbal medicines. Pharmacognosy scope and importance – source – Crude Drugs – Scope and Importance, Classification (Taxonomical, Morphological Chemical, Pharmacological); Cultivation, Collection and processing of crude drugs. Cultivation and utilization of medicinal and aromatic plants in India. National Medicinal Plants Board of India.

### UNIT II: Plant Tissue Culture as Source of Plant material production for Medicines (15 Hours)

Plant tissue culture as source of medicines, Role of plant tissue culture in enhancing secondary metabolite production (*Withaniasomnifera*, *Rauwolfia9Ierpentine*, *Catheranthusroseus*, *Andrographispaniculata* and *Dioscoreasp*) – Elicitation – Biotransformation, Hairy root culture. Factors affecting secondary metabolites production.

### Unit III: Standardization of Plant Drug Materials and Phytochemicals (15 Hours)

Methods of Drug evaluation (Morphological, microscopic, physical and chemical). Phytochemical investigations – standardization and quality control of herbal drugs. Preliminary screening, Assay of Drugs – Biological evaluation/assays, Microbiological methods – Chemical Methods of Analysis, Detection of Adulterants: Chemical estimations, Spectrophotometry and fluorescence analysis. Drug adulteration – Types of adulterants.

### Unit IV: Analysis of Phytochemicals and Biological Screening (15 Hours)

Carbohydrates and derived products: Glycosides – extraction methods (*Digitalis*, *Dioscorea*); Tannins (Hydrolysable and Condensed types); Volatile oils – extraction methods (Clove, Mentha). Study of some herbal formulation techniques as drug cosmetics.

### Unit V: Types of Phytochemicals (15 Hours)

Alkaloids – extraction methods (*Taxus*, *Cinchona*); Flavonoids- extraction methods, Resins- extraction method: Application of phytochemicals in phytopharmacueticals; Biocides,

Biofungicides, Biopesticides. Women entrepreneurship development – marketing cultivated medicinal plants.

<b>Teaching Methodology</b>	PPT, chalk and talk, herbal preparations and practical demonstration.
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### Books for Study

1. Kokate, C.K., Purohit, A.P & S.B. Gokhale. (1996). *Pharmacognosy* (4<sup>th</sup> ed.). Nirali Prakashan.
2. Roseline, A. (2011). *Pharmacognosy*. MJP publishers.
3. Tilgner, S.M. (2018). *Herbal ABC's: The foundation of herbal medicine*. Wise Acres LLC.
4. Hornok, L. (1997). *Natural products in medicine: A biosynthetic approach*. Wiley.
5. Chichister, U.K.J. (1999). *Cultivation and processing of medicinal plants*. Wiley & Sons. Trease and Evans.
6. Mukherjee, P.K. (2008). *Quality control of herbal drugs* (3<sup>rd</sup> ed.). Business Horizons Pharmaceutical Publishers.
7. Kirtikar, K.R. & Basu, B.D. (2012). *Indian medicinal plants*. University Bookstore.
8. Biswas, P.K. (2006). *Encyclopedia of medicinal plants* (Vol. 1-7). Dominant Publishers.
9. Chaudhuri, A.B. (2007). *Endangered medicinal plants*. Daya Publishing House.

### Books for Reference

1. Wallis, T.E. (1999). *Textbook of pharmacognosy*. CBS Publishers and Distributors,
2. Kumaresan, V & Regland, A. (2004). *Taxonomy of angiosperms: Systematic botany, economic botany, botany & ethnobotany*.
3. Anonymous. (2004). *Cultivation of selected medicinal plants*. National Medicinal Plants Board, Govt. of India.
4. Rao, A.V. (2000). *Herbal cure for common diseases*. Diamond books Pvt. Ltd.
5. Dey, A.C. (1998). *Indian medicinal plants used in ayurvedic preparations*. Bishen Singh Mahendra Pal Singh.
6. Sathya, S., Jaiganesh, K.P & Sudha, T. (2019). *Current trends in herbal drug technology*. Pharmacy Council of India.
7. Lewis, W.H & Elwin-Lewis, M.P.F. (1976). *Medical botany: Plants affecting man's health*. Wiley Inter Science Publication. John Wiley and Sons.

### Web Sources

1. <https://www.kopykitab.com/Herbal-Science>
2. [https://kadampa.org/books/free-ebook-download-howtotyl?gclid=CjwKCAiA6vXwBRBKEiwAYE7iS5t8yenurCIUCTdV9olKo9TbyAh4fsoFqPYWGs5qBTbytD22z7lo0BoCYnUQAvD\\_BwE](https://kadampa.org/books/free-ebook-download-howtotyl?gclid=CjwKCAiA6vXwBRBKEiwAYE7iS5t8yenurCIUCTdV9olKo9TbyAh4fsoFqPYWGs5qBTbytD22z7lo0BoCYnUQAvD_BwE)
3. [https://www.barnesandnoble.com/b/free-ebooks/nook-books/alternative-medicine-natural-healing/herbal-medicine/\\_/N-ry0Z8qaZ11iu](https://www.barnesandnoble.com/b/free-ebooks/nook-books/alternative-medicine-natural-healing/herbal-medicine/_/N-ry0Z8qaZ11iu)
4. <http://cms.herbalgram.org/heg/volume8/07July/HerbalEBooks.html?t=1310004932&ts=1579066352&signature=1dd0d5aef818b19bcdcd6c063a78e404>
5. <https://www.dattanibookagency.com/books-herbs-science.html>
6. <https://www.springer.com/gp/book/9783540791157>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	recollect the importance of herbal technology.	K1
CO2	understand the classification of crude drugs from various botanical sources.	K2
CO3	analyze on the application of secondary metabolites in modern medicine.	K3
CO4	create new drug formulations using therapeutically valuable phytochemical compounds for the healthy life of society.	K4
CO5	comprehend the current trade status and role of medicinal plants in socio economic growth.	K5
CO6	develop entrepreneurship skill through learning preparation processes of herbal drugs and phytoconstituents.	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PBO1ES02		Elective - 2: Herbal Technology							5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	3	2	2	3	2	2	3	2	2.4
CO2	2	3	2	3	2	3	2	3	2	1	2.3
CO3	2	2	3	2	1	3	3	2	3	1	2.2
CO4	3	3	2	3	2	3	3	2	3	2	2.6
CO5	2	2	3	2	1	3	2	3	2	1	2.1
CO6	2	1	2	2	1	2	3	2	3	2	2.0
Mean overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PBO1AE01	Ability Enhancement Course: Nursery and Gardening	2	1

Course Objectives
To recognize the importance of nursery and gardening
To gain an understanding of nursery management
To develop skills necessary to manage a wholesale nursery
To acquire knowledge regarding theory and practice of rising plants
To develop an interest to become an entrepreneur

#### **UNIT I: Nursery (6 Hours)**

Definition, objectives and scope and building up of infrastructure for nursery, planning and seasonal activities – Planting: direct seeding and transplants.

#### **UNIT II: Seed (6 Hours)**

Structure and types - Seed dormancy; causes and methods of breaking dormancy - Seed storage: Seed banks, factors affecting seed viability, genetic erosion - Seed production technology - seed testing and certification.

#### **UNIT III: Vegetative Propagation (6 Hours)**

Air-layering, cutting, selection of cutting, collecting season, treatment of cutting, rooting medium and planting of cuttings - Hardening of plants - green house - mist chamber, shed root, shade house and glasshouse.

#### **UNIT IV: Gardening (6 Hours)**

Definition, objectives and scope - different types of gardening - landscape and home gardening - parks and its components - plant materials and design - computer applications in landscaping.

#### **UNIT V: Gardening Operations (6 Hours)**

Soil laying, manuring, watering, management of pests and diseases and harvesting. Sowing/raising of seeds and seedlings: Transplanting of seedlings - Study of cultivation of different vegetables: cabbage, brinjal, lady's finger, onion, garlic, tomato and carrot - Storage and marketing procedures.

<b>Teaching Methodology</b>	PPT, videos and practical demonstration.
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### **Books for Study**

1. Bose, T.K & Mukherjee, D. (1972). *Gardening in India*. Oxford & IBH Publishing Co.
2. Sandhu, M.K. (1989). *Plant propagation*. Wile Eastern Ltd.
3. Kumar, N. (1997). *Introduction to horticulture*. Rajalakshmi Publications.
4. Agrawal, P.K. (1993). *Handbook of seed technology*. Dept. of Agriculture and Cooperation, National Seed Corporation Ltd.

### **Books for Reference**

1. Prasad, S & Kumar, U. (2005). *Greenhouse management for horticultural crops* (2<sup>nd</sup> ed.). Agrobios.
2. Acquaah, G. (2002). *Horticulture: Principles and practices*. Prentice Hall of India Pvt. Ltd.
3. Abraham, A. & Vatsala, P. (1981). *Introduction to orchids*. Tropical Botanic Garden and Research Institute.
4. Hartman, H.T & Kester, D.E. (1989). *Plant propagation*. Prentice Hall Ltd.

### **Web Sources**

1. <https://www.kopykitab.com/Nursery-And-Gardening-SEC-by-Prof-C-D-Patil-Dr-G-M-Rane-Dr-S-A-Patil>
2. <https://www.wonderslate.com/nursery-and-gardening-management/ebook-details?siteName=books&bookId=38078&preview=true>
3. [https://books.google.co.in/books/about/Nursery\\_Hindi\\_Book\\_Bonsai\\_Plants\\_Nursery.html?id=-nfDDwAAQBAJ&redir\\_esc=y](https://books.google.co.in/books/about/Nursery_Hindi_Book_Bonsai_Plants_Nursery.html?id=-nfDDwAAQBAJ&redir_esc=y)
4. <https://www.amazon.in/Gardening-Books/b?ie=UTF8&node=1318122031>
5. <https://www.worldcat.org/title/handbook-of-horticulture/oclc/688653648>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	compare and contrast cultivation of different vegetables and growth of plants in nursery and gardening.	K4
CO2	develop new strategies to enhance growth and quality of nursery plants.	K5
CO3	develop necessary skill in different propagation techniques in gardening	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PBO1AE01		Ability Enhancement Course: Nursery and Gardening							2	1
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO 2	PSO3	PSO4	PSO5	
CO1	3	3	2	3	2	3	3	2	3	2	2.6
CO2	2	2	3	2	1	3	2	3	2	1	2.1
CO3	2	1	2	2	1	2	3	2	3	2	2.0
Mean overall Score											2.2 (High)



School of

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COMPUTING SCIENCES

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## DEPARTMENT OF COMPUTER SCIENCE St. JOSEPH'S COLLEGE (Autonomous)

*Accredited at A++ Grade (Cycle IV) by NAAC Special Heritage Status awarded by UGC  
College with Potential for Excellence by UGC DBT-STAR & DST-FIST sponsored College*

TIRUCHIRAPPALLI - 620 002.

Phone : 0431 - 4226392, 2700320, Fax : 0431 - 2701501

Website : [www.sjctni.edu](http://www.sjctni.edu)

### **MINUTES OF THE BOARD OF STUDY MEETING HELD ON 21-07-2023 at 11.30 AM**

The meeting started with a silent prayer. All the faculty members of Shift -I and Shift-II attended the meeting. Mr. A. Charles, Head, Department of Computer Science welcomed the board of studies members Dr. K. Mani, MCA., M. Phil., Ph.D., Head, Department of Computer Science, Nehru Memorial College, Puthanampatti (University Nominee), Mr. Manikandan (Representing Mr. Tony Reagan), SYSTECH, Tiruchirappalli, (Industry Representative) and all the faculty members of the department of Computer Science.

#### **Agenda (TANSCHS Syllabus)**

Initially, Mr. A. Charles, Head of the department briefly explained the issues and challenges in the MCA TANSCHS Syllabus given during June, 2023 and what are the changes have been made after the getting approval for following TANSCHS syllabus that has been given during April, 2023.

After recalling the points that have passed before the Board of Studies Meeting, Mr. A. Charles, Head of the department presented the B.Sc. TANSCHS Syllabus of June, 2023 to the members.

After completing the presentation, HoD, concluded that only the references were changed compared with the previous B.Sc. TANSCHS syllabus given in April, 2023.

Dr. K. Mani, suggested the following after reviewing the B.Sc. TANSCHS Syllabus:

1. There is a mismatch in the Lab hours and credits compared with previous B.Sc. TANSCHS syllabus. Credits and hours can be reduced for the Programming Lab.
2. Textbooks are not relevant to the chapters given in the syllabus. So, the department can put related text books for every unit in the Syllabus.
3. In the B.Sc. TANSCHS Syllabus, Allied Course I: Numerical Methods syllabus has the unit Numerical and Differentiation, but the concepts of Differentiation are not clearly mentioned. Also, the unit seems to be not worth for 15 hours.

4. April B.Sc. TANCHE Syllabus Textbooks exactly matched with the title, but the June TANCHE syllabus matched only 60%.
5. In Problem Solving Techniques syllabus, the textbooks covered all the topics but no coherency between the units.

Mr. A. Charles and other staff members explained challenges to follow the B.Sc. TANCHE Syllabus with these issues. He agreed to modify the syllabus if any relevant suggestions given by the Board of Studies members.

Next, Mr. A. Charles, Head of the department presented the MCA TANCHE Syllabus that had been given during April, 2023 to the members.

Dr. K. Mani, suggested the following after reviewing the MCA TANCHE Syllabus:

1. Most of the Syllabus reflected the fundamental concepts only, so, advanced topics can be added.
2. C++ and Data Structures Syllabus has a unit “Working with Files”, it includes the topic of data structure. It’s not relevant to the unit, so it can be deleted. Unit 5 “Stack and Queues” in the same syllabus, does not contain the topic queue.

After discussing the issues and TANCHE rules, The BoS members accepted the current B.Sc. CS and MCA syllabus of TANCHE model as it is.

**Any other matter:**





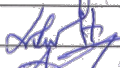

Mr. A. Charles, Head of the department presented the syllabus of the FOUR certificate courses to the BoS members which are going to be offered by the department.

Mr. Manikandan from Systech, Tiruchirappalli, suggested to include some practical oriented content in the certificate courses.


Mr. A. Charles, Head of the department, asked the certificate course in-charges to frame the common evaluation methods for all the certificate courses.

The meeting came to an end around 12.30 p.m. with the thanking note of the HoD.

*The list of faculty members who were present in the meeting is given below:*

S. No.	Name of the Staff	Signature
1.	Mr. A. Charles	
2.	Dr. L. Arockiam	
3.	Mr. V. S. Joe Irudayaraj	
4.	Dr. D. Ravindran	
5.	Dr. S. Britto Ramesh Kumar	
6.	Dr. A. Aloysius	

7.	Dr. V. Jude Nirmal	<i>V. Jude</i>
8.	Rev. Dr. S. Arul Oli SJ	<i>S. Aruloli</i>
9.	Rev. Dr. S. Santiago SJ	<i>S. Santiago</i>
10.	Dr. A. Vimal Jerald	<i>A. Vimal</i>
11.	Dr. George Gabriel Richard Roy	<i>G. G. R. Roy</i>
12.	Dr. K. R. Martin	<i>K. R. Martin</i>
13.	Dr. K. Maheswaran	<i>K. Maheswaran</i>
14.	Dr. B. Rex Cyril	<i>B. Rex Cyril</i>
15.	Dr. J. Antony John Prabu	<i>J. Antony John Prabu</i>
16.	Dr. A. Jenifer Jothi Mary	<i>A. Jenifer Jothi Mary</i>
17.	Dr. S. Josephine Theresa	<i>S. Josephine Theresa</i>
18.	Ms. S. Thulasi Bharathi	<i>S. Thulasi Bharathi</i>
19.	Dr. S. Sathyapriya	<i>S. Sathyapriya</i>
20.	Ms. M. Merla Agnes Mary	<i>M. Merla Agnes Mary</i>
21.	Dr. J. Hirudhaya Mary Asha	<i>J. Hirudhaya Mary Asha</i>
22.	Mr. C. Mohanraja	<i>C. Mohanraja</i>
23.	Ms. Sherine Dominick	<i>Sherine Dominick</i>
24.	Ms. A.H. Amalorpava Akila	<i>A.H. Amalorpava Akila</i>
25.	Mr. R. Arockiaraj	<i>R. Arockiaraj</i>

  
 Head of the Department  
 Head of the Department  
 Department of Computer Science  
 St. Joseph's College(Autonomous)  
 Tiruchirappalli-620 002.

PROGRAMME PATTERN				
B. Sc COMPUTER SCIENCE				
Part	Course Code	Title of the Course	Hours	Credits
I	23UTA11GL01A	General Tamil – 1 தமிழ் இலக்கிய வரலாறு - 1	5	3
	23UFR11GL01	French-1		
	23UHI11GL01	Hindi-1		
	23USA11GL01	Sanskrit-1		
II	23UEN12GE01	General English-1	5	3
III	23UCS13CC01	<b>Core Course - 1:</b> Python Programming	4	4
	23UCS13CP01	<b>Core Practical - 1:</b> Python Programming	5	5
	23UMA13AC01B	<b>Allied Course - 1:</b> Numerical Methods	5	4
IV	23UCS14FC01	<b>Foundation Course:</b> Problem Solving Techniques	2	2
	23UCS14SE01	<b>Skill Enhancement Course – 1 (Non Major Elective):</b> Office Automation	2	2
	23UHE14VE01	<b>Value Education:</b> Essentials of Humanity	2	1
		<b>Total</b>	<b>30</b>	<b>24</b>

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UCS13CC01	Core Course - 1: Python Programming	4	4

Course Objectives
To make students understand the concepts of Python programming
To provide solutions using control structures in Python programming
To apply the knowledge functions, strings and modules in Python based solutions
To learn the various element-based data types in Python programming
To work with file-based operations with Python

### UNIT I: Fundamentals of Python (12 Hours)

**Basics of Python Programming:** History of Python-Features of Python-Literal-Constants-Variables – Identifiers – Keywords-Built-in Data Types – Output Statements – Input Statements – Comments – Indentation – Operators-Expressions-Type conversions. **Python Arrays:** Defining and Processing Arrays – Array methods.

### UNIT II: Control Statements (12 Hours)

**Control Statements:** Selection/Conditional Branching statements: if, if-else, nested if and if-elif-else statements. **Iterative Statements:** While loop, For loop, Else suite in loop and Nested loops. **Jump Statements:** Break, Continue and Pass statements.

### UNIT III: Functions in Python (12 Hours)

**Functions:** Function Definition – Function Call – Variable Scope and its Lifetime-Return Statement. **Function Arguments:** Required Arguments, Keyword Arguments, Default Arguments and Variable Length Arguments – Recursion. **Python Strings:** String operations- Immutable Strings – Built-in String Methods and Functions - String Comparison. **Modules:** import statement- The Python module – dir() function – Modules and Namespace – Defining our own modules.

### UNIT IV: Lists and Dictionaries (12 Hours)

**Lists:** Creating a list -Access values in List-Updating values in Lists-Nested lists -Basic list operations-List Methods. **Tuples:** Creating, Accessing, Updating and Deleting Elements in a tuple – Nested tuples– Difference between lists and tuples. **Dictionaries:** Creating, Accessing, Updating and Deleting Elements in a Dictionary – Dictionary Functions and Methods - Difference between Lists and Dictionaries.

### UNIT V: File Handling (12 Hours)

Types of files in Python - Opening and Closing files-Reading and Writing files: write() and writelines() methods- append() method – read() and readlines() methods – with keyword – Splitting words – File methods - File Positions- Renaming and deleting files.

Teaching Methodology	Videos, PPT, Demonstration, Hands on Session and Lecture Methods.
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### Books for Study

1. Thareja, R. (2017). *Python programming using problem solving approach* (1<sup>st</sup> ed.). Oxford University Press.
2. Rao, N. R. (2017). *Core Python programming* (1<sup>st</sup> ed.). Dream tech Publishers.

### Books for Reference

1. Kurama, V. (2018). *Python programming: A modern approach*. Pearson Education.
2. Lambert, K. A. (2017). *Fundamentals of Python – First programs*. CENGAGE Publication.

### Web Sources

1. <https://www.programiz.com/python-programming>
2. <https://www.guru99.com/python-tutorials.html>
3. [https://www.w3schools.com/python/python\\_intro.asp](https://www.w3schools.com/python/python_intro.asp)
4. <https://www.geeksforgeeks.org/python-programming-language/>
5. [https://en.wikipedia.org/wiki/Python\\_\(programming\\_language\)](https://en.wikipedia.org/wiki/Python_(programming_language))

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	recall simple Python programs that solve basic problems	K1
CO2	explain the basic concepts of Python programming	K2
CO3	use Python to interact with the operating system and other external resources.	K3
CO4	analyse and apply solutions to problems by using various Python techniques.	K4
CO5	develop reusable and maintainable Python software.	K5

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23UCS13CC01	Core Course - 1: Python Programming								4	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	1	1	3	3	2	3	2	2	2.2
CO2	3	2	3	3	2	1	3	2	2	2	2.3
CO3	3	3	2	3	1	3	2	3	2	3	2.5
CO4	2	2	3	1	3	2	3	2	3	3	2.4
CO5	2	3	2	2	2	2	3	2	2	2	2.2
Mean overall Score											2.32 (High)

<b>Semester</b>	<b>Course Code</b>	<b>Title of the Course</b>	<b>Hours/ Week</b>	<b>Credits</b>
<b>1</b>	<b>23UCS13CP01</b>	<b>Core Practical - 1:</b> Python Programming	<b>5</b>	<b>5</b>

**List of Exercises:**

1. Variables, constants, I/O statements
2. Operators
3. Conditional Statements, Loops and Jump Statements
4. Functions and Recursion
5. Arrays
6. Strings
7. Modules
8. Lists and Tuples
9. Dictionaries
10. File Handling



Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23UCS14FC01	Foundation Course: Problem Solving Techniques	2	2

Course Objectives
To study the basics of computers
To study the data types and arithmetic operations, know about the algorithms and develop program using flow chart and pseudocode
To understand and apply the basic concepts of operators, structures, and loops
To learn about numeric data and character-based data and analyze about arrays
To understand and illustrate DFD based on program modules

### UNIT I: An Introduction to Computers and Programming (6 Hours)

**Introduction:** History, characteristics and limitations of Computer. **Hardware/Anatomy of Computer:** CPU, Memory, Secondary storage devices, Input Devices and Output devices. **Types of Computers:** PC, Workstation, Minicomputer, Main frame and Supercomputer. **Software:** System software and Application software. **Programming Languages:** Machine language, Assembly language, High-level language, 4 GL and 5GL- Features of good programming language. **Translators:** Interpreters and Compilers.

### UNIT II: Developing a Program (6 Hours)

**Data:** Data types, Input, Processing of data, Arithmetic Operators, Hierarchy of operations and Output. Different phases in Program Development Cycle (PDC). **Structured Programming:** **Algorithm:** Features of good algorithm, Benefits and drawbacks of algorithm. **Flowcharts:** Advantages and limitations of flowcharts, when to use flowcharts, flowchart symbols and types of flowcharts. **Pseudocode:** Writing a pseudocode. **Coding, documenting and testing a program:** Comment lines and types of errors. Program design: Modular Programming.

### UNIT III: Selection and Repetition Structures (6 Hours)

**Selection Structures:** Relational and Logical Operators -Selecting from Several Alternatives – Applications of Selection Structures. **Repetition Structures:** Counter Controlled Loops –Nested Loops– Applications of Repetition Structures.

### UNIT IV: Data Types and Arrays (6 Hours)

**Data:** Numeric Data and Character Based Data. **Arrays:** One Dimensional Array - Two Dimensional Arrays – Strings as Arrays of Characters.

### UNIT V: Program Modules and Data Files (6 Hours)

**Data Flow Diagrams:** Definition, DFD symbols and types of DFDs. **Program Modules:** Subprograms-Value and Reference parameters- Scope of a variable - Functions – Recursion. **Files:** File Basics-Creating and reading a sequential file- Modifying Sequential Files.

<b>Teaching Methodology</b>	Videos, PPT, Demonstration, Hands on Session and Lecture Methods.
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**Book for Study**

1. Venit, S. (2010). *Introduction to programming: Concepts and design* (4<sup>th</sup> ed.). Dream Tech Publishers.

**Books for Reference**

1. Venit, S. & Drake, E. (2013). *Prelude to programming: Concepts and design* (5<sup>th</sup> ed.). Pearson Education.
2. Venit, S. & Drake, E. (2015). *Prelude to programming: Concepts and design* (6<sup>th</sup> ed.). Pearson Education.
3. Leon, A. & Leon, M. (1999). *Fundamentals of information technology*. Vikas.
4. Jaiswal, S. (2009). *Information technology today* (4<sup>th</sup> ed.). Galgotia Publications.

**Web Sources**

1. <https://www.geeksforgeeks.org/computer-fundamentals-tutorial>
2. [https://www.tutorialspoint.com/computer\\_programming/computer\\_programming\\_basics.htm](https://www.tutorialspoint.com/computer_programming/computer_programming_basics.htm)

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	recall the basics of computers	K1
CO2	demonstrate Structured Programming and its representation through using selection and repetition procedures.	K2
CO3	understand and apply modularization on data and represent it through DFD based on program modules.	K3

		Relationship Matrix										
Semester	Course code	Title of the Course									Hours	Credits
1	23UCS14FC01	Foundation Course: Problem Solving Techniques									2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	2	3	2	2	2	3	2	2	2	2	2.2	
CO2	3	2	3	2	2	2	3	2	3	2	2.4	
CO3	2	3	2	2	2	2	2	3	2	3	2.3	
Mean overall Score											2.3 (High)	

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23UCS14SE01	Skill Enhancement Course – 1 (Non Major Elective): Office Automation	2	2

Course Objectives
To understand the basics of computer systems and its components
To summarize the basic concepts of a word processing package
To gain the knowledge on electronic spreadsheet software
To attain exposure on database management system
To create presentations using presentation tool

#### **UNIT I: Introductory Concepts (6 Hours)**

Memory unit – CPU-Input Devices: Keyboard, Mouse and Scanner. Output devices: Monitor, Printer. Introduction to Operating systems & its features: DOS – UNIX– Windows. Introduction to Programming Languages.

#### **UNIT II: Word Processing (6 Hours)**

Open, Save and close word document; Editing text – tools, formatting, bullets; Spell Checker - Document formatting – Paragraph alignment, indentation, headers and footers, numbering; printing – Preview, options, merge.

#### **UNIT III: Spreadsheets (6 Hours)**

Opening, entering text and data, formatting, navigating; Formulas – entering, handling and copying; Charts – creating, formatting and printing, analysis tables, preparation of financial statements, introduction to data analytics.

#### **UNIT IV: Database Concepts (6 Hours)**

The concept of data base management system; Data field, records, and files, Sorting and indexing data; Searching records. Designing queries, and reports; Linking of data files; Understanding Programming environment in DBMS; Developing menu drive applications in query language.

#### **UNIT V: Presentation Software (6 Hours)**

Features – Understanding slide typecasting & viewing slides – creating slide shows. Applying special object – including objects & pictures – Slide transition – Animation effects, audio inclusion, timers.

<b>Teaching Methodology</b>	Videos, PPT, Demonstration, Hands on Session and Lecture Methods.
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#### **Books for Study**

1. Norton, P. (2005). *Introduction to computers*. Tata McGraw-Hill.
2. Kettel, J. A., Davis, G. H. & Simmons, C. (2003). *Microsoft 2003*. Tata McGraw- Hill.

#### **Books for Reference**

1. Wang, W. (2015). *Microsoft Office 2016 for dummies* (1<sup>st</sup> ed.). Wiley publication.
2. Withee, R., Withee, K. & Reed, J. (2016). *Microsoft Office 365 for dummies* (2<sup>nd</sup> ed.). Wiley Publication.

#### Web Sources

1. <https://www.w3schools.blog/ms-word-tutorial>
2. <https://www.w3schools.com/EXCEL/index.php>
3. <https://www.javatpoint.com/powerpoint-tutorial>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	demonstrate the skill based on computer and its components and various OS, Word Processing Package, Electronic Spread Sheet, Database Management System, Power Point.	K3
CO2	solve the problems on computer and its components and various OS, Word Processing Package, Electronic Spread Sheet, Database Management System, Power Point.	K4
CO3	recall basic concepts of computer and its components and various OS, Word Processing Package, Electronic Spread Sheet, Database Management System, Power Point.	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UCS14SE01		Skill Enhancement Course – 1 (Non Major Elective): Office Automation							2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	2	2	3	2	3	2	3	2.2
CO2	3	3	3	2	1	3	3	3	2	2	2.5
CO3	2	3	3	2	1	2	3	3	2	2	2.3
Mean overall Score											2.34 (High)

<b>PROGRAMME PATTERN</b>			
<b>MASTER OF COMPUTER APPLICATIONS</b>			
<b>Course Code</b>	<b>Title of the Course</b>	<b>Hours</b>	<b>Credits</b>
23PCA1CC01	<b>Core Course - 1:</b> C++ and Data Structures	4	4
23PCA1CC02	<b>Core Course - 2:</b> Introduction to Computer Architecture	4	3
23PCA1CC03	<b>Core Course - 3:</b> Relational Database Management Systems	4	3
23PCA1CP01	<b>Core Practical - 1:</b> Data Structures using C++	4	2
23PCA1CP02	<b>Core Practical - 2:</b> RDBMS	4	2
23PCA1ES01	<b>Elective - 1:</b> Accounting and Financial Management	4	3
23PCA1ES02	<b>Elective - 2:</b> Theory of Computation	4	3
23PCA1AE01	<b>Ability Enhancement Course:</b> Programming in Java	2	1
	<b>Total</b>	<b>30</b>	<b>21</b>

- Mandatory Bridge Course for all Non-Computer Science Stream Students.
- Two weeks to be conducted outside the class hours and evaluated for 100 marks (purely internal).

<b>Course Code</b>	<b>Title of the Course</b>	<b>Hours</b>	<b>Marks</b>	<b>Credit</b>
23PCA1BC01	<b>Bridge Course</b>	30	100	2

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23PCA1CC01	Core Course - 1: C++ and Data Structures	4	4

Course Objectives
To develop a solid understanding of the fundamental concepts of C++ programming
To gain in object-oriented programming by comprehending the concepts of classes, objects, constructors, and inheritance
To acquire the skills necessary to handle file operations, including opening, closing, updating, and error handling
To master the implementation and application of stack data structure, including infix to postfix conversion, recursion
To attain a thorough understanding of tree and graph data structures, including binary trees, traversals, and graphs

#### **UNIT I: Introduction to C++ (12 hours)**

Tokens, Keywords, Identifiers, Variables, Operators, Manipulators, Expressions and Control Structures in C++; Pointers - Functions in C++ - Main Function -Function Prototyping - Parameters Passing in Functions - Values Return by Functions - Inline Functions - Friend and Virtual Functions

#### **UNIT II: Classes and Objects (12 hours)**

Constructors and Destructors; and Operator Overloading and Type Conversions - Type of Constructors - Function overloading. Inheritance: Single Inheritance - Multilevel Inheritance - Multiple Inheritance - Hierarchical Inheritance - Hybrid Inheritance. Pointers, Virtual Functions and Polymorphism; Managing Console I/O operations.

#### **UNIT III: Working with Files (10 hours)**

Classes for File Stream Operations - Opening and Closing a File – End of File Deduction - File Pointers - Updating a File - Error Handling during File Operations – Command line Arguments.

#### **UNIT IV: Stack (14 hours)**

Data Structures: Definition of a Data structure - primitive and composite Data Types, Asymptotic notations, Arrays, Operations on Arrays, Order lists. Applications of Stack - Infix to Postfix Conversion, Recursion, Maze Problems - Queues- Operations on Queues, Queue Applications, Circular Queue. Singly Linked List- Operations, Application - Representation of a Polynomial, Polynomial Addition; Doubly Linked List - Operations, Applications.

## UNIT V: Trees and Graphs

(12 hours)

Binary Trees - Conversion of Forest to Binary Tree, Operations - Tree Traversals; Graph - Definition, Types of Graphs, Hashing Tables and Hashing Functions, Traversal - Shortest Path; Dijkstra's Algorithm.

<b>Teaching Methodology</b>	Lecture-based instruction, Demonstration, Group Discussion, Peer Learning, Problems solving, and Project-based learning
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### Books for Study

1. Horowitz, E., Sahni, S. & Mehta. (2008). *Fundamentals of data structures in C++* (2<sup>nd</sup> ed.). Galgotia.
2. Schildt, H. (1999). *C++ - The complete reference* (3<sup>rd</sup> ed.). Tata McGraw – Hill.
3. Goodrich, M. T., Tamassia, R. & Mount, D. M. (2007). *Data structures and algorithms in C++*. Wiley.

### Books for Reference

1. Heileman, G. L. (1996), *Data structures, algorithms and object oriented programming*. Mc-Graw Hill International Editions.
2. Aho, A. V., Ullman, J. D. & Hopcraft, J. E. (1974), *Data structures and algorithms*. Addison Wesley Publication.
3. Salaria, R. S. (2018). *Data structures and algorithms Using C++*. Kanna Book Publishing.

### Web Resources

1. <https://www.geeksforgeeks.org/data-structures/>
2. [https://www.tutorialspoint.com/cplusplus/cpp\\_data\\_structures.htm](https://www.tutorialspoint.com/cplusplus/cpp_data_structures.htm)
3. <https://www.programiz.com/cpp-programming/data-structure>
4. <https://www.codecademy.com/learn/learn-c-plus-plus/modules/learn-cpp-data-structures>
5. <https://cslibrary.stanford.edu/110/BinaryTrees.html>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to,	
CO1	define the fundamental concepts of C++ programming language.	K1
CO2	summarize the principles of object-oriented programming.	K2
CO3	apply different techniques of C++ to create and manipulate files.	K3
CO4	analyze the applications of data structure and develop programs using the data structure	K4
CO5	build and manipulate different data structure in C++, applying the same to develop algorithms.	K5
CO6	design and implement complex programs that involve multiple concepts, data structures, and algorithms.	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PCA1CC01		Core Course - 1: C++ and Data Structures							4	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	1	2	2	3	2	3	3	3	2.3
CO2	2	2	1	2	3	2	2	3	2	3	2.2
CO3	2	2	1	2	3	3	2	2	3	2	2.2
CO4	1	2	2	2	3	2	2	3	2	3	2.2
CO5	2	2	3	3	2	2	3	2	3	3	2.5
CO6	2	2	3	2	2	2	2	3	3	3	2.4
Mean overall Score											2.3 (High)



Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23PCA1CC02	<b>Core Course - 2:</b> Introduction to Computer Architecture	4	3

Course Objectives
Understand the Digital number system and their conversions
Identify the operations of logic Gates and simplify the Boolean expressions using K-Map
Comprehend the fundamental principles of simple Arithmetic Circuits
Realize the design of sequential logic circuits such as Flip Flops, Registers and Counters and its applications
Gain the knowledge about the memory elements like RAM, ROM, and Magnetic Disk memories and Secondary Memories.

### **UNIT I: Digital and Number System (12 Hours)**

Data and Information Features of Digital Systems, Number Systems. Decimal, Binary, Octal, Hexadecimal and their inter conversions, Representation of Data: Signed Magnitude, one's complement and two's complement, Binary Arithmetic, Fixed point representation and Floating-point representation of numbers. Codes BCD, XS-3, Gray code, hamming code, alphanumeric codes (ASCII, EBCDIC, UNICODE), Error detecting and error correcting codes

### **UNIT II: Boolean Algebra (12 Hours)**

Boolean Algebra: Basic gates (AND, OR, NOT gates), Universal gates (NAND and NOR gates), other gates (XOR, XNOR gates). Boolean identities, De Morgan Laws. Karnaugh maps: SOP and POS forms, Quine McClusky method.

### **UNIT III: Combinational Circuits (12 Hours)**

Combinational Circuits: Half adder, full adder, code converters, combinational circuit design, Multiplexers and demultiplexers, encoders, decoders, Combinational design using mux and demux, PLA.

### **UNIT IV: Sequential Circuit Design (12 Hours)**

Sequential Circuit Design: Flip flops RS, Clocked RS, D, JK, JK Master Slave, T, Counters, Shift registers and their types, Counters: Synchronous and Asynchronous counters.

### **UNIT- V: ALU Structure & Memory (12 Hours)**

ALU Structure – Memory: ROM, RAM, PROM, EPROM, EEPROM, and Secondary Memory: Hard Disk and optical Disk, Cache Memory, I/O devices.

<b>Teaching Methodology</b>	Videos, PPT, Demonstration, and Designing Logic Circuit
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**Books for Study**

1. Jain, R. P. (2008). *Modern digital electronics*. McGraw Hill.
2. Gill, N. S. & Dixit, J. B. (2016). *Digital design and computer organization*. University Science Press, Sausalito, CA, United States.
3. Norton, P. (2005). *Introduction to computers*. McGraw Hill.

**Books for Reference**

1. Malvino & Leach (2014). *Digital principles and applications*. McGraw Hill, New York.
2. Balagurusamy (2009). *Introduction to computers*. McGraw Hill Education, New York.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	recall the fundamentals of digital logic and elements of a digital computer	K1
CO2	demonstrate the logics of sequential and combinational circuits	K2
CO3	solve the problems on logic circuits using digital logics	K3
CO4	classify the digital logics of sequential and combinational circuits	K4
CO5	interpret the functioning of logic circuits and memory elements	K5
CO6	design digital circuit based on the given constraints	K6

Relationship Matrix												
Semester	Course code		Title of the Course								Hours	Credits
1	23PCA1CC02		Core Course - 2: Introduction to Computer Architecture								4	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	3	2	2	2	3	2	3	2	3	2.5	
CO2	3	3	3	2	1	3	3	3	2	2	2.5	
CO3	2	3	3	2	1	2	3	3	2	2	2.3	
CO4	3	3	3	2	1	3	3	3	2	2	2.5	
CO5	3	3	3	1	1	2	3	3	2	2	2.3	
CO6	3	3	3	2	3	3	2	3	2	3	2.7	
Mean overall Score											2.56 (High)	

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23PCA1CC03	<b>Core Course - 3:</b> Relational Database Management Systems	4	3

Course Objectives
To learn the fundamentals of data models, SQL and to represent a database system using ER Diagrams
To study relational database design concepts and normalization procedures
To understand the fundamental concepts of transaction processing, concurrency control techniques and recovery procedures
To understand the internal storage structure using different file systems and indexing techniques which will help in physical database design
To gain fundamental knowledge on other databases like Distributed, XML and Object-relational databases

#### UNIT I: Relational Databases

(12 Hours)

Purpose of Database System – Views of data – Data Models – Database System Architecture – Introduction to relational databases – Relational Model – Keys – Relational Algebra – SQL fundamentals – Advanced SQL features – Embedded SQL – Dynamic SQL.

#### UNIT II: Database Design

(12 Hours)

Entity-Relationship model – E-R Diagrams – Enhanced- ER Model – ER-to-Relational Mapping – Functional Dependencies – Non-loss Decomposition – First, Second, Third Normal Forms, Dependency Preservation – Boyce/Codd Normal Form – Multi-valued Dependencies and Fourth Normal Form – Join Dependencies and Fifth Normal Form

#### UNIT III: Transactions

(12 Hours)

Transaction Concepts – ACID Properties – Schedules – Serializability – Concurrency Control – Need for Concurrency – Locking Protocols – Two Phase Locking – Deadlock – Transaction Recovery – Save Points – Isolation Levels – *SQL Facilities for Concurrency and Recovery*.

#### UNIT IV: Implementation Techniques RAID

(12 Hours)

File Organization – Organization of Records in Files – Indexing and Hashing – Ordered Indices – B+ tree Index Files – B tree Index Files – Static Hashing – Dynamic Hashing – *Query Processing Overview – Algorithms for SELECT and JOIN operations – Query optimization using Heuristics and Cost Estimation*.

#### UNIT V: Advanced Topics

(12 Hours)

Distributed Databases: Architecture, Data Storage, Transaction Processing – Object-based Databases: Object Database Concepts, Object-Relational features, ODMG Object Model, ODL, OQL – XML Databases: XML Hierarchical Model, DTD, XML Schema, XQuery – *Information Retrieval: IR Concepts, Retrieval Models, Queries in IR systems*.

<b>Teaching Methodology</b>	a) Provide Exercises for SQL Queries, Data Modeling and Normalization b) Assign group work to design relational databases c) Conduct regular quizzes to evaluate the knowledge level of the students d) Provide students with relevant OER references
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### **Books for Study**

1. Silberschatz, A., Korth, H. F. & Sudharsha. S. (2011). *Database System Concepts* (6<sup>th</sup> ed.). Tata McGraw Hill.
2. Elmasri, R., Navathe, S. B. (2011). *Fundamentals of Database Systems* (6<sup>th</sup> ed.). Pearson Education.

### **Books for Reference**

1. Date, C. J., Kannan, A. & Swamynathan. S. (2006). *An Introduction to Database Systems* (8<sup>th</sup> ed.). Pearson Education.
2. Ramakrishnan, R. (2015). *Database Management Systems* (4<sup>th</sup> ed.). McGraw Hill, College Publications.
3. Gupta, G. K. (2011). *Database Management Systems*. Tata McGraw Hill.

### **Websites and eLearning Sources**

1. <https://www.w3schools.com/sql/>
2. <https://www.studytonight.com/dbms/database-normalization.php>
3. <https://www.databasejournal.com/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
<b>CO1</b>	recall the key concepts and terminologies in relational and advanced database systems	<b>K1</b>
<b>CO2</b>	interpret the implementation scenarios of database design transactions and storage mechanisms in relational data model	<b>K2</b>
<b>CO3</b>	map ER Model to relational model, normalize data and formulate SQL queries	<b>K3</b>
<b>CO4</b>	classify data accessing strategies in different types of database systems	<b>K4</b>
<b>CO5</b>	appraise how advanced databases differ from traditional databases	<b>K5</b>
<b>CO6</b>	build a complete relational database design with proper normalizations	<b>K6</b>

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PCA1CC03		Core Course - 3: Relational Database Management Systems							4	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	3	1	2	2	2	3	2	2	2.2
CO2	3	3	2	1	1	3	2	3	2	2	2.2
CO3	3	2	3	1	1	3	3	3	2	2	2.3
CO4	2	3	3	1	3	1	3	2	2	3	2.3
CO5	3	2	3	2	2	2	2	3	1	2	2.2
CO6	3	3	3	2	3	3	2	3	2	3	2.4
Mean overall Score											2.26 (High)

Semester	Course Code	Title of the Course	Hours	Credits
1	23PCA1CP01	Core Practical - 1: Data Structures using C++	4	2

## C++

1. Class and Objects
2. Functions
3. Constructors
4. Inheritance
5. Pointers
6. File Handling

## Data Structure

7. Array
8. Stack and Queue
9. Linked List
10. Binary Tree Traversals

<b>Semester</b>	<b>Course Code</b>	<b>Title of the Course</b>	<b>Hours</b>	<b>Credits</b>
<b>1</b>	<b>23PCA1CP02</b>	<b>Core Practical - 2: RDBMS</b>	<b>4</b>	<b>2</b>

## **SQL**

1. DDL, DML and DCL Queries
2. Set Operations
3. Views
4. Joins
5. Sub Queries
6. Indexes, Sequence and Synonyms

## **PL/SQL**

7. Cursors
8. Functions and Procedures
9. Packages
10. Triggers

## **FORMS AND REPORTS**

11. Forms – Menus, Buttons, LOVs, Master-Detail form design
12. Simple Report Design

Semester	Course Code	Title of the Course	Hours	Credits
1	23PCA1ES01	<b>Elective - 1:</b> Accounting and Financial Management	4	3

Course Objectives
To understand the fundamental principles of accounting
To develop the ability to analyze and interpret financial statements
To critically analyze and provide recommendations to improve the operations of organizations
To acquire the skills to prepare functional budgets and understand their characteristics.
To develop a comprehensive understanding of project appraisal techniques

#### **UNIT I: Introduction to the Principles of Accounting (12 hours)**

Principles of double entry -Assets and Liabilities - Accounting records and systems - Trial balance and preparation of financial statements - Trading, Manufacturing, Profit and Loss accounts, Balance Sheet including adjustments (Simple problems only).

#### **UNIT II: Analysis and Interpreting Accounts and Financial Statements (12 hours)**

Ratio analysis - Use of ratios in interpreting the final accounts (trading accounts and loss a/c and balance sheet) - final accounts to ratios as well as ratios to final accounts.

#### **UNIT III: Break-even analysis and Marginal Costing (12 hours)**

Meaning of variable cost and fixed cost – Cost-Volume -Profit analysis – calculation of breakeven point, Profit planning, sales planning and other decision – making analysis involving break - even analysis - Computer Accounting and algorithm.(differential cost analysis to be omitted)

#### **UNIT IV: Budget/Forecasting (12 hours)**

Preparation of and Characteristics of functional budgets, Production, sales, Purchases, cash and flexible budgets.

#### **UNIT V: Project Appraisal (12 hours)**

Method of capital investment decision making: Payback method , ARR method - Discounted cash flows - Net Present values - Internal rate of return - Sensitivity analysis - Cost of capital

<b>Teaching Methodology</b>	Lecture-based Teaching, Case-Studies and Problem Solving, Problem-based learning
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#### **Books for Study**

1. Shukla, M. C. & Grewal, T. S. (1991). *Advanced Accounts*, S. Chand & Co.
2. Gupta R.L. & Radhaswamy, M. (1991). *Advanced Accounts* Vol. II, Sultan Chand & Sons.



3. Maheswari, S. N. (2021). *Principles of Management Accounting*. Sultan Chand.
4. Ramachandran, R. & Srinivasan, S. (2017). *Management Accounting (Theories, Problems & Solutions)* (6th ed.). Sriram Publications.

#### Books for Reference

1. Kuchhal, S. C. (1980). *Financial Management*. Chaitanya.
2. Mohan, M. & Goyal, S. N. (1987). *Principles of Management Accounting*. Arya Sahithya Bhawan.
3. Hingorani, N. L. & Ramanathan, A. R. (1992). *Management Accounting* (5<sup>th</sup> ed.). Sultan Chand.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	recall and comprehend the fundamental principles, concepts, and terminology of accounting	K1
CO2	explain the purpose and significance of financial statements in business decision-making	K2
CO3	solve accounting problems and make informed decisions based on financial data and analysis	K3
CO4	compare the findings from financial analysis and provide insights and recommendations for management	K4
CO5	assess the effectiveness of budgeting and forecasting in planning and controlling financial activities	K5
CO6	elaborate the importance of ethical considerations in accounting practices and decision-making	K6

Relationship Matrix												
Semester	Course code		Title of the Course								Hours	Credits
1	23PCA1ES01		Elective - 1: Accounting and Financial Management								4	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	2	2	3	2	3	2	2	2	1	2.2	
CO2	3	3	1	3	2	2	3	2	2	1	2.2	
CO3	1	2	3	2	2	2	3	2	3	2	2.2	
CO4	3	3	1	2	1	1	2	3	2	3	2.1	
CO5	2	3	2	3	3	3	2	2	2	2	2.4	
CO6	2	3	2	3	3	3	2	2	2	2	2.4	
Mean overall Score											2.3 (High)	

Semester	Course Code	Title of the Course	Hours	Credits
1	23PCA1ES02	Elective - 2: Theory of Computation	4	3

Course Objectives
To give an overview of the theoretical foundations of computer science from the perspective of formal languages
To illustrate finite state machines to solve problems in computing
To explain the hierarchy of problems arising in theory of computation
To familiarize various types of grammar
To use basic concepts of formal languages and finite automata techniques

### **UNIT I: Review of Mathematical Theory (12 Hours)**

COMBINATORICS Review of Permutation and Combination - Mathematical Induction - Pigeon hole principle - Principle of Inclusion and Exclusion - generating function - Recurrence relations. Statements – Connectives – Truth Tables – Normal forms – Predicate calculus – Inference – Theory for Statement Calculus and Predicate Calculus

### **UNIT II: Regular Languages and Finite Automata (12 Hours)**

Regular Expressions, Regular Languages, Application of Finite Automata, Automata with output - Moore machine & Mealy machine, Finite Automata, Memory requirement in a recognizer, Definitions, union- intersection and complement of regular languages, Non-Deterministic Finite Automata, Conversion from NFA to FA- Non-Deterministic Finite Automata, Conversion of NFA- to NFA, Kleene's Theorem, Minimization of Finite automata, Regular And Non Regular Languages – pumping lemma.

### **UNIT III: Context free grammar (CFG) (12 Hours)**

Definitions and Examples, Unions Concatenations and Kleene's of Context free language, Regular Grammar for Regular Language, Derivations and Ambiguity, Unambiguous CFG and Algebraic Expressions, Backaus Naur Form (BNF), Normal Form – CNF.

### **UNIT IV: Pushdown Automata, CFL and NCFL (12 Hours)**

Definitions, Deterministic PDA, Equivalence of CFG and PDA & Conversion, Pumping lemma for CFL, Intersections and Complements of CFL, Non-CFL.

### **UNIT V: Turing Machine (TM) (12 Hours)**

TM Definition, Model of Computation, Turing Machine as Language Acceptor, TM that Compute Partial Function, Church Turing Thesis, Combining TM, Variations Of TM, Non-Deterministic TM, Universal TM, Recursively and Enumerable Languages, Context sensitive languages and Chomsky hierarchy.

**Note: Emphasis is given only on basic concepts and problems (No Proof and Derivations)**

<b>Teaching Methodology</b>	Chalk and Talk, Videos, PPTs, Group Discussion and Problem solving
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### **Books for Study**

1. Tremblay, J. P. & Manohar, R. (1997). *Discrete Mathematical Structures with Applications to Computer Science*. TATA McGraw-Hill Edition.
2. Hopcroft, J. E. & Ullman, J. D. (1979). *Introduction to Automata Theory, Languages and Computation*. Narosa Publishing House.
3. Linz, P. (2016). *An Introduction to Formal Languages and Automata* (6<sup>th</sup> ed.). Jones & Bartlett Learning.

### **Reference Books**

1. Mishra, K. L. P. & Chandrashekar, N. (2003). *Theory of Computer Science- Automata Languages and Computation* (2<sup>nd</sup> ed.). Prentice Hall.
2. Hopcroft, J. E., Motwani, R. & Ullman, J. D. (2007). *Introduction to Automata Theory Languages and Computation* (3<sup>rd</sup> ed.). Pearson Education.

### **Web References**

1. <https://nptel.ac.in/courses/106106049>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	familiarize with the basics of Theory of Computation	K1
CO2	apply the principles of languages and finite automata to solve problems related to regular expressions, regular languages, finite automata with output, memory requirements, and operations on languages	K2
CO3	demonstrate proficiency in grammars by defining and constructing grammars for various languages, understanding the concepts of ambiguity, unambiguity, and normal forms	K3
CO4	understand the concept and functionality of machines as a model of computation, including language acceptance, computation of partial functions	K4
CO5	apply critical thinking and problem-solving skills to analyze complex computational problems and devise appropriate solutions using the concepts learned in theory of computation	K5
CO6	demonstrate advanced knowledge and understanding of theoretical aspects of computation, including advanced topics such as advanced combinatorics, advanced formal languages, complexity theory, and computability theory	K6

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23PCA1ES02	Elective - 2: Theory of Computation								4	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	2	3	2	2	3	2	1	3	2.3
CO2	1	2	2	3	2	2	2	3	2	3	2.2
CO3	2	2	3	3	3	1	3	3	3	2	2.5
CO4	2	3	3	2	2	3	3	2	3	2	2.5
CO5	1	2	2	2	3	2	3	3	3	3	2.4
CO6	1	2	2	3	2	2	3	2	2	3	2.2
Mean overall Score											2.35 (High)

Semester	Course Code	Title of the Course	Hours	Credits
1	23PCA1AE01	Ability Enhancement Course: Programming in Java	2	1

Course Objectives
To understand the fundamentals of Object-Oriented Programming
To familiar with the syntax and structure of Java programming
To explore the different data types and operators in Java
To understand the significance of decision-making statements in Java programming
To gain knowledge about classes and objects in Java

#### **UNIT I: Introduction to OOPS (6 hours)**

Paradigms of Programming Languages –Basic concepts of Object Oriented Programming – Differences between Procedure Oriented Programming and Object Oriented programming - Benefits of OOPs – Application of OOPs.

#### **UNIT II: Introduction to Java (6 hours)**

History – Java features – Java Environment – JDK – API. Introduction to Java: Types of java program – Creating and Executing a Java program – Java Tokens- Java Virtual Machine (JVM) – Command Line Arguments –Comments in Java program.

#### **UNIT III: Data types and Operators (6 hours)**

Constants – Variables – Data types - Scope of variables – Type casting – Operators: Special operators –Expressions – Evaluation of Expressions.

#### **UNIT IV: Looping Statements and Arrays (6 hours)**

Decision making and branching statements- Decision making and Looping– break – continue statement- Arrays: One Dimensional Array – Multidimensional Array.

#### **UNIT V: Class and objects (6 hours)**

Defining a class – Methods – Creating objects– Accessing class members – Constructors – Method overloading – Static members – this keyword – Inheritance: Defining inheritance – types of inheritance – JDBC Connectivity.

#### **List of Practical's**

1. Write a Java program to find area and perimeter of circle.
2. Write a java Program to find factorial of a given number.
3. Write a java program to find simple and compound Interest
4. Write a Java program to find sum of n numbers using array
5. Write a simple Java program using class & objects.

Teaching Methodology	PPT, Demonstration
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**Books for Study**

1. Balagurusamy, E. (2014). *Programming with Java* (5<sup>th</sup> ed.). Tata McGraw Hill Education (India) Private Limited.
2. Sagayaraj et al. (2018). *Java Programming for Core and Advanced Learners*. Universities Press (India) Private Limited.

**Books for Reference**

1. Schildt, H. (2007). *The complete reference Java* (7<sup>th</sup> ed.). Tata McGraw Hill Education (India) Private Limited.
2. Muthu, C. (2011). *Programming with Java* (2<sup>nd</sup> ed.). Vijay Nicole Imprints Private Limited.

**Web Resources**

1. <https://www.javatpoint.com/java-tutorial>
2. <https://www.geeksforgeeks.org/java/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	recall the fundamentals concepts in java programming.	K4
CO2	understand the different types of inheritance.	K5
CO3	apply the object-oriented programming concepts to write simple java programs.	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PCA1AE01		Ability Enhancement Course: Programming in Java							2	1
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	2	1	1	3	3	3	2	3	2.3
CO2	3	3	2	2	1	3	2	3	2	2	2.32
CO3	3	3	3	2	2	3	3	2	2	2	2.5
Mean overall Score											2.4 (High)

Semester	Course Code	Title of the Course	Hours	Credits
1	23PCA1BC01	Bridge Course	30	2

Course Objectives
To provide the basic Concepts in Information Technology
To provide the concepts of mathematical logic and discrete structures
To provide the mathematical logic for solving problems
To understand the fundamental syntax and concepts of C programming, Control statements and Looping structures
To write programs using various control structures, strings, arrays and pointers.

### **UNIT I: Fundamentals of Information Technology**

Introduction to Computers – Generation of Computers – Classification of Digital Computer – Anatomy of Digital Computer. CPU and Memory – Secondary Storage Devices – Input Devices – Output Devices. Introduction to Computer Software – Programming Language – Operating Systems - Introduction to Database Management System.

### **UNIT II: Mathematical Foundations for Computer Science**

Mathematical Logic: Statements and Notation – Connectives-Statement. Formulas and Truth Tables – Tautologies – Equivalence of Formulas – Duality Law. Tautological implications – Theory of inference – validity using truth tables – Rules of Inference.

### **UNIT III: Problem Solving Techniques**

Algorithms – Flow charts – Developing algorithms and flowcharts for solving simple problems using sequential, selection and iterative programming Structures.

### **UNIT IV: Programming In C**

Structure of a C program – Data Types – Constants and Variables – Operators and Expressions – Control structures – Looping structures. Arrays – Functions – Built-in-functions – User defined functions – Scope of Variables – Passing Arrays to function – Strings and pointers.

### **UNIT V: Coding Practices**

Simple Programs using Operators – Branching structures – Looping structures – Arrays Strings – Functions – Structures – Union – Pointers.

<b>Teaching Methodology</b>	Lecture-based instruction, Project-based learning, Demonstration
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### **Books for Study**

1. Leon, A. & Leon, M. (2009). *Fundamentals of Information Technology* (2<sup>nd</sup> ed.). Vikas Publishing House Pvt. Ltd.
2. Tremblay, J. P. & Manohar, R. (2008). *Discrete Mathematical Structures with Applications to Computer Science* (1<sup>st</sup> ed.). McGraw-Hill International Edition.
3. Jaiswal, S. (2009). *Information Technology Today* (4<sup>th</sup> ed.). Galgotia Publications.
4. Balagurusamy, E. (2016). *Programming in ANSI C* (7<sup>th</sup> ed.). Tata McGraw Hill Education Private Limited.

### **Books for Reference**

1. Gottfried, B. & Schaum. (2018). *Outline Programming with C* (4<sup>th</sup> ed.). Tata McGraw Hill Education Private Limited.
2. Kernighan & Ritchie. (1998). *The C Programming Language* (2<sup>nd</sup> ed.). Prentice Hall.
3. Kanetkar, Y. (2021). *Let Us C* (18<sup>th</sup> ed.). BPB Publications.





## DEPARTMENT OF DATA SCIENCE St. JOSEPH'S COLLEGE (Autonomous)

Special Heritage Status awarded by UGC, College with Potential for Excellence by UGC  
Accredited at 'A++' Grade (Cycle IV) by NAAC, DBT-STAR & DST - FIST Sponsored College

**TIRUCHIRAPPALLI - 620 002, S.INDIA**

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### Minutes of the Board of Studies Meeting

The Board of Studies meeting of the Department of Data Science was convened on 21-07-2023 (Friday) at 3:00 p.m. in the faculty room of the Department as per the notice SJCPNNo.017/2023-24 dated 14.07.2023 from the Dean, School of Biological Sciences to discuss and finalize the first Semester courses of TANSCH model M.Sc(Data Science) Syllabus, Certificate courses for the academic year 2023-2024, Value added Courses for the academic year 2023-2024, evaluation pattern and eligibility criteria for M.Sc (Data Science) course.

#### **Attendees**

##### **External experts:**

- Dr. H. Karamath Ali, Associate Professor, (University Nominee)  
Department of Computer Science,  
Thanthai Periyar Government Arts and Science College (Autonomous),  
Tiruchirappalli  
Email : hkaramath@yahoo.com  
Mobile: +919443628962
- Dr. S. Domnic, Associate Professor, (Subject Expert)  
Department of Computer Applications  
National Institute of Technology,  
Tiruchirappalli – 620 015.  
E-mail: domnic@nitt.edu  
Mobile: 9994904763

##### **Faculty members:**

- |                            |  |
|----------------------------|--|
| 1. Dr. L.Arockiam          | Associate Professor and Head of the Department |
| 2. Dr. V.Arul Kumar        | Assistant Professor                            |
| 3. Dr. I.Priya Stella Mary | Assistant Professor                            |
| 4. Dr. M.Kriushanth        | Assistant Professor                            |
| 5. Dr. A.Beatrice Dorothy  | Assistant Professor                            |

The meeting commenced with a silent prayer. Dr. L. Arockiam extended a warm welcome to the external experts and the Department faculty members.

**HOD**  
Department of Data Science  
St. Joseph's College (Autonomous)  
Tiruchirappalli - 620 002.

The following aspects were discussed and finalized during the meeting

- The POs, PSOs, Course Pattern, the Course Code, Course Title, Hours, Credits for all the first Semester courses of TANSCHÉ model M.Sc(Data Science) Syllabus were verified and tuned in accordance with the requirements specified in the first-semester course pattern for PG(2023 – 24).
- Certificate Courses and Value-added Courses for the academic year 2023-2024 were unanimously decided as follows

**Certificate Courses**

- (i) Artificial Intelligence [Course Code : yet to be assigned]
- (ii) Internet of Things [Course Code : yet to be assigned]

**Value added Courses**

- (i) Data Analytics [Course Code : yet to be assigned]
- (ii) Python for Data Analytics [Course Code : yet to be assigned]

- The proposed Question Pattern for Mid/End Semester and Semester examinations, as presented by the CoE, was accepted without any modifications. The details are as follow

**For Mid & End Semester Examinations**

SECTION – A Answer all the questions:	$7 \times 1 = 7$
SECTION – B Answer all the questions:	$5 \times 3 = 15$
SECTION – C Answer ALL the questions by choosing either / or	$3 \times 6 = 18$
SECTION – D Answer any TWO out of Three questions	$2 \times 10 = 20$
	<b>TOTAL = 60</b>

**For Semester Examination**

SECTION – A Answer all the questions:	$10 \times 1 = 10$
SECTION – B Answer all the questions:	$10 \times 3 = 30$
SECTION – C Answer ALL the questions by choosing either / or	$5 \times 6 = 30$
SECTION – D Answer any THREE out of Five questions	$3 \times 10 = 30$
	<b>TOTAL= 100</b>

- It was decided to treat the Ability Enhancement Course: Data Science using Excel [Course Code : 23PDS1AE01] purely as an internal course
- The eligibility criteria listed below for joining the M.Sc (Data Science) Course were explored and approved by the BoS members B.Sc., (Computer Science/Computer Applications/Information Technology)/ B.VoC (SD and SE)/ B.E(CSE)/B.Tech(IT)/B.Sc.,(Mathematics/Statistics)/Any Science degree with Mathematics / Statistics as allied courses

**Eligibility criteria**

- B.Sc., (Computer Science/Computer Applications/Information Technology)/ B.VoC (SD and SE)/ B.E(CSE)/B.Tech(IT)/B.Sc.,(Mathematics/Statistics)/Any Science degree with Mathematics / Statistics as allied courses
- The meeting was concluded with a vote of thanks proposed by Dr. M. Kriushanth.

A.T.

**HOD**  
**Department of Data Science**  
**St. Joseph's College (Autonomous)**  
**Trichy - 620 002.**



## Department of Data Science

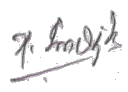






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### Attendees

- |                           |                            |  |
|---------------------------|----------------------------|--|
| 1. Dr. H. Karamath Ali    | Associate Professor        |    |
| 2. Dr. S. Dominic         | Associate Professor        |    |
| 3. Dr.L.Arockiam          | Associate Professor & Head |    |
| 4. Dr.V.Arul Kumar        | Assistant Professor        |    |
| 5. Dr.I.Priya Stella Mary | Assistant Professor        |    |
| 6. Dr.Kriushanth          | Assistant Professor        |   |
| 7. Dr.A.Beatrice Dorothy  | Assistant Professor        |  |

<b>PROGRAMME PATTERN</b>			
<b>M.Sc. DATA SCIENCE</b>			
<b>Course Code</b>	<b>Title of the Course</b>	<b>Hours</b>	<b>Credits</b>
23PDS1CC01	<b>Core Course - 1:</b> Fundamentals of Data Science	6	5
23PDS1CC02	<b>Core Course - 2:</b> Mathematics for Data Science	6	5
23PDS1CC03	<b>Core Course - 3:</b> Statistics – 1	6	4
23PDS1ES01	<b>Elective - 1:</b> Data Structures and Algorithms	5	3
23PDS1ES02	<b>Elective - 2:</b> Java Programming	5	3
23PDS1AE01	<b>Ability Enhancement Course:</b> Data Science using Excel	2	1
	<b>Total</b>	<b>30</b>	<b>21</b>

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PDS1CC01	Core Course - 1: Fundamentals of Data Science	6	5

Course Objectives
To introduce students to the field of data science and its various applications
To provide students with a foundation in the mathematical and statistical concepts that are essential for data science
To teach students how to collect, clean, and analyse data using data mining and data warehousing techniques
To train students in the use of visualization techniques to communicate the results of their data analysis
To expose students to the latest trends in data science and its applications

#### **UNIT I: Introduction of Data Science (18 Hours)**

Data Science – Data science Venn diagram - Basic terminology – Data science case studies- Types of data – levels of data- Types of data analytics - Descriptive Analytics-Diagnostic analytics- Predictive analytics- Prescriptive analytics- Five steps of Data science

#### **UNIT II: Mathematical Preliminaries (18 Hours)**

Basic Maths – mathematics as discipline – basic symbols and terminology –linear algebra. Basic Probability – definitions- probability – Bayesian vs frequentist – compound events – conditional probability – rules of probability.

#### **UNIT III: Data Mining and Data Warehousing (18 Hours)**

Introduction to Data warehousing – Design consideration of data warehouse - Data loading process – case study – Data mining – Data mining techniques – Tools and platforms – case study

#### **UNIT IV: Visualizing Data (18 Hours)**

Exploratory Data Analysis – Developing the visual aesthetic – chart types – Great visualizations – Reading graphs – Interactive visualizations

#### **UNIT V: Data Science – Recent Trends (18 Hours)**

Applications of Data Science, recent trends in various data collection and analysis techniques, various visualization techniques, application development methods of used in data science.

<b>Teaching Methodology</b>	Lecture-based instruction, Project-based learning, Discovery Learning
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### **Books for Study**

1. Sinan, O. (2016). *Principles of data science*. Packt Publishing.
2. Maheshwari, A. (2023). *Data analytics made accessible* (2<sup>nd</sup> ed.). Amazon Digital Services.
3. Skiena, S. S. (2017). *The data science design manual*. Springer International Publishing

### **Books for Reference**

1. Jean, H. (2023). *Data science*. Certybox Education.
2. Pierson, L. (2021). *Data science for dummies*. John Wiley & Sons.
3. Grus, J. (2019). *Data science from scratch: First principles with python*. O'Reilly Media.
4. Blum, A., Hopcroft, J. & Kannan, R. (2020). *Foundations of data science*. Cambridge University Press.

### **Web Sources**

1. <https://www.analyticsvidhya.com/>
2. <https://www.simplilearn.com>
3. <https://www.ibm.com/in-en/topics/data-science>
4. <https://www.mygreatlearning.com/blog/what-is-data-science/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
<b>CO1</b>	define the terms "data" and "analytics" and explain their different types.	<b>K1</b>
<b>CO2</b>	explain the basic mathematical concepts used in data science.	<b>K2</b>
<b>CO3</b>	classify the different types of data intensive operations and tools.	<b>K3</b>
<b>CO4</b>	describe the five steps of the data science process.	<b>K4</b>
<b>CO5</b>	identify the different tools and methods for analysing data.	<b>K5</b>
<b>CO6</b>	analyse the recent potential applications and development of data science.	<b>K6</b>

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
<b>1</b>	<b>23PDS1CC01</b>	<b>Core Course - 1: Fundamentals of Data Science</b>								<b>6</b>	<b>5</b>
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
<b>CO1</b>	3	3	3	2	1	3	3	3	2	1	2.4
<b>CO2</b>	2	2	3	2	2	2	2	3	2	2	2.2
<b>CO3</b>	3	2	3	2	2	3	2	3	2	2	2.4
<b>CO4</b>	3	2	2	2	2	3	2	2	2	2	2.2
<b>CO5</b>	2	3	3	2	1	2	3	3	2	1	2.2
<b>CO6</b>	2	3	3	2	1	2	3	3	2	1	2.2
Mean overall Score											<b>2.3 (High)</b>



Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PDS1CC02	Core Course - 2: Mathematics for Data Science	6	5

Course Objectives
To develop a deep understanding of vectors and matrices and their applications in data science.
To explore the four fundamental subspaces and their significance in solving linear systems, analysing data, and understanding the structure of matrices.
To investigate the concepts of orthogonality and the role of determinants in matrix properties and solving linear equations.
To gain proficiency in eigen values and eigen vectors and their importance in data science applications.
To Understand the concept of Singular Value Decomposition (SVD) such as dimensionality reduction, principal component analysis (PCA) and understanding the behaviour of linear transformations.

#### **UNIT I: Vectors and Matrices (18 Hours)**

Vectors and Linear Combinations-Lengths and Angles from Dot Products-Matrices and Their Column Spaces-Matrix Multiplication  $AB$  and  $CR$

Solving Linear Equations  $Ax = b$  - Elimination and Back Substitution-Elimination Matrices and Inverse Matrices-Matrix Computations and  $A = LU$ -Permutations and Transposes

#### **UNIT II: The Four Fundamental Subspaces (18 Hours)**

Vector Spaces and Subspaces-Computing the Nullspace by Elimination:  $A = CR$ -The Complete Solution to  $Ax = b$ - Independence, Basis, and Dimension-Dimensions of the Four Subspaces

#### **UNIT III: Orthogonality and Determinants (18 Hours)**

Orthogonality of Vectors and Subspaces-Projections onto Lines and Subspaces-Least Squares Approximations-Orthonormal Bases and Gram-Schmidt-The Pseudo inverse of a Matrix

3 by 3 Determinants and Cofactors-Computing and Using Determinants-Areas and Volumes by Determinants

#### **UNIT IV: Eigenvalues and Eigenvectors (18 Hours)**

Diagonalizing a Matrix-Symmetric Positive Definite Matrices-Complex Numbers and Vectors and Matrices-Solving Linear Differential Equations

#### **UNIT V: The Singular Value Decomposition (SVD) and Linear Transformations (18 Hours)**

Singular Values and Singular Vectors-Image Processing by Linear Algebra-Principal Component Analysis (PCA by the SVD)

The Idea of a Linear Transformation-The Matrix of a Linear Transformation-The Search for a Good Basis

<b>Teaching Methodology</b>	lecture-based instruction, technology-based learning, group learning, individual learning, inquiry-based learning
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### **Books for Study**

1. Strang, G. (2023). *Introduction to linear algebra* (6th ed.). Wellesley - Cambridge Press.

### **Books for Reference**

1. Lay, D., Lay, S. & McDonald, J. (2014). *Linear algebra and its applications* (5th Ed.). Pearsons.
2. Axler, S. (2015). *Linear algebra done right (Undergraduate Texts in Mathematics)* (3rd ed.). Springer.
3. Hefferon, J. (2020). *Linear algebra* (4th ed.). Orthogonal Publishing L3c
4. Philips, J. M. (2021). *Mathematical foundations for data analysis* (1st ed.). Springer Nature Switzerland AG.

### **Web Sources**

1. <https://joshua.smcvt.edu/linearalgebra/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	recall and reproduce fundamental mathematical concepts relevant to data science	K1
CO2	explain the underlying principles of mathematical techniques and interpret various fundamental subspaces.	K2
CO3	apply and utilize eigenvalue and eigenvector concepts to analyze the behavior of linear transformations and diagonalize matrices.	K3
CO4	analyze and evaluate different linear transformations in terms of their effects on vector spaces and subspaces.	K4
CO5	evaluate the impact of linear transformations on data quality, interpretability, and computational complexity in various data science scenarios.	K5
CO6	formulate creative solutions by applying mathematical techniques to optimize linear transformations and matrix operations in data science applications.	K6

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23PDS1CC02	Core Course - 2: Mathematics for Data Science								6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	3	2	2	3	2	3	2	3	2.5
CO2	2	3	3	2	1	2	3	2	1	3	2.2
CO3	3	2	3	2	2	3	2	2	2	2	2.3
CO4	3	3	2	2	1	3	3	3	2	3	2.5
CO5	2	3	3	2	2	3	3	2	2	3	2.5
CO6	2	3	3	2	1	3	3	2	2	3	2.4
Mean overall Score											2.4 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PDS1CC03	Core Course - 3: Statistics – 1	6	4

Course Objectives
To develop a solid understanding of the fundamental concepts and principles of statistics
To acquire the skills to analyse and interpret data
To gain proficiency in applying inferential statistics to make inferences and draw conclusions about populations based on sample data
To develop an understanding of probability models and their applications in solving real-world problems
To learn how to use statistical software and tools effectively to analyse data, generate reports, and present statistical findings in a concise manner

### UNIT I: Introduction to Statistics

(18 Hours)

Introduction-Data Collection and Descriptive Statistics-Inferential Statistics and Probability Models-Populations and Samples-A Brief History of Statistics- **Organization and Presentation of Data**-Origin and development of Statistics, Scope, limitation and misuse of statistics. Types of data: primary, secondary, quantitative and qualitative data. Types of Measurements: nominal, ordinal, discrete and continuous data. Presentation of data by tables: construction of frequency distributions for discrete and continuous data, graphical representation of a frequency distribution by histogram and frequency polygon, cumulative frequency distributions

### UNIT II: Descriptive Statistics

(18 Hours)

Introduction-Describing Data Sets-Frequency Tables and Graphs-Relative Frequency Tables and Graphs-Grouped Data, Histograms, Ogives, and Stem and Leaf Plots-Summarizing Data Sets- Sample Mean, Sample Median, and Sample Mode-Sample Variance and Sample Standard Deviation-Sample Percentiles and Box Plots-Chebyshev's Inequality-Normal Data Sets-Paired Data Sets and the Sample Correlation Coefficient – **Correlation**: Scatter plot, Karl Pearson coefficient of correlation, Spearman's rank correlation coefficient, multiple and partial correlations (for 3 variates only).

### Unit III: Random Variables and Expectation

(18 Hours)

Random Variables-Types of Random Variables-Jointly Distributed Random Variables-Independent Random Variables-Conditional Distributions-Expectation-Properties of the Expected Value-Expected Value of Sums of Random Variables-Variance-Covariance and Variance of Sums of Random Variables-Moment Generating Functions-Chebyshev's Inequality and the Weak Law of Large Numbers- **Special random variables**: The Bernoulli and Binomial Random Variables-Computing the Binomial Distribution Function-The Poisson Random Variable-Computing the Poisson Distribution Function-The Hypergeometric Random Variable- The Uniform Random Variable- Normal Random Variables-Exponential Random Variables-The Poisson Process-The Gamma Distribution-Distributions Arising from the Normal-The Chi- Square Distribution-The t-Distribution-The F Distribution-The Logistics Distribution

**UNIT IV: Distributions of Sampling Statistics****(18 Hours)**

Introduction-The Sample Mean-The Central Limit Theorem-Approximate Distribution of the Sample Mean, the need for larger samples -The Sample Variance-Sampling Distributions from a Normal Population-Distribution of the Sample Mean, Joint Distribution of X and S-Sampling from a Finite Population- **Parameter estimation:** Introduction-Maximum Likelihood Estimators-Interval Estimates-Confidence Interval for a Normal Mean When the Variance is Unknown-Confidence Intervals for the Variance of a Normal Distribution - Estimating the Difference in Means of Two Normal Populations-Approximate Confidence Interval for the Mean of a Bernoulli Random Variable-Confidence Interval of the Mean of the Exponential Distribution-The Bayes Estimator

**UNIT V: Basics and Elements of Probability****(18 Hours)**

Random experiment, sample point and sample space, event, algebra of events. Definition of Probability: classical, empirical and axiomatic approaches to probability, properties of probability. Theorems on probability, conditional probability and independent events, Laws of total probability, Baye's theorem and its applications-Introduction-Sample Space and Events- Venn Diagrams and the Algebra of Events-Axioms of Probability-Sample Spaces Having Equally Likely Outcomes

<b>Teaching Methodology</b>	Lecture, Problem solving and case studies, Collaborative learning, interactive online sources, Visualization techniques
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**Books for Study**

1. Ross, S. M. (2023). *Introduction to probability and statistics for engineers and scientists* (5th ed.), Elsevier Academic Press.
2. Rohatgi, V. K. & Saleh, E. (2015). *An introduction to probability and statistics* (3rd ed.), John Wiley & Sons Inc.
3. Gupta, S. C. & Kapoor, V. K. (2014). *Fundamentals of mathematical statistics* (11th ed.), Sultan Chand & Sons.

**Books for Reference**

1. Frost, J. (2020). *Introduction to statistics: An intuitive guide for analyzing data and unlocking discoveries*. Jim Publishing.

**Web Sources**

1. <https://onlinestatbook.com/2/> <https://www.simplilearn.com/tutorials/statistics-tutorial>
2. <https://towardsdatascience.com/fundamentals-of-statistics-for-data-scientists-and-data-analysts-69d93a05aae7>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	recall the basic statistical concepts, formulas, and definitions	K1
CO2	interpret the statistical findings and results in a clear and coherent manner	K2
CO3	apply the different statistical Methods on datasets	K3
CO4	analyse and evaluate the validity and reliability of statistical data	K4
CO5	determine the shape of the distribution of data	K5
CO6	design and execute statistical experiments or studies to investigate specific research questions	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PDS1CC03		Core Course - 3: Statistics – 1							6	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO 2	PSO3	PSO4	PSO5	
CO1	3	3	3	2	1	3	3	3	2	1	2.4
CO2	2	2	3	2	2	2	2	3	2	2	2.2
CO3	3	2	3	2	2	3	2	3	2	2	2.4
CO4	3	2	2	2	2	3	2	2	2	2	2.2
CO5	2	3	3	2	1	2	3	3	2	1	2.2
CO6	2	3	3	2	1	2	3	3	2	1	2.2
Mean overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PDS1ES01	Elective - 1: Data Structures and Algorithms	5	3

Course Objectives
To understand fundamental concepts of Data Structures
To enhance the student's ability to deal with problem solving techniques
To enable the students for appropriate use of hashing techniques
To enrich the proper understanding of various sorting techniques
To choose appropriate graph techniques that the students can apply in various fields.

### UNIT I: Basic Concepts (15 Hours)

Basic steps in complete development of Algorithm – Analysis and complexity of Algorithm – Asymptotic notations – Problem Solving techniques and examples. ADT: List ADT, Stacks ADT, Queue ADT

### UNIT II: Algorithm Design Mode (15 Hours)

Greedy Method - Divide and Conquer - Dynamic Programming – Backtracking – Branch and Bound

Trees: Preliminaries Binary Tree, Search Tree ADT, Binary Search Trees, AVL Trees, Tree Traversals, B-Trees

### UNIT III: Hashing (15 Hours)

General Idea, Hash Function, Separate Chaining, Open Addressing, Rehashing, Extendible Hashing, Priority Queues, Model, Simple Implementations, Binary Heap, Applications

### UNIT IV: Sorting (15 Hours)

Sorting - Preliminaries, Insertion Sort, Shell Sort, Heap Sort, Merge Sort, Quick Sort, External Sorting

### UNIT V: Graphs (15 Hours)

Definitions, Topological Sort, Shortest Path Algorithm, Minimum Spanning Tree, Application of Depth First Search. Theory of NP-Completeness: Formal language framework, Complexity classes – P, NP – NP Reducibility and NP-Complete, NP-Hard

Teaching Methodology	Instructive method, Problem solving, Group Discussion
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### Books for Study

1. Aho, Hopcroft, J. E. & Ullman, J. D. (2009). *Design and analysis of computer algorithms* (1st ed.), Addison-Wesley.
2. Horowitz & Sahani (2008). *Fundamentals of computer algorithms* (2nd ed.),

Computer Science Press.

3. Weiss (2002.), *M. A. Data structure and algorithm analysis in C* (2nd ed.), Pearson Education.

#### Books for Reference

1. Baase, S. & Gelder, A. V. (2008). *Computer algorithms introduction to design and analysis*. Pearson Education.
2. Goodrich, M. T. & Tamassia, R. (2006.). *Algorithm design: Foundations, analysis, and internet examples*. Wiley.

#### Web Sources

1. <https://www.programiz.com/dsa>
2. [https://www.tutorialspoint.com/data\\_structures\\_algorithms/index.htm](https://www.tutorialspoint.com/data_structures_algorithms/index.htm)
3. <https://www.javatpoint.com/data-structure-tutorial>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	recall the basic concepts of data structures and algorithms	K1
CO2	interpret the algorithm design mode	K2
CO3	apply the different hashing techniques	K3
CO4	analyze the sorting techniques	K4
CO5	determine the usages of graphs	K5
CO6	discuss the various NP completeness	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PDS1ES01		Elective - 1: Data Structures and Algorithms							5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	1	2	2	2	2	2	3	2	2	2
CO2	3	2	3	1	3	3	2	2	3	3	2.5
CO3	2	3	3	3	3	2	2	3	2	2	2.5
CO4	3	2	2	2	2	3	3	3	3	3	2.6
CO5	2	2	1	3	2	3	2	3	2	3	2.3
CO6	3	2	2	2	2	2	2	2	2	2	2.1
Mean overall Score											2.3 (High)



Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PDS1ES02	<b>Elective - 2:</b> Java Programming	5	3

Course Objectives
To develop knowledge and understand the fundamental concepts of Java Programming
To enhance the problem-solving skills with object-oriented programming
To enable the use of exception handling
To enrich a proper understanding of multithreading
To deploy event handling techniques to utilize the packages

### **UNIT I: Introduction to Java (15 Hours)**

Overview – Features - Fundamental OOPS concepts – JDK – JRE – JVM -Structure of a Java program - Data types – Variables – Arrays – Operators –Keywords - Naming Conventions - Control statements, Type conversion and Casting - Scanner - String - equals(), equals Ignore Case(), length()

### **UNIT II: Classes and Objects (15 Hours)**

Class – Objects – Methods - Method Overloading - Constructors – Constructor Overloading - this keyword - usage of static with data and methods – Garbage Collection - Access Control Inheritance: Concept – extends keyword - Single and Multilevel Inheritance – Composition – super keyword - Method Overriding - Abstract Classes - Dynamic Method Dispatch – Usage of final with data, methods and classes. Packages and Interfaces: Concepts - package and import keywords - Defining, Creating and Accessing a Package – Interfaces - Multiple Inheritance in Java, Extending and Initialising fields in Interfaces.

### **UNIT III: Exception Handling (15 Hours)**

Exception handling- Types of Exceptions- try, catch, throw, throws and finally keywords - User defined Exceptions. JDBC: Database Connectivity- Types of JDBC drivers- Executing statements Prepared statements- Callable statements - Mapping SQL types to Java Result Set Meta data

### **UNIT IV: Multithreading (15 Hours)**

Introduction - Life Cycle of a Thread, Thread class and Runnable Interface, Thread Priorities, Synchronisation. GUI Programming with JavaFX: JavaFX Basic Concepts – Packages - Stage and Scene Classes – Nodes and Scene Graphs – Layouts - The Application Class and the Lifecycle Methods - Launching a JavaFX Application - JavaFX Application Skeleton - Compiling and Running -Application Thread. JavaFX Controls: Label – Button – Image – Radio Button – Check Box – List View Combo Box- Text Field – Scroll Pane

### **UNIT V: Event Handling (15 Hours)**

Event Handling – Input Event, Action Event and Window Event. Java Library: Java.util – List, Array List

<b>Teaching Methodology</b>	Videos, PPT, Blackboard, Demonstration, Exercises
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### Book for Study

1. Schildt, H (2014). *Java: The complete reference*. McGraw-Hill Education Group, New York.

### Books for Reference

1. Eckel, B. (2006). *Thinking in Java* (4<sup>th</sup> ed.). Pearson Education, New Jersey.
2. Liang, Y. D. (2015). *Intro to Java programming, brief version*. Pearson Higher Ed, New Jersey.
3. Holmes, J. B. & Joyce, T. D. (2001). *Object-oriented programming with Java*. Jones & Bartlett Learning, Massachusetts.

### Web Sources

1. <http://docs.oracle.com/javase/tutorial/java/index.html/>
2. <http://www.java2s.com/Tutorial/Java/CatalogJava.htm/>
3. <https://www.edureka.co/blog/object-oriented-programming>

<b>Course Outcomes</b>		
<b>CO No.</b>	<b>CO-Statements</b>	<b>Cognitive Levels (K - Level)</b>
	On successful completion of this course, students will be able to	
<b>CO1</b>	recall the basic concepts of programming	<b>K1</b>
<b>CO2</b>	interpret the classes and objects	<b>K2</b>
<b>CO3</b>	apply the different object-oriented concepts	<b>K3</b>
<b>CO4</b>	analyze the usages of exception handling	<b>K4</b>
<b>CO5</b>	determine the GUI programming	<b>K5</b>
<b>CO6</b>	discuss the various types of event handling	<b>K6</b>

<b>Relationship Matrix</b>											
<b>Semester</b>	<b>Course code</b>		<b>Title of the Course</b>							<b>Hours</b>	<b>Credits</b>
<b>1</b>	<b>23PDS1ES02</b>		<b>Elective - 2: Java Programming</b>							<b>5</b>	<b>3</b>
<b>Course Outcomes</b>	<b>Programme Outcomes (POs)</b>					<b>Programme Specific Outcomes (PSOs)</b>					<b>Mean Score of COs</b>
	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	<b>PSO4</b>	<b>PSO5</b>	
<b>CO1</b>	2	3	2	3	3	3	3	3	2	3	2.7
<b>CO2</b>	2	3	2	2	3	2	3	2	2	2	2.3
<b>CO3</b>	3	3	2	2	2	2	2	2	2	2	2.2
<b>CO4</b>	2	2	2	3	2	3	2	2	2	3	2.3
<b>CO5</b>	3	3	2	2	1	1	2	3	2	3	2.2
<b>CO6</b>	3	3	2	2	2	2	2	2	2	2	2.2
<b>Mean overall Score</b>											<b>2.3 (High)</b>

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PDS1AE01	<b>Ability Enhancement Course:</b> Data Science using Excel	2	1

Course Objectives
To understand the basic components of Excel, including worksheets, workbooks, tabs, and ribbons
To gain proficiency in worksheet basics, including data entry, formatting, and organization
To apply formulas and functions effectively to perform calculations and analyse data in Excel
To explore data visualization techniques in Excel
To learn how to create pivot tables, add slicers and timelines, and manipulate calculated fields and items

#### **UNIT I: Getting Started with Excel (6 Hours)**

Worksheets and Workbooks- Navigation with Keyword- Tabs and Ribbons – File Menu - Quick Access Toolbar –Excel options – Create a new workbook- Understanding Worksheet Basics

#### **UNIT II: Protecting, Importing and exporting Data from Excel (6 Hours)**

Protect Workbook – Protect sheet and Allow Edit Ranges- Importing data into Excel: Importing from Text – Importing from Web – Importing from Database- Exporting Data from Excel: Export to file- Export to SharePoint List

#### **UNIT III: Perform Operations with Formulas and Functions (18 Hours)**

Understanding formulas – operators in formula – Defined Names – Calculations – functions in formula – Logical functions – Summarizing functions – Text functions – Lookup functions – Date and Time functions - Math functions – Statistical functions

#### **UNIT IV: Data Visualization with New Chart Types (18 Hours)**

Chart types and when to use them - Waterfall Chart- Histogram – Box and Whisker Chart- Tree map Chart – Gantt Chart – Milestone Chart -Macros in Excel: VBA Quick View – Enabling Developer Tab – Create Macro –Record Macro

#### **UNIT V: Putting Data into Pivots (18 Hours)**

Understanding the terminologies- Verify the source – Format Data for Sync- Recommended Pivot Tables - Setting Pivot table default layout – Adding Slicers & Timelines - Adding / Deleting calculated fields from Pivot – Adding / Deleting calculated items from Pivot - Consolidate data from different sources in Pivot

<b>Teaching Methodology</b>	Demonstration and Explanation, Hands-on Practice, Individual Projects
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### **Books for Study**

1. Nigam, M. (2019). *Advanced analytics with Excel* (2nd ed.). BPB Publications.
2. Wayne, L. W. (2019). *Microsoft Excel 2019: Data analysis & business model* (1<sup>st</sup> ed.), PHI Learning Pvt. Ltd.

### **Books for Reference**

1. Zhou, H. (2020). *Learn data mining through Excel: A step-by-step approach for understanding machine learning method* (1st ed). Apress.
2. Lalwani, L. (2019). *Excel 2019 all-in-one* (1st ed). BPB Publications

### **Web Source**

1. <https://www.techtarget.com/searchenterprisedesktop/definition/Excel>
2. <https://www.w3schools.com/EXCEL/index.php>
3. <https://support.microsoft.com/en-us/office/excel-video-training-9bc05390-e94c-46af-a5b3-d7c22f6990bb>
4. <https://www.techtarget.com/searchenterprisedesktop/definition/Excel>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	recall the Excel functions and formulas	K1
CO2	interpret descriptive statistics, charts, and graphs in Excel	K2
CO3	utilize Excel functions and formulas to perform data manipulation	K3
CO4	analyze and interpret data using Excel's data analysis tools	K4
CO5	evaluate and compare different data analysis techniques and approaches in Excel	K5
CO6	design and create comprehensive data visualizations, reports, and dashboards using Excel's advanced charting and visualization features	K6

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23PDS1AE01	Ability Enhancement Course: Data Science using Excel								2	1
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	3	2	1	3	3	3	2	1	2.4
CO2	2	2	3	2	2	2	2	3	2	2	2.2
CO3	3	2	3	2	2	3	2	3	2	2	2.4
CO4	3	2	2	2	2	3	2	2	2	2	2.2
CO5	2	3	3	2	1	2	3	3	2	1	2.2
CO6	2	3	3	2	1	2	3	3	2	1	2.2
Mean overall Score											2.3 (High)

## **Department of Information Technology**

### **Minutes of the Board of Studies meeting on 21-07-2023**

The Board of Studies meeting for BCA and M.Sc computer Science was held on 21<sup>st</sup> July 2023 at 11.30 AM. The meeting started with a silent prayer, following which Dr P Joseph Charles, Head of the Department expressed his note of welcome to the faculty members of the department for their presence.

The Head of the Department presented the course pattern and the first semester syllabi both for I BCA and I M.Sc Computer Science to be approved by the board.

The Head of the Department presented the Question paper Patterns of Mid & End semester tests as well as the Semester Examinations. The pattern prescribed by the College was approved by the members of the board unanimously.

The meeting came to an end with the thanking note of the HoD at 12.20 pm

BOARD OF STUDIES MEETING HELD ON 21.07.2023		
DEPARTMENT OF INFORMATION TECHNOLOGY		
St. JOSEPH'S COLLEGE(AUTONOMOUS)		
TIRUCHIRAPPALLI -620002		
S. No.	Name and address	Signature
1.	Dr. J.G.R. Sathiyaseelan Associate Professor & Head Department of Computer Science, Bishop Heber College (Autonomous), Tiruchirappalli – 620 017 (University Representative)	AAA
2.	Dr. A. Padma Priya Associate Professor, Dept. of Computer Science, Alagappa University, Karaikudi – 630 003, (Subject Expert)	AAA
3.	Mr. A. Vijay Xavier, Product Integration Analyst, Edgeverve System Ltd.,, No.44, Electronics City, Hosur Main Road, Bangalore – 560 100	AAA
4.	Dr. P. Joseph Charles	
5.	Dr. S. Hendry Leo Kanickam	
6.	Dr. A. Antony Prakash	
7.	Dr. V. Maria Antoniate Martin	
8.	Dr. T. Lucia Agnes Beena	
9.	Dr. P. Bastin Thiyagaraj	
10.	Dr. C. Venish Raja	
11.	Dr. R. Mangai Begum	
12.	Dr. A. Angelpreethi	
13.	Dr. D. Richard	
14.	Dr. I. Carol	
15.	Dr. T. Nikil Prakash	
16.	P. Naseem	
17.	K. Buvaneshwari	

PROGRAMME PATTERN				
INFORMATION TECHNOLOGY: BCA				
Part	Course Code	Title of the Course	Hours	Credits
I	23UTA11GL01A	General Tamil - 1 தமிழ் இலக்கிய வரலாறு - 1	5	3
	23UFR11GL01	French-1		
	23UHI11GL01	Hindi-1		
	23USA11GL01	Sanskrit-1		
II	23UEN12GE01	General English-1	5	3
III	23UBC13CC01	<b>Core Course - 1:</b> Python Programming	5	5
	23UBC13CP01	<b>Core Practical - 1:</b> Python	4	4
	23UMA13AC01B	<b>Allied Course - 1:</b> Numerical Methods	5	4
IV	23UBC14FC01	<b>Foundation Course:</b> Structured Programming Language in C	2	2
	23UBC14SE01	<b>Skill Enhancement Course - 1(Non Major Elective):</b> Fundamentals of Information Technology	2	2
	23UHE14VE01	<b>Value Education:</b> Essentials of Humanity	2	1
<b>Total</b>			<b>30</b>	<b>24</b>



Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23UBC13CC01	Core Course - 1: Python Programming	5	5

Course Outcomes
To make students understand the concepts of Python programming
To apply the OOPs concept in PYTHON programming
To impart knowledge on functions Function Arguments, Python Strings, Modules
To make the students learn best practices in PYTHON programming
To know the python file handling

### **UNIT I: Basics of Python Programming, Python Arrays (15 Hours)**

Basics of Python Programming: History of Python – Features of Python – Literal - Constants- Variables – Identifiers–Keywords-Built-in Data Types – Output Statements –Input Statements-Comments –Indentation – Operators – Expressions-Type conversions. Python Arrays: Defining and Processing Arrays–Array methods.

### **UNIT II: Control Statements, Branching statements, Iterative Statements, Jump Statements (15 Hours)**

Control Statements: Selection/Conditional Branchingstatements: if, if else, nested if and if-el if-else statements. Iterative Statements: while loop, for loop, else suite in loop and nested loops. Jump Statements: break, continue and pass statements.

### **UNIT III: Functions, Function Arguments, Python Strings, Modules (15 Hours)**

Functions: Function Definition – Function Call – Variable Scope and its Life time Return Statement. Function Arguments: Required Arguments, Keyword Arguments, Default Arguments and Variable Length Arguments Recursion. Python Strings: String operations- Immutable Strings - Built-in String Methods and Functions - String Comparison. Modules: import statement- The Python module – dir() function – Modules and Name space–Defining our own modules.

### **UNIT IV: Lists, Tuples, Dictionaries (15 Hours)**

Lists: Creating a list – Access values in List-Updating values in Lists – Nested lists Basic list operations-List Methods. Tuples: Creating, Accessing, Updating and Deleting Elements in atuple–Nestedtuples–Differencebetweenlistsandtuples.Dictionaries: Creating, Accessing, Updating and Deleting Elements in a Dictionary–Dictionary Functions and Methods- Difference between Lists and Dictionaries.

### **UNIT V: Python File Handling (15 Hours)**

Python File Handling: Types of files in Python -Opening and Closing files-Reading and Writing files: write () and write lines () method sappend () method–read () and read lines () methods–with keyword–Splitting words –File methods – File Positions – Renaming and deleting files.

<b>Teaching Methodology</b>	Chalk and Talk, PPT, videos
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### **Books for Study**

1. Thareja, R. (2017). *Python Programming using problem solving approach* (1<sup>st</sup> ed.). Oxford University Press.
2. Rao, R. N. (2017). *Core Python Programming* (1<sup>st</sup> ed.). Dreamtech Publishers.

### **Books for Reference**

1. Kurama, V. (2017). *Python Programming: A Modern Approach*. Pearson Education.
2. Lutz, M. (2013). *Learning Python*. Orielly.
3. Stewarts, A. (2017). *Python Programming*. Online.
4. Nelli, F. (2015). *Python Data Analytics*. Apress.
5. Lambert, K. A. (2017). *Fundamental soft Python – First Programs*. CENGAGE
6. Publication.

### **Web Sources**

1. <https://www.programiz.com/python-programming>
2. <https://www.programiz.com/python-programming>
3. [http://www.w3schools.com/python/python\\_intro.asp](http://www.w3schools.com/python/python_intro.asp)
4. <http://www.geeksforgeeks.org/python-programming-language/>
5. [https://en.wikipedia.org/wiki/Python\\_\(programming\\_language\)](https://en.wikipedia.org/wiki/Python_(programming_language))

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will	
CO1	learn the basics of python, do simple programs on python, learn how to use an array.	K1
CO2	develop program using selection statement, work with looping and jump statements, do programs on loops and jump statements.	K2
CO3	concept of function, function arguments, implementing the concept strings in various application, significance of modules, work with functions, strings and modules.	K3
CO4	work with list, tuples and dictionary, write program using list, tuples and dictionary.	K4
CO5	usage of file handlings in python, concept of reading and writing files, do programs using files.	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UBC13CC01		Core Course - 1: Python Programming							5	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	2	2	3	3	2	2	3	3	2.4
CO2	2	3	3	3	2	3	2	2	3	2	2.5
CO3	3	2	3	3	3	3	2	2	3	2	2.6
CO4	3	3	2	2	3	3	2	2	3	2	2.5
CO5	2	3	3	3	2	3	2	2	3	3	2.6
Mean overall Score											2.52 (High)

<b>Semester</b>	<b>Course Code</b>	<b>Title of the Course</b>	<b>Hours/ Week</b>	<b>Credits</b>
<b>1</b>	<b>23UBC13CP01</b>	<b>Core Practical - 1: Python</b>	<b>4</b>	<b>4</b>

<b>Course Objectives</b>
Be able to design and program Python applications
Be able to create loops and decision statements in Python
Be able to work with functions and pass arguments in Python
Be able to build and package Python modules for reusability
Be able to read and write files in Python

1. Program using variables, constants, I/O statements in Python.
2. Program using Operators in Python.
3. Program using Conditional Statements.
4. Program using Loops.
5. Program using Jump Statements.
6. Program using Functions.
7. Program using Recursion.
8. Program using Arrays.
9. Program using Strings.
10. Program using Modules.
11. Program using Lists.
12. Program using Tuples.
13. Program using Dictionaries.
14. Program for File Handling.

<b>Teaching Methodology</b>	Lab
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Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will	
CO1	demonstrate the understanding of syntax and semantics of	K1
CO2	identify the problem and solve using PYTHON programming techniques.	K2
CO3	identify suitable programming constructs for problem solving.	K3
CO4	analyze various concepts of PYTHON language to solve the problem in an efficient way.	K4
CO5	develop a PYTHON program for a given problem and test for its correctness.	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UBC13CP01		Core Practical - 1: Python							4	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	2	2	3	2	2	2	2	3	2.2
CO2	2	2	3	2	3	2	1	3	2	2	2.2
CO3	3	2	3	2	3	3	3	1	1	1	2.2
CO4	2	3	3	2	2	2	3	3	1	1	2.2
CO5	3	2	2	3	3	3	2	3	1	1	2.3
Mean overall Score											2.22 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UBC14FC01	Foundation Course: Structured Programming Language in C	2	2

Course Objectives
To familiarize the students with the Programming basics and the fundamentals of C, Datatypes in C, Mathematical and logical operations.
To understand the concept using if statements and loops.
This unit covers the concept of Arrays.
This unit covers the concept of Functions.
To understand the concept of implementing pointers.

#### UNIT I: Overview of C

(6 Hours)

Overview of C: Importance of C, sample C program, C program structure, executing C program. Constants, Variables, and Data Types: Character set, C tokens, keywords and identifiers, constants, variables, data types, declaration of variables, assigning values to variables---Assignment statement, declaring a variable as constant, as volatile. Operators and Expression.

#### UNIT II: Decision Making and Branching, Looping

(6 Hours)

Decision Making and Branching: Decision making with If, simple IF, IF ELSE, nested IF ELSE, ELSE IF ladder, switch, GOTO statement. Decision Making and Looping: While, Do-While, For, Jumps in loops.

#### UNIT III: Arrays

(6 Hours)

Arrays: Declaration and accessing of one & two-dimensional arrays, initializing two-dimensional arrays, multidimensional arrays.

#### UNIT IV: Functions

(6 Hours)

Functions: The form of C functions, Return values and types, calling a function, categories of functions, Nested functions, Recursion, functions with arrays, call by value, call by reference, storage classes-character arrays and string functions.

#### UNIT V: Pointers

(6 Hours)

Pointers: definition, declaring and initializing pointers, accessing a variable through address and through pointer, pointer expressions, pointer increments and scale factor, pointers and arrays, pointers and functions, pointers and structures.

Teaching Methodology	Chalk and Talk, ppt, videos
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**Book for Study**

1. Balagurusamy, E. (2010). *Programming in ANSI C* (5<sup>th</sup> ed.). Tata McGraw-Hill.

**Books for Reference**

1. Gottfried, B. (2018). *Schaum's Outline Programming with C* (4<sup>th</sup> ed.). Tata McGraw-Hill.
2. Kernighan & Ritchie (1998). *The C Programming Language* (2<sup>nd</sup> ed.). Prentice Hall.
3. Kanetkar, Y. (2021). *Let Us C* (18<sup>th</sup> ed.). BPB Publications.

**Web Sources**

1. <https://codeforwin.org/>
2. <https://www.geeksforgeeks.org/c-programming-language/>
3. <http://en.cppreference.com/w/c>
4. <http://learn-c.org/>
5. <https://www.cprogramming.com/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will	
CO1	remember the program structure of C with its syntax and semantics	K1
CO2	understand the programming principles in C (data types, operators, branching and looping, arrays, functions, structures, pointers and files)	K2
CO3	apply the programming principles learnt in real-time problems	K3

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UBC14FC01		Foundation Course: Structured Programming Language in C							2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	3	2	2	1	2	2	2	2	2.1
CO2	3	2	2	3	2	2	2	2	2	2	2.2
CO3	3	2	3	3	3	3	2	2	1	1	2.3

Mean overall Score	2.2 (High)
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Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23UBC14SE01	<b>Skill Enhancement Course :1 (Non Major Elective):</b> Fundamentals of Information Technology	2	2

Course Objectives
Understand basic concepts and terminology of information technology
Have a basic understanding of personal computers and their operation
Be able to identify data storage and its usage
Get great knowledge of software and its functionalities
Understand about operating system and their uses

#### **UNIT I: Introduction to Computers (6 Hours)**

Introduction to Computers – Generations of Computer–Data and Information – Components of Computer – Software – Hardware – Input Devices Output Devices—Types of Operating System.

#### **UNIT II: MS Word (6 Hours)**

MS Word: Introduction–Elements of Window–Files, Folders and Directories – Text Manipulating: Cut, Copy, Paste, Drag and Drop – Text Formatting: Font – Style, Size, Face and Colors (Both foreground and background)–AlignmentBulletsandNumbering-Headerandfooterwatermark–inserting objects (images, other application document)–Table creation – Mail merge.

#### **UNIT III: MS Excel (6 Hours)**

MS Excel: Introduction–Inserting rows and columns–Sizing rows and columns–Implementing formulas–Generating series-Functions in excel –CreationofChart–Insertingobjects–Filter–Sorting–Insertingworksheet.

#### **UNIT IV: MS PowerPoint (6 Hours)**

MS PowerPoint: Introduction–Slides Manipulation (Inserting new, Copy, paste, delete and duplicate slides) –Slide show– Types of Views – Types of Animations–Inserting Objects–Implementing multimedia (Videoand Audio)–Templates (Built-in and User-Defined).

#### **Unit V: Internet, E-Commerce (6 Hours)**

Internet: Introduction to Internet and Intranet–Services of Internet-Domain Name – URL – Browser – Types of Browsers – Search Engine -E-Mail – Basic Components of E-Mail. How



to send group mail. ECommerce: Digital Signature–Digital Currency–Online shopping and transaction.

<b>Teaching Methodology</b>	Chalk and Talk, PPT, Videos
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### Books for Study

1. Mathew, A. & Murugesan, S. K. (2009). *Fundamental of information technology*. Majesti Books.
2. Leon, A & Leon, M. (2009). *Fundamental of information technology* (2<sup>nd</sup> ed.). Majesti Books.
3. Bansal, S. K. (2004). *Fundamental of information technology*. Majesti Books.

### Books for Reference

1. Kumar, B. S. P. (2014). *Fundamental of information technology*. Khanna Book Publishing.
2. Wilkinson, G. G. (1987). *Fundamentals of information technology*. Wiley-Blackwell.
3. Ravichandran, A. (2014). *Fundamentals of information technology*. Khanna Book Publishing.

### Web Sources

1. <https://testbook.com/learn/computer-fundamentals>
2. <http://www.tutorialsmate.com/2020/04/computer-fundamentals-tutorial.html>
3. <http://www.javatpoint.com/computer-fundamentals-tutorial>
4. [http://www.tutorialspoint.com/computer\\_fundamentals/index.htm](http://www.tutorialspoint.com/computer_fundamentals/index.htm)
5. <http://www.nios.ac.in/media/documents/sec229new/Lesson1.pdf>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will	
CO1	learn the basics of computer, Construct the structure of the required things in computer, learn how to use it.	K4
CO2	develop organizational structure using for the devices present currently under input or output unit.	K5
CO3	concept of storing data in computer using two header namely RAM and ROM with different types of ROM with advancement in storage basis.	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UBC14FC01		Skill Enhancement Course :1 (Non Major Elective): Fundamentals of Information Technology							2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	1	2	3	3	2	2	3	2	3	1	2.2
CO2	2	2	2	2	3	3	2	3	2	3	2.4

C03	1	3	3	3	2	3	2	2	2	2	2.3
Mean overall Score											2.3 (High)

PROGRAMME PATTERN			
INFORMATION TECHNOLOGY: M. Sc. COMPUTER SCIENCE			
Course Code	Title of the Course	Hours	Credits
23PCS1CC01	<b>Core Course - 1:</b> Analysis and Design of Algorithms	6	5
23PCS1CC02	<b>Core Course - 2:</b> Object Oriented Analysis and Design and C++	6	5
23PCS1CP01	<b>Core Practical - 1:</b> Algorithm and OOPS	6	4
23PCS1ES01	<b>Elective -1:</b> Advanced Software Engineering	5	3
23PCS1ES02	<b>Elective -2:</b> Python Programming	5	3
23PCS1AE01	<b>Ability Enhancement Course:</b> Big Data Analytics	2	1
<b>Total</b>		<b>30</b>	<b>21</b>

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23PCS1CC01	Core Course - 1: Analysis and Design of Algorithms	6	5

Course Objectives
Enable the students to learn the Elementary Data Structures Algorithms
Presents an Introduction to the Algorithms, their analysis and design
Discuss various methods like Basic Traversal and Search Techniques, Divide and Conquer method, Dynamic programming, Backtracking
Understood the Various Design And Analysis of the algorithms

#### **UNIT I: Introduction (18 Hours)**

Introduction: - Algorithm Definition and Specification – Space complexity - Time Complexity Asymptotic Notations - Elementary Data Structure: Stacks and Queues – Binary Tree - Binary Search Tree - Heap – Heap sort- Graph.

#### **UNIT II: Traversal and Search Techniques (18 Hours)**

Basic Traversal And Search Techniques: Techniques for Binary Trees - Techniques for Graphs - Divide and Conquer: - General Method – Binary Search – Merge Sort – Quick Sort.

#### **UNIT III: Greedy Method (18 Hours)**

The Greedy Method:-General Method – Knapsack Problem – Minimum Cost Spanning Tree – Single Source Shortest Path.

#### **UNIT IV: Dynamic Programming (18 Hours)**

Dynamic Programming - General Method – Multistage Graphs–All Pair Shortest Path – Optimal Binary Search Trees – 0/1 Knapsacks – Traveling Salesman Problem – Flow Shop Scheduling.

#### **UNIT V: Backtracking (18 Hours)**

Backtracking:-General Method – 8-Queens Problem – Sum Of Subsets – Graph Coloring – Hamiltonian Cycles – Branch And Bound: - The Method – Traveling Sales person.

<b>Teaching Methodology</b>	Videos, PPT, Demonstration and creation of models
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**Books for Study**

1. Aho, A. V., Hopcroft, J. E., & Ullman, J. D. (2009). *Data Structures and Algorithms*. Addison -Wesley.
2. Horowitz, E., & Sahni, S. (1978). *Fundamentals of Computer Algorithms*. Universities Press.

**Books for Reference**

1. Goodrich. (2003). *Data structures & algorithms in Java* (3<sup>rd</sup> ed.). Wiley.
2. Skiena. (2008). *The algorithm design manual* (2<sup>nd</sup> ed.). Springer.
3. Levith, A. (2003). *Introduction to the design and analysis of algorithm*. Pearson Education Asia.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will,	
CO1	get knowledge about algorithms and determine their time complexity. Demonstrate specific search and sort algorithms using divide and conquer technique	K1
CO2	gain a good understanding of Greedy Method and Its algorithm	K2
CO3	be able to describe graphs using dynamic programming techniques	K3
CO4	demonstrate the concept of backtracking branch and bound technique	K4
CO5	compare different sorting and searching techniques	K5
CO6		K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PCS1CC01		Core Course - 1: Analysis and Design of Algorithms							6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	3	2	1	3	2	2	1	3	2.1
CO2	3	2	2	3	2	1	3	3	2	1	2.2
CO3	3	2	3	3	3	3	2	1	3	1	2.4
CO4	1	2	1	1	3	2	3	3	1	3	2.0
CO5	3	1	2	1	3	2	3	3	3	2	2.3
CO6	2	3	3	2	2	1	3	3	1	2	2.2
Mean overall Score											2.2

	(High)
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Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23PCS1CC02	<b>Core Course - 2:</b> Object Oriented Analysis and Design and C++	6	5

Course Objectives
Present The Object model, classes and objects, object orientation, machine view and model management view
Enables the students to learn the basic functions, principles and concepts of object-oriented analysis and design
Enable the students to understand C++ language with respect OOAD

#### **UNIT I: Object Model (18 Hours)**

The Object Model: The Evolution of the Object Model – Elements of the Object Model – Applying the Object Model. Classes and Objects: The Nature of an Object – Relationship among Objects.

#### **UNIT II: Classes and Objects (18 Hours)**

Classes and Object: Nature of Class – Relationship Among Classes – The Interplay of Classes and Objects. Classification: The importance of Proper Classification – Identifying classes and objects – Key Abstractions and Mechanism.

#### **UNIT III: C++ Introduction (18 Hours)**

Introduction to C++ - Input and output statements C++ - Declarations - Control Structures – Functions in C++.

#### **UNIT IV: Inheritance and Overloading (18 Hours)**

Classes and Objects – Constructors and Destructors – Operators Overloading – Type Conversion Inheritance – Pointers and Arrays.

#### **UNIT V: Polymorphism and Files (18 Hours)**

Memory Management Operators - Polymorphism – Virtual functions – Files – Exception Handling – String Handling - Templates.

<b>Teaching Methodology</b>	Videos, PPT, Demonstration and creation of models
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**Books for Study**

1. Booch, G. (1998). *Object oriented analysis and design with applications* (2<sup>nd</sup> ed.). Pearson Education.
2. Kamthane, A. N. (2003). *Object-oriented programming with ANSI & Turbo C++*. First Indian Print, Pearson Education.

**Books for Reference**

1. Balagurusamy. (2003). *Object oriented programming with C++* (2<sup>nd</sup> ed.). TMH.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will	
CO1	understand the concept of Object-Oriented development and modeling techniques.	K1
CO2	gain knowledge about the various steps performed during object design.	K2
CO3	abstract object-based views for generic software systems.	K3
CO4	link OOAD with C++ language.	K4
CO5	apply the basic concept of OOPs and familiarize to write C++ program.	K5
CO6		K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PCS1CC02		Core Course - 2: Object Oriented Analysis and Design and C++							6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	3	2	1	3	2	2	1	3	2.1
CO2	3	2	2	3	2	1	3	3	2	1	2.2
CO3	3	2	3	3	3	3	2	1	3	1	2.4
CO4	1	2	1	1	3	2	3	3	1	3	2.0
CO5	3	1	2	1	3	2	3	3	3	2	2.3
CO6											
Mean overall Score											2.1 (Medium)

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23PCS1CP01	Core Practical - 1: Algorithm and OOPS	6	4

Course Objectives
This course covers the basic data structures like Stack, Queue, Tree, List
This course enables the students to learn the application of the data structures using various techniques
It also enables the students to understand C++ language with respect to OOAD concepts
Application of OOPS concepts

#### List of Programs (75 Hours)

1. Write a program to solve the tower of Hanoi using recursion.
2. Write a program to traverse through binary search tree using traversals.
3. Write Program to perform various operations on stack using linked list.
4. Write A Program to perform various operations in a circular queue.
5. Write Program to sort an array an element using quicksort.
6. Write a program to solve number of elements in ascending order using heap sort.
7. Write Program to Solve the knapsack problem using greedy method.
8. Write a program to search for an element in a tree using divide & conquer strategy.
9. Write a program to place the 8 queens on an 8X8 matrix so that no two queens attack.
10. Write a C++ program to perform Virtual Function.
11. Write a C++ program to perform Parameterized constructor.
12. Write a C++ program to perform Friend Function.
13. Write a C++ program to perform Function Overloading.
14. Write a C++ program to perform Single Inheritance.
15. Write a C++ program to perform Employee Details Using files.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will,	
CO1	understand the concepts of object oriented with respect to C++.	K1
CO2	be able to understand and implement OOPS concepts	K2
CO3	implement data structures like Stack, Queue, Tree, List using C++.	K3
CO4	apply data structures for Sorting, Searching using different techniques.	K4
CO5	apply and implement major object oriented concepts like function overloading, constructors and inheritance to solve real-world problems.	K5
CO6	demonstrate virtual functions and Input/Output Streams.	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PCS1CP01		Core Practical - 1: Algorithm and OOPS Lab							6	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	2	2	2	2	2	3	3	3	2.4
CO2	3	2	2	3	2	2	2	2	3	2	2.3
CO3	3	2	2	3	2	2	2	2	3	2	2.3
CO4	2	2	2	3	2	2	2	3	2	2	2.2
CO5	2	2	3	2	2	2	3	2	2	3	2.3
Mean overall Score 2.34											2.2 (High)



Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23PCS1ES01	<b>Elective -1:</b> Advanced Software Engineering	5	3

Course Objectives
Introduction to Software Engineering, Design, Testing and Maintenance.
Enable the students to learn the concept of Software Engineering.
Learn about Software Project Management, Software Design & Testing.

### **UNIT I: Introduction (18 Hours)**

Introduction: The Problem Domain – Software Engineering Challenges - Software Engineering Approach – Software Processes: Software Process – Characteristics of a Software Process – Software Development Process Models – Other software processes.

### **UNIT II: Software Requirements (18 Hours)**

Software Requirements Analysis and Specification : Requirement engineering – Type of Requirements – Feasibility Studies – Requirements Elicitation – Requirement Analysis – Requirement Documentation – Requirement Validation – Requirement Management – SRS - Formal System Specification – Axiomatic Specification – Algebraic Specification - Case study: Student Result Management System. Software Quality Management –Software Quality, Software Quality Management System, ISO 9000, SEI CMM.

### **UNIT III: Project Management (18 Hours)**

Software Project Management: Responsibilities of a software project manager – Project planning – Metrics for Project size estimation – Project Estimation Techniques – Empirical Estimation Techniques – COCOMO – Halstead’s software science – Staffing level estimation – Scheduling– Organization and Team Structures – Staffing – Risk management – Software Configuration Management – Miscellaneous Plan.

### **UNIT IV: Software Design (18 Hours)**

Software Design: Outcome of a Design process – Characteristics of a good software design – Cohesion and coupling - Strategy of Design – Function Oriented Design – Object Oriented Design - Detailed Design - IEEE Recommended Practice for Software Design Description.

### **UNIT V: Software Testing (18 Hours)**

Software Testing: A Strategic approach to software testing – Terminologies – Functional testing– Structural testing – Levels of testing – Validation testing - Regression testing – Art of Debugging – Testing tools - Metrics - Reliability Estimation. Software Maintenance - Maintenance Process - Reverse Engineering – Software Re-engineering - Configuration Management Activities.

<b>Teaching Methodology</b>	Videos, PPT, Demonstration and creation of models
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**Books for Study**

1. Jalote, P. (2005). *An integrated approach to software engineering* (3<sup>rd</sup> ed.). Narosa Publishing House Pvt Ltd, India.
2. Mall, R. (2009). *Fundamentals of software engineering* (3<sup>rd</sup> ed.). PHI Publication.

**Books for Reference**

1. Aggarwal, K. K. & Singh, Y. (2008). *Software engineering* (3<sup>rd</sup> ed.). New Age International Publishers.
2. Pressman, R. S. (2004). *Software engineering: A practitioner's approach* (6<sup>th</sup> ed.). Published by McGraw Hill.
3. Ghezzi, C., Jarayeri, M. & Manodrioli, D. (2007). *Fundamentals of software engineering* (7<sup>th</sup> ed.). PHI Publication.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will,	
CO1	understand Software Engineering Process.	K1
CO2	understand Software Project Management Skills, design and quality management.	K2
CO3	analyze Software Requirements and Specification.	K3
CO4	analyze Software Testing, Maintenance and Software Re-Engineering.	K4
CO5	design and conduct various types and levels of software quality for software projects.	K5
CO6	distinguish Software Testing Strategies.	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PCS1ES01		Elective -1: Advanced Software Engineering							5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	3	2	2	3	2	3	3	3	2.6
CO2	3	2	3	2	1	3	3	2	3	2	2.4
CO3	3	2	1	3	3	2	3	3	2	3	2.5
CO4	2	3	3	2	3	2	2	2	2	3	2.4
CO5	3	2	3	1	3	3	3	3	3	2	2.6
CO6	2	3	3	2	3	2	2	2	2	3	2.4
Mean overall Score											2.4 (High)

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23PCS1ES02	<b>Elective -2:</b> Python Programming	5	3

Course Objectives
Present introduction Python, creation web applications, network applications and working in the clouds.
Use functions for structuring Python programs
Understand different Data Structures in Python
Represent compound data using Python lists, tuples and dictionaries

#### **UNIT I: Introduction (18 Hours)**

**Python:** Introduction – Numbers – Strings – Variables – Lists – Tuples – Dictionaries – Sets – Comparison.

#### **UNIT II: Code Structures (18 Hours)**

**Code Structures:** if, elif, and else – Repeat with while – Iterate with for – Comprehensions – Functions – Generators – Decorators – Namespaces and Scope – Handle Errors with try and except – User Exceptions.

#### **UNIT III: Modules, Packages, and Programs (18 Hours)**

**Modules, Packages, and Programs:** Standalone Programs – Command-Line Arguments – Modules and the import Statement – The Python Standard Library. **Objects and Classes:** Define a Class with class – Inheritance – Override a Method – Add a Method – Get Help from Parent with super – In self Defense –Get and Set Attribute Value with Properties – Name Mangling for Privacy – Method Types – Duck Typing – Special Methods – Composition.

#### **UNIT IV: Data Types (18 Hours)**

**Data Types:** Text Strings – Binary Data. **Storing and Retrieving Data:** File Input/Output – Structured Text Files – Structured Binary Files - Relational Databases – NoSQL Data Stores. **Web:** Web Clients – Web Servers – Web Services and Automation.

#### **UNIT V: Systems (18 Hours)**

**Systems:** Files – Directories – Programs and Processes – Calendars and Clocks. **Concurrency:** Queues – Processes – Threads – GreenThreads and gevent – twisted– Redis. **Networks:** Patterns – The Publish - Subscribe Model – TCP/IP – Sockets –ZeroMQ – Internet Services – Web Services and APIs – Remote Processing – Big Fat Data and MapReduce – Working in the Clouds.

<b>Teaching Methodology</b>	Videos, PPT, Demonstration and creation of models
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### Books for Study

1. Lubanovic, B. (2014). *Introducing python* (1<sup>st</sup> ed.). O'Reilly Inc (Second Release).
2. Lutz, M (2013). *Learning python* (5<sup>th</sup> ed.). O'Reilly Inc.

### Books for Reference

1. Beazley, D. M. (2009). *Python essential edition*. Addison Wesley.
2. Taneja, S. & Naveen, K. (2017). *Python programming - A modular approach* (1<sup>st</sup> ed.). Pearson India, Pearson Publications.

<b>Course Outcomes</b>		
<b>CO No.</b>	<b>CO-Statements</b>	<b>Cognitive Levels (K - Level)</b>
	On completion of this course, students will,	
<b>CO1</b>	understand the basic concepts of Python Programming.	<b>K1</b>
<b>CO2</b>	understand File Operations, Classes and Objects.	<b>K2</b>
<b>CO3</b>	acquire Object Oriented Skills in Python.	<b>K3</b>
<b>CO4</b>	develop Web applications using Python.	<b>K4</b>
<b>CO5</b>	develop Client Server Networking applications.	<b>K5</b>
<b>CO6</b>	discover business applications to solve real time problems.	<b>K6</b>

<b>Relationship Matrix</b>											
<b>Semester</b>	<b>Course code</b>		<b>Title of the Course</b>							<b>Hours</b>	<b>Credits</b>
<b>1</b>	<b>23PCS1ES02</b>		<b>Elective -2: Python Programming</b>							<b>5</b>	<b>3</b>
<b>Course Outcomes</b>	<b>Programme Outcomes (POs)</b>					<b>Programme Specific Outcomes (PSOs)</b>					<b>Mean Score of COs</b>
	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	<b>PSO4</b>	<b>PSO5</b>	
<b>CO1</b>	3	2	3	2	2	3	2	3	3	3	2.6
<b>CO2</b>	3	2	3	2	1	3	3	2	3	2	2.4
<b>CO3</b>	3	2	1	3	3	2	3	3	2	3	2.5
<b>CO4</b>	2	3	3	2	3	2	2	2	2	3	2.4
<b>CO5</b>	3	2	3	1	3	3	3	3	3	2	2.6
<b>CO6</b>	3	2	1	3	3	2	3	3	2	3	2.5
<b>Mean overall Score</b>											<b>2.5 (High)</b>

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23PCS1AE01	Ability Enhancement Course: Big Data Analytics	2	1

Course Objectives
Introduction to Big data analytics and Careers in Big data
Understand different Methodologies about Hadoop Technology
This course enables the students to learn the HBase and YARN Technologies

#### **UNIT I: Overview of Big Data (6 Hours)**

What is big data – Structuring Big data – Elements of Big data – Big data analytics- Careers in Big data. EXPLORING THE USE OF BIG DATA IN BUSINESS: Use of big data in social networking - Preventing Fraudulent Activities – Detecting Fraudulent Activities in Insurance Sector – Retail Industry.

#### **UNIT II: Technologies for Handling Big Data (6 Hours)**

Distributed and parallel computing for Big data – Hadoop – Cloud computing and big data - Understanding Hadoop Ecosystem: Hadoop Ecosystem – Hadoop Distributed File System – Map Reduce.

#### **UNIT III: HBase (6 Hours)**

HBase Architecture – Storing big data with HBase – Interacting with the Hadoop Ecosystem – Combining HBase and HDFS – Hive – Pig.

#### **UNIT IV: Big Data Technology (6Hours)**

Exploring the big data stack – virtualization and big data. Storing Data in Database and Data Warehouse: RDBMS and Big data.

#### **UNIT V: Hadoop Yarn Architecture (6 Hours)**

YARN Architecture – Working of YARN – YARN Schedulers. Exploring Hive: Hive services.

<b>Teaching Methodology</b>	<b>Videos, PPT, Demonstration and creation of models</b>
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**Books for Study**

1. DT Editorial Services (2017), *Big data black book*, Dreamtech Press.

**Books for Reference**

1. Minelli, M., Chambers, M. & Dhiraj, A. (2014). *Big data*. Big Analytics. Wiley.
2. Sathi, A. (2013). *Big Data Analytics: Disruptive technologies for changing the game*. Elsevier.
3. Mohanty, S., Jagadeesh, M. & Srivatsa, H. (2013). *Big data imperatives: Enterprise big data warehouse, BI implementations and analytics*. Apress Media.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will,	
CO1	comprehend the overview of an exciting growing field of big data analytics	K1
CO2	perform the fundamentals of various big data analytics techniques.	K2
CO3	analyze the HADOOP and Map Reduce technologies associated with Distributed File System	K3
CO4	evaluate the Job Execution in Hadoop Environment.	K4
CO5	discuss the programming tools in Hadoop Echo System.	K5
CO6	understand yarn architecture and explore hive services	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PCS1AE01		Ability Enhancement Course: Big Data Analytics							2	1
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	2	2	2	2	2	3	3	3	2.4
CO2	3	2	2	3	2	2	2	2	3	2	2.3
CO3	2	2	3	2	3	3	2	2	3	3	2.5
CO4	2	2	2	3	2	2	2	3	2	2	2.2
CO5	2	2	3	2	2	2	3	2	2	3	2.3
CO6	2	2	3	2	2	2	3	2	2	3	2.3
Mean overall Score											2.3 (High)



## DEPARTMENT OF MATHEMATICS

### St. JOSEPH'S COLLEGE (Autonomous)

Accredited at A++ Grade (4<sup>th</sup> Cycle) by NAAC Special Heritage Status awarded by UGC  
College with Potential for Excellence by UGC DBT-STAR & DST-FIST sponsored College

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#### Minutes of the Board of Studies in Mathematics held on 21.07.2023

The Board of Studies in Mathematics was held on 21.07.2023 in the Department of Mathematics. The Meeting was started with silent prayer.

All the members of the Board except Dr. S. Somasundaram (Subject Expert) and Mr. Senthil Paramasivam (Industrialist) were present.

Dr. M. Thiagarajan, Head of the Department of Mathematics welcomed the members for the meeting and introduced the University Representative Member, Dr. S. Sethuraman, Associate Professor of Mathematics, Periyar E.V.R. College, Trichy- 620 023 and briefed his contributions to the BoS of Mathematics for the past three years.

The Course patterns for I Semester of UG and PG along with the content of each course based on the TANSCH model were presented. It was mentioned that the core courses were taken from the TANSCH model syllabus without any change in the content and textbooks were changed suitable to the content of that course.

For elective courses both UG and PG, new syllabi were prepared and presented for the selected course given in the Model Syllabus.

The board passed the course patterns and content for each course after scrutinizing the content.

The board approved course title "Latex for Beginners" to be offered as Value-Added Course and the course "Speed Arithmetic" for certificate Course. Content for the above courses will be finalised by the Department.

The board passed a resolution to adapt the Question Patterns provided by the ERC, viz, for MID/END and Semester Exam.

#### I UG (2023-2024 – ODD SEM)

S.No	Course Title	Course Code	Hours	Credit	Is the syllabus given in TANSCH	Suggestions
1.	Algebra & Trigonometry	23UMA13CC01	5	5	Yes	Change of Text Books
2.	Differential Calculus	23UMA13CC02	5	5	Yes	Change of Text Books
3.	Allied Course: Statistical Methods I	23UMA13AC01	4	3	No	Board Approved the New Syllabus
4.	SEC-1(NME): Mathematics for Competitive Examinations	23UMA14SE01	2	2	No	Board Approved the New Syllabus



5.	Foundation Course – Bridge Mathematics	23UMA14FC01	2	2	Yes	No Change
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#### I PG (2023-2024– ODD SEM)

S. No	Course Title	Course Code	Hours	Credit	Is the syllabus given in TANSCHÉ	Suggestions
1.	Algebraic Structures	23PMA1CC01	6	5	Yes	No Change
2.	Real Analysis I	23PMA1CC02	6	5	Yes	No Change
3.	Ordinary Differential Equations	23PMA1CC03	6	4	Yes	No Change
4.	ES 1: Graph Theory and Applications	23PMA1ES01	5	3	No	Board Approved the New Syllabus
5.	ES 2: Fuzzy Sets and Their Applications	23PMA1ES02	5	3	No	Board Approved the New Syllabus
6.	AEC: Problem Solving in Advance Mathematics	23PMA1AE01	2	1	No	Board Approved the New Syllabus

#### I UG (Allied Courses) (2023-2024– ODD SEM)

S. No	Course Title	Course Code	Hours	Credit	Is the syllabus given in TANSCHÉ	Suggestions
1.	Allied Mathematics for Chemistry I	23UCH13AC01	6	5	NO	Board Approved the New Syllabus
2.	Allied Mathematics for Physics I	23UPH13AC01	6	5	NO	Board Approved the New Syllabus
3.	Numerical Methods	23UCS13AC01	5	4	NO	Board Approved the New Syllabus
4.	Numerical Methods	23UBC13AC01	5	4	NO	Board Approved the New Syllabus
5.	Allied Mathematics for Electronics I	23UEL13AC01	6	5	NO	Board Approved the New Syllabus

Enclosure: I UG, I PG & I UG Allied Syllabi

Dr.M.THIAGARAJAN, M.Sc., M.Phil., Ph.D.,  
Head and Associate Professor  
Department of Mathematics  
HOD of Mathematics  
St. Joseph's College (Autonomous)  
Tiruchirappalli-620 002



PROGRAMME PATTERN				
B. Sc. MATHEMATICS				
Part	Course Code	Title of the Course	Hours	Credits
I	23UTA11GL01A	General Tamil- 1 (தமிழ் இலக்கிய வரலாறு-1)	5	3
	23UFR11GL01	French-1		
	23UHI11GL01	Hindi-1		
	23USA11GL01	Sanskrit-1		
II	23UEN12GE01	General English-1	5	3
III	23UMA13CCO1	<b>Core Course - 1:</b> Algebra and Trigonometry	5	5
	23UMA13CC02	<b>Core Course - 2:</b> Differential Calculus	5	5
	23UMA13ACO1	<b>Allied Course - 1:</b> Statistical Methods -1	4	3
IV	23UMA14FC01	<b>Foundation Course:</b> Bridge Mathematics	2	2
	23UMA14SE01	<b>Skill Enhancement Course - 1(Non Major Elective):</b> Mathematics for Competitive Examinations	2	2
	23UHE14VE01	<b>Value Education:</b> Essentials of Humanity	2	1
	<b>Total</b>		<b>30</b>	<b>24</b>

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UMA1CC01	Core Course - 1: Algebra and Trigonometry	5	5

Course Objectives
Basic knowledge to solve polynomial equations of higher degree
Skill to determine the summation for the Binomial, Exponential and Logarithms series
Understanding the concepts of eigen values and eigen vectors, Cayley Hamilton theorem and its applications
Knowledge about the expansions of trigonometry functions, solve theoretical and applied problems
Basic ideas on the theory of equations, matrices, number theory and regular hyperbolic functions

### UNIT I (15 Hours)

Reciprocal Equations – Standard form – Increasing or decreasing the roots of a given equation – Removal of terms – Approximate solutions of roots of polynomials by Horner's method – Related Problems.

### UNIT II (15 Hours)

Summation of Series: Binomial – Exponential – Logarithmic series (Theorems without proof) – Related Problems

### UNIT III (15 Hours)

Characteristic equation – Eigen values and Eigen Vectors – Similar matrices – Cayley – Hamilton Theorem (Statement only) – Finding powers of square matrix – Inverse of a square matrix up to order 3 – Diagonalization of square matrices – Related Problems.

### UNIT IV (15 Hours)

Expansions of  $\sin n\theta$ ,  $\cos n\theta$  in powers of  $\sin \theta$ ,  $\cos \theta$  – Expansion of  $\tan n\theta$  in terms of  $\tan \theta$  – Expansion of  $\cos^n \theta$ ,  $\sin^n \theta$ ,  $\cos^m \theta$ ,  $\sin^m \theta$  – Expansion of  $\tan (\theta_1 + \theta_2 + \dots + \theta_n)$  – Expansion of  $\sin \theta$ ,  $\cos \theta$  and  $\tan \theta$  in terms of  $\theta$  – Related Problems.

### Unit V (15 Hours)

Hyperbolic functions – Relation between circular and hyperbolic functions – Formulas in hyperbolic functions, Inverse hyperbolic functions – Logarithm of complex quantities, Summation of trigonometric series – Related Problems.

Teaching Methodology	Demonstration, Problem solving, group discussion
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### Books for Study

- Pillay, T. K. M., Natarajan, T. & Ganapathy, K. S. (2007). *Algebra, Volume I*. Viswanathan Publication.

**Unit I:** Chapter 6 (Sec 16, 16.1, 17, 19, 30)

**Unit II:** Chapter 3 (Sec 10) and Chapter 4 (3 to 7)

2. Pillay, T. K. M., Natarajan, T. & Ganapathy, K. S. (2008). *Algebra, Volume II*. Viswanathan Publication.

**Unit III:** Chapter 2 (Sec 16, 16.1 to 16.4)

3. Duraipandian, P. & Pachaiyappa, K. (2009). *Trigonometry*. Muhil Publishers.

**Unit IV:** Chapter 2 (Sec 2.1, 2.1.1, 2.1.2) and Chapter 3 (Sec 3.1, 3.1.1, 3.2.1, 3.4, 3.4.1, 3.4.3)

**Unit V:** Chapter 4 (Sec 4.1 to 4.7), Chapter 5 (Sec 5.1 to 5.3) and Chapter 6 (Sec 6.1 to 6.6)

### Books for Reference

1. Burnstine, W. S. & Panton, A. W. (2016). *Theory of equations*. Wentworth Press.
2. Lay, D. C. (2007). *Linear Algebra and its applications* (3<sup>rd</sup> ed.). Pearson Education Asia (Indian Reprint).
3. Thomas, G. B. & Finney, R. L. (2005). *Calculus* (9<sup>th</sup> ed.). Pearson Education, Delhi.
4. Durell, C. V. & Robson, A. (2003). *Advanced Trigonometry*. Courier Corporation.
5. Stewart, J., Redlin, L. & Watson, S. (2015). *Algebra and Trigonometry*. Cengage Learning Pub.
6. Thomas, G. B. & Finney, R. L. (2010). *Calculus and Analytical Geometry* (9<sup>th</sup> ed.). Pearson Publication.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	classify and solve reciprocal equations	K1
CO2	find the sum of binomial, exponential and logarithmic series	K2
CO3	find Eigen values, eigen vectors, verify Cayley – Hamilton theorem and diagonalize a given matrix	K3
CO4	expand the powers and multiples of trigonometric functions in terms of sine and cosine	K4
CO5	determine relationship between circular and hyperbolic functions and the summation of trigonometric series	K5

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23UMA1CC01	Core Course - 1: Algebra and Trigonometry								5	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	2	2	2	2	3	2	2	2	2.1
CO2	3	2	2	3	2	2	2	2	2	3	2.3
CO3	2	3	3	2	2	2	2	2	3	3	2.4
CO4	2	2	3	2	2	2	2	3	3	2	2.3
CO5	2	2	3	2	2	3	2	3	2	3	2.4
Mean overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credit
1	23UMA13CC02	Core Course - 2: Differential Calculus	5	5

Course Objectives
Using basic skills of differentiation for successive differentiation, and their applications
Successive partial differentiation and total differentiation
Applying partial derivatives to find maxima and minima
Finding the envelope of family of curves
Basic knowledge on the notions of curvature, evolutes, involutes and polar co-ordinates and in solving related problems.

#### UNIT I: Successive Differentiation (15 Hours)

Introduction (Review of basic concepts) – The  $n^{th}$  derivative – Standard results – Fractional expressions – Trigonometrical transformation – Formation of equations involving derivatives – Leibnitz formula for the  $n^{th}$  derivative of a product (without proof).

(Chapter III Sections 1.1 – 1.6 and Section 2.1)

#### UNIT II: Partial Differentiation (15 Hours)

Partial derivatives – Successive partial derivatives – Function of a function rule – Total differential coefficient – A special case – Implicit Functions

(Chapter 8 Sections 1.1 – 1.5)

#### UNIT III: Partial Differentiation (Continued) (15 Hours)

Homogeneous functions – Partial derivatives of a function of two variables – Maxima and Minima of functions of two variables – Lagrange's method of undetermined multipliers.

(Chapter 8: Sections 1.6, 1.7, Sections: 4 and 5)

#### UNIT IV: Envelope (15 Hours)

Method of finding the envelope – Another definition of envelope – Envelope of family of curves which are quadratic in the parameter.

(Chapter: 10 Sections: 1.1 – 1.4)

#### UNIT V: Curvature (15 Hours)

Definition of Curvature – Circle, Radius and Centre of Curvature – Evolutes and Involute – Radius of Curvature in Polar Co-ordinates

(Chapter: 10 Sections: 2.1–2.7)

Teaching Methodology	Demonstration, Problem solving, group discussion
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#### Book for Study

1. Narayanan, S. & Pillay, T. K. M. (2015). *Calculus*. Volume I. S. Viswanathan Publishers Pvt. Ltd.

**Books for Reference**

1. Courant, R. & John, F. (1989). *Introduction to Calculus and analysis* (Volumes I & II). Springer- Verlag.
2. Apostol, T. (2007). *Calculus* (Volumes I & II). Wiley India Pvt. Limited.

<b>Course Outcomes</b>		
<b>CO No.</b>	<b>CO-Statements</b>	<b>Cognitive Levels (K - Level)</b>
	On successful completion of this course, the students will be able to	
<b>CO1</b>	acquire basic knowledge successive differentiation, partial and total differentiation, envelope and curvature.	<b>K1</b>
<b>CO2</b>	understand the concepts successive differentiation, involutes evolutes and curvatures.	<b>K2</b>
<b>CO3</b>	apply Leibnitz formula for nth derivative partial differentiation for maxima and minima, involutes ,evolutes and curvature.	<b>K3</b>
<b>CO4</b>	analyze various method involving in solving differentiation and curves.	<b>K4</b>
<b>CO5</b>	evaluate nth derivatives, maxima minima, envelopes and curvature.	<b>K5</b>

<b>Relationship Matrix</b>											
<b>Semester</b>	<b>Course code</b>		<b>Title of the Course</b>							<b>Hours</b>	<b>Credits</b>
<b>1</b>	<b>23UMA13CC02</b>		<b>Core Course - 2: Differential Calculus</b>							<b>5</b>	<b>5</b>
<b>Course Outcomes</b>	<b>Programme Outcomes (POs)</b>					<b>Programme Specific Outcomes (PSOs)</b>					<b>Mean Score of COs</b>
	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	<b>PSO4</b>	<b>PSO5</b>	
<b>CO1</b>	2	1	2	2	2	3	3	2	2	3	2.2
<b>CO2</b>	2	3	2	1	2	3	3	2	2	3	2.3
<b>CO3</b>	1	2	3	2	3	2	3	2	3	2	2.3
<b>CO4</b>	1	2	2	3	1	2	3	2	2	3	2.1
<b>CO5</b>	1	2	2	2	3	1	3	2	2	3	2.1
<b>Mean overall Score</b>											<b>2.2 (High)</b>

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UMA13AC01	Allied Course - 1: Statistical Methods -1	4	3

Course Objectives
To make the students to gain wide knowledge in the fundamental concepts of Statistics
To understand the idea of random variables and its types
To derive certain values incorporated with random variables
To relate the statistical distributions with the real life situations
To apply statistical techniques to get the solutions to real life problems

### UNIT I (12 Hours)

Random variables: Distribution function - Discrete random variable - Continuous random variable.

### UNIT II (12 Hours)

Mathematical expectation - Expected value of function of a random variable - Properties of expectation - Properties of variance – Covariance.

### UNIT III (12 Hours)

Moment generating function – Properties of cumulants - Chebychev's inequality - Binomial distribution.

### UNIT IV (12 Hours)

Poisson distribution: Properties, Moments of Poisson distribution – Geometric distribution: Moment generating function of Geometric distribution.

### UNIT V (12 Hours)

Normal distribution: Moment generating function of Normal distribution, Mean deviation about mean – Gamma distribution - Exponential distribution.

Teaching Methodology	Demonstration, Problem solving, group discussion
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### Books for Study

- Gupta, S. C. & Kapoor, V. K. (2003). *Fundamentals of mathematical statistics* (11<sup>th</sup> ed.). Sultan Chand & Sons.

**Unit I:** Chapter 5: Sec 5.1-5.4

**Unit II:** Chapter 6: Sec 6.1 - 6.6

**Unit III:** Chapter 7: Sec 7.1, 7.2 and 7.5, Chapter 8: Sec 8.4(Omit 8.4.3, 8.4.10-8.4.12)

**Unit IV:** 8.5 (Omit 8.5.10) and 8.7

**Unit V:** Chapter 9: Sec 9.2 (Omit 9.2.11-9.2.15), 9.5 and 9.8.

**Books for Reference**

1. Vittal, P. R. (2004). *Mathematical statistics*. Margham Publications.
2. Kapur, J. N & Saxena, H. C. (2010). *Mathematical statistics* (20<sup>th</sup> ed.). S. Chand & Company Ltd.

<b>Course Outcomes</b>		
<b>CO No.</b>	<b>CO-Statements</b>	<b>Cognitive Levels (K - Level)</b>
	On successful completion of this course, students will be able to	
<b>CO1</b>	acquire the knowledge of basic concepts in statistics	<b>K1</b>
<b>CO2</b>	be able to understand various types of random variables and the distributions	<b>K2</b>
<b>CO3</b>	calculate moments, cumulants, moment generating function and various constants of probability distributions	<b>K3</b>
<b>CO4</b>	illustrate the theory of random variables, distribution functions and probability distributions with suitable example.	<b>K4</b>
<b>CO5</b>	be able to evaluate solution of real-life problems under the concept of probability and probability distributions.	<b>K5</b>

<b>Relationship Matrix</b>											
<b>Semester</b>	<b>Course code</b>		<b>Title of the Course</b>							<b>Hours</b>	<b>Credits</b>
<b>1</b>	<b>23UMA13AC01</b>		<b>Allied Course - 1: Statistical Methods -1</b>							<b>4</b>	<b>3</b>
<b>Course Outcomes</b>	<b>Programme Outcomes (POs)</b>					<b>Programme Specific Outcomes (PSOs)</b>					<b>Mean Score of COs</b>
	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	<b>PSO4</b>	<b>PSO5</b>	
<b>CO1</b>	3	3	2	2	1	3	3	2	1	2	2.2
<b>CO2</b>	3	3	2	2	1	3	3	2	1	2	2.2
<b>CO3</b>	3	2	2	2	1	3	3	2	1	2	2.1
<b>CO4</b>	3	3	2	2	1	3	3	2	1	2	2.2
<b>CO5</b>	3	3	3	2	1	3	3	2	1	2	2.3
<b>Mean overall Score</b>											<b>2.2 (High)</b>

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UMA14FC01	Foundation Course: Bridge Mathematics	2	2

Course Objectives
Explain various trigonometric ratios and find them for different angles, including sum of the angles, multiple and submultiple angles, etc. Also, they can solve the problems using the transformations
Find the limit and derivative of a function at a point, the definite and indefinite integral of a function. Find the points of min/max of a function
Prove the binomial theorem and apply it to find the expansions of any $(x + y)^n$ and also, solve the related problems
Find the various sequences and series and solve the problems related to them. Explain the principle of counting
Find the number of permutations and combinations in different cases. Apply the principle of counting to solve the problems on permutations and combinations

#### UNIT I (6 Hours)

Trigonometry: Introduction to trigonometric ratios, proof of  $\sin(A+B)$ ,  $\cos(A+B)$ ,  $\tan(A+B)$  formulae, multiple and sub multiple angles,  $\sin(2A)$ ,  $\cos(2A)$ ,  $\tan(2A)$  etc., transformations sum into product and product into sum formulae, inverse trigonometric functions, sine rule and cosine rule.

#### UNIT II (6 Hours)

Calculus: Limits, standard formulae and problems, differentiation, first principle, uv rule, u/v rule, methods of differentiation, application of derivatives, integration - product rule and substitution method.

#### UNIT III (6 Hours)

Algebra: Binomial theorem, General term, middle term, problems based on these concepts

#### UNIT IV (6 Hours)

Sequences and series (Progressions). Fundamental principle of counting. Factorial  $n$ .

#### UNIT V (6 Hours)

Permutations and combinations, Derivation of formulae and their connections, simple applications, combinations with repetitions, arrangements within groups, formation of groups.



<b>Teaching Methodology</b>	Chalk and Talk, PPT
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### Books for Study

<b>Unit I:</b>	11 <sup>th</sup> NCERT Mathematics book Chapter 3 12 <sup>th</sup> NCERT Mathematics book Chapter 2
<b>Unit II:</b>	11 <sup>th</sup> NCERT Mathematics book Chapter 12 12 <sup>th</sup> NCERT Mathematics book Chapter 7
<b>Unit III:</b>	11 <sup>th</sup> NCERT Mathematics book Chapter 7
<b>Unit IV:</b>	11 <sup>th</sup> NCERT Mathematics book Chapter 8
<b>Unit V:</b>	11 <sup>th</sup> NCERT Mathematics book Chapter 6.

### Books for Reference

1. Pillay, T. K. M., Natarajan, K. & Ganapathy, K. S. (2013). *Algebra vol - I*. Viswanathan, S., Printers & Publishers Pvt Ltd.
2. Narayanan, S. & Pillay, T. K. M. (2013). *Calculus vol - I*. Viswanathan, S., Printers & Publishers Pvt Ltd.
3. Narayanan, S. & Pillay, T. K. M. (2013). *Trigonometry*. Viswanathan, S., Printers & Publishers Pvt Ltd.

### Web Source

1. <https://ncert.nic.in/textbook.php>
2. <https://textbookcorp.tn.gov.in/textbook1.php>

<b>Course Outcomes</b>		
<b>CO No.</b>	<b>CO-Statements</b>	<b>Cognitive Levels (K - Level)</b>
	On successful completion of this course, students will be able to	
<b>CO1</b>	acquire knowledge of basics of mathematics like trigonometry, differential calculus, series, binomial theorem, permutations and combinations	<b>K1</b>
<b>CO2</b>	understand the process of finding the sum of the series, derivatives of functions and trigonometric expansions.	<b>K2</b>
<b>CO3</b>	apply the binomial theorem, trigonometric expressions, derivatives of functions, permutations and combinations in working out problems.	<b>K3</b>

<b>Relationship Matrix</b>											
<b>Semester</b>	<b>Course code</b>		<b>Title of the Course</b>							<b>Hours</b>	<b>Credits</b>
<b>1</b>	<b>23UMA14FC01</b>		<b>Foundation Course: Bridge Mathematics</b>							<b>2</b>	<b>2</b>
<b>Course Outcomes</b>	<b>Programme Outcomes (POs)</b>					<b>Programme Specific Outcomes (PSOs)</b>					<b>Mean Score of COs</b>
	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	<b>PSO4</b>	<b>PSO5</b>	
<b>CO1</b>	3	2	2	2	2	2	2	3	1	2	2.1
<b>CO2</b>	2	2	2	2	2	3	2	2	3	3	2.3
<b>CO3</b>	1	2	3	2	2	2	2	3	3	2	2.2
<b>Mean overall Score</b>											<b>2.2 (High)</b>

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23UMA14SE01	<b>Skill Enhancement Course – 1 (Non Major Elective): Mathematics for Competitive Examinations</b>	2	2

Course Objectives
To know various competitive related problem-solving techniques
To study the basic formulae on numbers
To study the competitive related problems
To Enrich their knowledge and to develop their logical reasoning thinking ability
To develop skill to meet the competitive examinations for better job opportunity

**UNIT I: Average (6 Hours)**

Basic Formula – Simple Problems (Chapter 6: pages 139-160)

**UNIT II: Problems on Numbers (6 Hours)**

Basic Formula – Simple Problems (Chapter 7: pages 161-181)

**UNIT III: Problems on Ages (6 Hours)**

Basic Formula – Simple Problems (Chapter 8: pages 182-194)

**UNIT IV: Profit and Loss (6 Hours)**

Important facts and Formulae – Simple Problems (Chapter 11: pages 251-293)

**UNIT V: Simple and Compound Interest (6 Hours)**

Important facts and Formulae – Simple Problems (Chapter 21& 22: pages 445-486)

<b>Teaching Methodology</b>	Problem solving, Group discussion, PPT
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**Books for Study**

1. Aggarwal, R. S. (2008). *Quantitative aptitude for competitive examinations (Fully Solved)*. Revised Edition. S. Chand & Co.

**Books for Reference**

1. Guha, A. (2016). *Quantitative aptitude for competitive examination*. (5<sup>th</sup> ed.). McGraw Hill Education Series.
2. Yadav, R. (2016). *Advanced maths for general competitions*. KD Publication.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	on successful completion of this course, the students will be able to	
CO1	apply the basic knowledge on problem-solving technique	K3
CO2	analyse the various mathematical concepts which is involving in competitive examinations	K4
CO3	evaluate mathematical formulae to solve problems asked in various competitive examinations	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UMA14SE01		Skill Enhancement Course - 1(Non Major Elective): Mathematics for Competitive Examinations							2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	1	2	2	2	3	3	2	2	3	2.2
CO2	2	3	2	1	2	3	3	2	2	3	2.3
CO3	1	2	3	2	3	2	3	2	3	2	2.3
Mean overall Score											2.26 (High)

**Allied Courses offered to other Departments**

<b>Course Code</b>	<b>Course Title</b>	<b>Offered to</b>	<b>Hours</b>	<b>Credits</b>
23UMA13AC01A	<b>Allied Course 1:</b> Mathematics for Chemistry 1	Chemistry	6	5
23UMA13AC01B	<b>Allied Course 1:</b> Numerical Methods	Computer Science	5	4
		BCA		
23UMA13AC01C	<b>Allied Course 1:</b> Mathematics for Physics 1	Physics	6	5
23UMA13AC01D	<b>Allied Course 1:</b> Mathematics for Electronics 1	Electronics	6	5

Semester	Course code	Title of the Course	Hours/Week	Credits
1	23UMA13AC01A	Allied Course 1: Mathematics for Chemistry 1	6	5

Course Objectives
Training the students in mastering the techniques of various branches of Mathematics
Motivating the students to apply the techniques in their respective major subjects
Introducing the basic knowledge of differentiation
Understanding the concept of matrices and its applications
Solving the problems in trigonometry and in Series summations

#### UNIT I (18 Hours)

Partial fractions – Binomial series – Summation of series – Finding terms – Coefficient of  $x^n$ .

#### UNIT II (18 Hours)

Exponential series – Summation – Logarithmic series – Summation.

#### UNIT III (18 Hours)

Matrices – Rank of a matrix – Solving simultaneous linear equation in three unknowns using Elementary Operations method – Eigen values and Eigen vectors – Verification of Cayley Hamilton theorem.

#### UNIT IV (18 Hours)

Expansion of  $\cos n\theta$  and  $\sin n\theta$  – Powers of sines and cosines of  $\theta$  in terms of functions of multiples of  $\theta$  -Expansion of  $\sin\theta$  and  $\cos\theta$  in a series of ascending powers of  $\theta$ .

#### UNIT V (18 Hours)

Higher Derivatives – Formation of equations involving derivatives – Applications of Leibnitz's theorem.

Teaching Methodology	Chalk and Talk method, PPT
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#### Book for Study

1. Narayanan, S., Rao, S. H. & Pillay, T. K. M. (2009). *Ancillary mathematics vol.-I*. Viswanathan, S., Printers & Publishers Pvt Ltd.

**Unit I:** Chapter 1, Sections 1.1 – 1.2 (Page No: 1 – 27)

**Unit II:** Chapter 1, Sections 1.3 – 1.4 (Page No: 28 – 53)

**Unit III:** Chapter 3, Sections 3.2 – 3.4 (Page No: 137 – 160)

**Unit IV:** Chapter 5, Sections 5.1 – 5.3 (Page No: 220 – 242)

**Unit V:** Chapter 6, Section 6.1 (Page No: 266 – 281)

### Books for Reference

1. Pillay, T. K. M., Natarajan, T. & Ganapathy, K. S. (2013). *Algebra vol - I*. Viswanathan, S., Printers & Publishers Pvt Ltd.
2. Narayanan, S. & Pillay, T. K. M. (2013). *Calculus vol - I*. Viswanathan, S., Printers & Publishers Pvt Ltd.
3. Narayanan, S. & Pillay, T. K. M. (2013). *Trigonometry*. Viswanathan, S., Printers & Publishers Pvt Ltd.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	acquire knowledge of basics of mathematics like series, matrices, trigonometry and differential calculus.	K1
CO2	understand the process of finding the sum of the series, eigen values and eigen vectors, higher derivatives of a function and trigonometric expansions.	K2
CO3	apply the binomial theorem, Cayley Hamilton Theorem, trigonometric expressions, higher derivatives of functions in working out problems they encounter in chemistry.	K3
CO4	analyse the importance of mathematical concepts in giving solution to chemistry based real time problems.	K4
CO5	evaluate eigen values, eigen vectors, summation of series in solving problems on chemistry.	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UMA13AC01A		Allied Course 1: Mathematics for Chemistry 1							6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	3	1	2	3	2	3	1	2.3
CO2	3	3	1	2	2	3	3	2	2	2	2.3
CO3	2	3	2	2	2	3	2	2	2	2	2.2
CO4	2	2	2	2	2	2	2	2	3	2	2.1
CO5	3	2	2	1	2	3	2	2	3	2	2.2
Mean overall Score											2.22 (High)

Semester	Course code	Title of the Course	Hours/Week	Credits
1	23UMA13AC01B	Allied Course 1: Numerical Methods	5	4

Course Objectives
To introduce the various topics in Numerical methods.
To make understand the fundamentals of algebraic equations
To apply interpolation and approximation on examples
To solve problems using numerical differentiation and integration
To solve linear systems, numerical solution of ordinary differential equations

#### **UNIT I: Fundamentals of Algebraic Equation (15 Hours)**

Solution of algebraic and transcendental equations-Bisection method – Method of successive Approximations or iteration method – Newton Raphson

#### **UNIT II: Simultaneous Linear Algebraic Equations (15 Hours)**

Simultaneous linear algebraic equations – Gauss elimination method – Gauss Jordan method  
Iterative methods - Gauss Jacobi method - Gauss Seidel method

#### **UNIT III: Interpolation with Equal And Unequal Interval (15 Hours)**

Difference operators and relations -Interpolation with equal intervals – Newton’s forward and backward difference formulae- Approximation of derivatives using interpolation polynomials- Interpolation with unequal intervals– Newton’s divided difference interpolation Lagrange’s interpolation.

#### **UNIT IV: Numerical Differentiation and Integration (15 Hours)**

Numerical integration – Trapezoidal rule – Romberg’s Method - Simpson’s 1/3

#### **UNIT V: Initial Value Problems For Ordinary Differential Equations (15 Hours)**

Single step methods – Taylor’s series method – Euler’s method – Modified Euler’s method - RungeKutta method for solving (Third and 4th order) equations

<b>Teaching Methodology</b>	Chalk and Talk, PPT
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#### **Books for Study**

1. Venkataraman, M. K.(2000). *Numerical methods in science and engineering* (5<sup>th</sup> ed.). National Publishing Company, Madras.

**Unit I:** Chapter 3 (Sec: 2, 3, 5)

**Unit II:** Chapter 4 (Sec: 2, 6)

**Unit III:** Chapter 6 (Sec: 3, 4), Chapter 8 (Sec : 4)

**Unit IV:** Chapter 9 (Sec: 7, 8, 9, 10)

## Unit V: Chapter 11 (Sec 6, 10, 12, 13)

### Books for Reference

1. Singaravelu, A. (1992). *Numerical methods*. Meenakshi Publications
2. Kandasamy, P., Thilagavathy, K. & Gunavathi, K. (2008). *Numerical methods*. S. Chand & Company Ltd.
3. Jain, M. K., Iyengar, S. R. K. & Jain, R. K. (2007). *Numerical methods for scientific and engineering computation*. New Age Pvt. Publishers, New Delhi.

### Web Sources

1. [https://onlinecourses.nptel.ac.in/noc23\\_ma94/preview](https://onlinecourses.nptel.ac.in/noc23_ma94/preview)

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	acquire the knowledge on various problems on numerical methods	K1
CO2	understand to solve numerical related problems	K2
CO3	apply appropriate numerical methods and C-program to solve the given problems and evaluate their solutions	K3
CO4	analyze the best approximated value of the root of the given function using various numerical methods	K4
CO5	evaluate various numerical problems using of ordinary differential equations and integration	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UMA13AC01B		Allied Course 1: Numerical Methods							5	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	3	2	2	3	2	3	2	2	2.5
CO2	2	3	3	2	2	2	3	2	2	3	2.4
CO3	3	1	3	2	2	3	2	2	1	2	2.1
CO4	3	2	2	1	2	3	3	3	2	3	2.4
CO5	2	3	3	1	2	3	3	2	2	3	2.4
Mean overall Score											2.36 (High)



Semester	Course code	Title of the Course	Hours/Week	Credits
1	23UMA13AC01C	Allied Course 1: Mathematics for Physics 1	6	5

Course Objectives
To train the students to use their basic skills of differentiation for successive differentiation
To have knowledge on integration and its properties
To know the methods of solving differential equations
To explore the basic ideas of matrices
To understand the nature of series

### UNIT I (18 Hours)

Higher Derivatives – Trigonometrical Transformation – Formation of Equation Involving Derivatives – Leibnitz’s Formula for the nth Derivatives of a Product (Without Proofs)

### UNIT II (18 Hours)

Properties of Definite Integrals - Integration by Parts - Reduction Formula for  $x^n e^{ax}$ ,  $x^n \cos ax$ ,  $x^n \sin ax$ ,  $\sin^n x$ ,  $\cos^n x$ ,  $\sin^m x \cos^n x$  and  $\tan^n x$ .

### UNIT III (18 Hours)

First Order Differential Equations - Variable Separable - Homogenous Equations- Non-Homogenous Equations - Linear Equation - Bernoulli’s Equation-Second Order Differential Equations - Linear Equation with Constant Coefficients.

### UNIT IV (18 Hours)

Matrices - Rank of a Matrix - Solving Simultaneous Linear Equations in Three Unknowns Using Elementary Operations Method - Eigen Values and Eigen Vectors - Verification of Cayley Hamilton Theorem.

### UNIT V (18 Hours)

Concept of Limit of a Sequence - Limit of a Function - Simple Problems -Convergence, Divergence and Oscillation of a Series - Geometric Series -Tests of Convergence and Divergence, Comparison Test, Ratio Test and Root Test (Without Proofs).

Teaching Methodology	Lectures, Demonstrations
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## Books for Study

1. Narayanan, S., Rao, R. H., Pillay, T. K. M. & Kandaswamy. (2009). *Ancillary mathematics, Vol-I*. Viswanathan, S., Printers & Publishers Pvt Ltd.  
**Unit I:** Chapter 6 – Sec 6.1, pp: 266-281  
**Unit IV:** Chapter 3 – Sec 3.2 - 3.4, pp: 137-160.
2. Narayanan, S., Rao, R. H., Pillay, T. K. M. & Kandaswamy. (2010). *Ancillary mathematics, Vol-II*. Viswanathan, S., Printers & Publishers Pvt Ltd.  
**Unit II:** Chapter 1 – Sec 11, Sec 12, pp: 68-72 , Sec 13.1-13.6, pp: 61-67, 73-82.
3. Narayanan, S. & Pillay, T. K. M. (2001). *Differential equations and its applications*. Viswanathan, S., Printers & Publishers Pvt Ltd.  
**Unit III:** Chapter 2- Sec 1-5, pp.7-19, Chapter 5- Sec 1-4, pp: 68-88.
1. Venkataraman, M. K. (1986). *Higher mathematics for engineering and science* (3<sup>rd</sup> ed.). The National Publishing Company, Madras.  
**Unit V:** Chapter 6 – Sec 1-14.

## Books for Reference

1. Narayanan, S. & Pillay, T. K. M. (1999), *Ancillary mathematics, Book II*. Viswanathan, S., Printers & Publishers Pvt Ltd.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	attain knowledge of higher derivatives, definite integrals, first and second order differential equations, matrices and infinite series.	K1
CO2	understand formation of equations involving derivatives, trigonometrical transformation in derivatives, properties of definite integrals operations and properties of matrices and convergence of series.	K2
CO3	illustrate integration by parts, reduction formula, simultaneous linear equations in three unknowns, different methods in first order differential equations and convergence of series.	K3
CO4	verify integration by parts, Leibnitz's formula, reduction formula, linear equation, Bernoulli's equation, Cayley Hamilton theorem and comparison test, ratio test and root test.	K4
CO5	evaluate definite integrals, reduction formula, solutions of first and second order differential equations, rank of a matrix eigenvalues and eigenvectors and convergence.	K5

Relationship Matrix											
Semester	Course code		Title of the Course					Hours	Credits		
1	23UMA13AC01C		Allied Course 1: Mathematics for Physics 1					6	5		
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	3	2	2	1	2	3	1	2	2.2
CO2	3	2	2	3	3	3	3	2	2	3	2.6
CO3	2	2	2	3	2	3	3	3	2	3	2.5
CO4	2	2	1	1	2	2	3	2	2	2	1.9
CO5	2	1	2	1	2	2	3	2	2	3	2
Mean overall Score											2.24 (High)

Semester	Course code	Title of the Course	Hours/Week	Credits
1	23UMA13AC01D	Allied Course 1: Mathematics for Electronics 1	6	5

Course Objectives
To explore the basic ideas of matrices
To know the methods of solving differential equations
To train the students to use their basic skills of differentiation for successive differentiation
To have knowledge on integration and its properties
To understand the nature of Central tendency

#### UNIT I (18 Hours)

Solutions of system of linear equations –Using Cramer’s rule - Eigen values and Eigen vectors of a matrix – Cayley Hamilton’s Theorem (Without proof).

#### UNIT II (18 Hours)

Expansion of  $\cos n\theta$  and  $\sin n\theta$  – Powers of sines and cosines of  $\theta$  in terms of functions of multiples of  $\theta$ .

#### UNIT III (18 Hours)

Second order differential equations – all the types of equations including Constant coefficients and particular integral when X is of the form  $x$ ,  $\sin x$  and  $\cos x$ .

#### UNIT IV (18 Hours)

Integration – Definite Integral – Methods of Integration – Fourier series – Even and odd functions - Half range Fourier series.

#### UNIT V (18 Hours)

Measures of Central tendency: Mean, Median, Mode (Direct method only) –  
Measures of variation: Range, Standard deviation.

Teaching Methodology	Lectures, Demonstrations
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#### Books for Study

- Venkataraman, M. K. (1988). *Engineering mathematics (Vol-II)* (3<sup>rd</sup> ed.). The National Publishing Company.  
**Unit – I:** Chapter 1 (Pages: 534-570)  
**Unit – III:** Chapter 5, Sections 5.1 – 5.3 (Pages: 220 – 242).

2. Narayanan, S., Rao, R. H., Pillay, T. K. M. & Kandaswamy. (2010). Ancillary mathematics, Vol-I. Viswanathan, S., Printers & Publishers Pvt Ltd.  
**Unit – II:** Chapter 5, Sections 5.1 – 5.3 (*Pages: 220 – 242*).
3. Narayanan, S., Rao, R. H., Pillay, T. K. M. & Kandaswamy. (2010). Ancillary mathematics, Vol-II. Viswanathan, S., Printers & Publishers Pvt Ltd.  
**Unit – IV:** Chapter 1 (*Pages 1 – 14*) Chapter 2 (*Pages 123 – 149*)
4. Pillai, R. S. N & Bagavathi. (2014), *Statistics -Theory and practice*, S. Chand & Company .Ltd.  
**Unit – V:** Chapter 9 (*Pages 124 – 170*) Chapter 10 (*pages 241 - 245, 259 - 267*)

#### **Books for Reference**

1. Narayanan, S. & Pillay, T. K. M. (1999), Ancillary mathematics, Book II. Viswanathan, S., Printers & Publishers Pvt Ltd.
2. Vittal, P. R. (2004). *Mathematical statistics*, Margham Publications.
3. Kapur, J. N. & Saxena, H. C. (2010). *Mathematical statistics* (20<sup>th</sup> ed.). S. Chand & Company Ltd, New Delhi.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	acquire knowledge of basics of matrices and understand the process of finding the eigen values and eigen vectors	K1
CO2	understand the types of second order differential equations	K2
CO3	apply the various method in real life problems in Measures of central tendency and measures of variation	K3
CO4	analyse the importance of $\cos n\theta$ and $\sin n\theta$	K4
CO5	evaluate Integration and Fourier series	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UMA13AC01D		Allied Course 1: Mathematics for Electronics 1							6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	2	1	3	3	2	2	3	2.3
CO2	3	2	2	1	2	3	3	3	2	3	2.4
CO3	2	3	2	2	1	2	3	2	3	2	2.2
CO4	2	3	2	3	1	2	3	2	2	3	2.3
CO5	2	2	2	2	1	2	3	2	2	3	2.1
Mean overall Score											2.26 (High)

PROGRAMME PATTERN			
M.Sc. MATHEMATICS			
Course Code	Title of the Course	Hours	Credits
23PMA1CC01	<b>Core Course - 1:</b> Algebraic Structures	6	5
23PMA1CC02	<b>Core Course - 2:</b> Real Analysis -1	6	5
23PMA1CC03	<b>Core Course - 3:</b> Ordinary Differential Equations	6	4
23PMA1ES01	<b>Elective - 1:</b> Graph Theory and Applications	5	3
23PMA1ES02	<b>Elective - 2:</b> Fuzzy Sets and Their Applications	5	3
23PMA1AE01	<b>Ability Enhancement Course:</b> Problem Solving in Advanced Mathematics	2	1
<b>Total</b>		<b>30</b>	<b>21</b>

Semester	Course code	Title of the Course	Hours/Week	Credits
1	23PMA1CC01	Core Course - 1: Algebraic Structures	6	5

Course Objectives
To gain a deep understanding of important concepts of class equations and Sylow's theorem in group theory and develop proficiency in their applications
To investigate the structure and behavior of algebraic systems and classify them based on certain properties, and apply the concepts to solve various mathematical problems in diverse area of studies
To understand the concepts of linear transformations and their properties, simplifying their representation, and analyzing their behaviors in various mathematical contexts
To simplify matrix representations while the rational canonical form aims to classify matrices, study minimal polynomials, and compute matrix powers efficiently
To provide insights into Eigen values and quadratic forms

#### **UNIT I (18 Hours)**

Counting Principle - Class equation for finite groups and its applications - Sylow's theorems (For theorem 2.12.1, First proof only).

#### **UNIT II (18 Hours)**

Solvable groups - Direct products - Finite abelian groups- Modules.

#### **UNIT III (18 Hours)**

Linear Transformations: Canonical forms –Triangular form - Nilpotent transformations.

#### **UNIT IV (18 Hours)**

Jordan form - rational canonical form.

#### **UNIT V (18 Hours)**

Trace and transpose - Hermitian, unitary, normal transformations, real quadratic form.

<b>Teaching Methodology</b>	Chalk and talk, Lectures, Demonstrations, PPT.
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### Books for Study

1. Herstein, I. N. (1975). *Topics in Algebra* (2<sup>nd</sup> ed.). Wiley Eastern Limited.

**Unit I:** Chapter 2: Sections 2.11 and 2.12 (Omit Lemma 2.12.5)

**Unit II:** Chapter 5: Section 5.7 (Lemma 5.7.1, Lemma 5.7.2, Theorem 5.7.1)

Chapter 2: Section 2.13 and 2.14 (Theorem 2.14.1 only)

Chapter 4: Section 4.5

**Unit III:** Chapter 6: Sections 6.4, 6.5

**Unit IV:** Chapter 6: Sections 6.6 and 6.7

**Unit V:** Chapter 6: Sections 6.8, 6.10 and 6.11 (Omit 6.9)

### Books for Reference

1. Artin, M. (1991). *Algebra*. Prentice Hall.
2. Bhattacharya, P. B., Jain, S. K. & Nagpaul, S. R. (1997). *Basic abstract algebra* (2<sup>nd</sup> ed.). Cambridge University Press (Indian Edition).
3. Luther, I. S. & Passi, I. B. S. (1999). *Algebra, vol. I – Groups (1996); Vol. II Rings*. Narosa Publishing House.
4. Malik, D. S., Mordeson, J. N. & Sen, M. K. (1997). *Fundamental of abstract algebra* (International Edition). McGraw Hill.
5. Jacobson, N. & Freeman, W. H. (1980). *Basic algebra, Vol. I & II*. Hindustan Publishing Company.

### Web Sources

1. <http://mathforum.org>, <http://ocw.mit.edu/ocwwweb/Mathematics>,
2. <http://www.opensource.org>, [www.algebra.com](http://www.algebra.com)

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	recall basic counting principle, define class equations to solve problems, explain Sylow's theorems and apply the theorem to find number of Sylow subgroups.	K1
CO2	define Solvable groups, define direct products, examine the properties of finite abelian groups, define modules	K2
CO3	define similar Transformations, define invariant subspace, explore the properties of triangular matrix, to find the index of nilpotence to decompose a space into invariant subspaces, to find invariants of linear transformation, to explore the properties of nilpotent transformation relating nilpotence with invariants.	K3
CO4	define Jordan, canonical form, Jordan blocks, define rational canonical form, define companion matrix of polynomial, find the elementary devices of transformation, apply the concepts to find characteristic polynomial of linear transformation.	K4
CO5	define trace, define transpose of a matrix, explain the properties of trace and transpose, to find trace, to find transpose of matrix, to prove Jacobson lemma using the triangular form, define symmetric matrix, skew symmetric matrix, adjoint, to define Hermitian, unitary, normal transformations and to verify whether the transformation in Hermitian, unitary and normal	K5
CO6	interpret and evaluate ideas of theory of Eigen values and quadratic forms.	K6

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23PMA1CC01	Core Course - 1: Algebraic Structures								6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO 1	PSO 2	PSO3	PSO 4	PSO5	
CO1	3	3	3	2	1	3	2	3	2	3	2.5
CO2	2	3	3	2	2	2	3	2	1	3	2.3
CO3	3	2	3	2	2	3	2	2	2	2	2.3
CO4	3	3	2	2	2	3	3	3	2	3	2.6
CO5	2	3	3	2	1	3	3	2	2	3	2.4
CO6	2	3	3	2	1	3	3	2	2	3	2.4
Mean overall Score											2.42 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PMA1CC02	Core Course - 2: Real Analysis -1	6	5

Course Objectives
To enable the students to learn the basic concepts of real analysis
To understand proof techniques in analysis and be well prepared for the advanced courses like functional analysis and advanced analysis
To work comfortably with functions of bounded variation, Riemann – Stieltjes Integration
To work with Convergence of infinite series and infinite product
To know uniform convergence and its interplay between various limiting operations

## UNIT I

(18 Hours)

Introduction – Properties of monotonic functions – Functions of bounded variation – Total variation – Additive property of total variation – Total variation on  $[a, x]$  as a function of  $x$  – Functions of bounded variation expressed as the difference of two increasing functions – Continuous functions of bounded variation – Absolute and conditional convergence – Dirichlet's test and Abel's test – Rearrangement of series – Riemann's theorem on conditionally convergent series.

## UNIT II

(18 Hours)

Introduction – Notation – The definition of the Riemann – Stieltjes integral – Linear Properties – Integration by parts– Change of variable in a Riemann – Stieltjes integral – Reduction to a Riemann Integral – Euler's summation formula – Monotonically increasing integrators, Upper and lower integrals – Additive and linearity properties of upper, lower integrals – Riemann's condition – Comparison theorems.

## UNIT III

(18 Hours)

Integrators of bounded variation–Sufficient conditions for the existence of Riemann–Stieltjes integrals–Necessary conditions for the existence of RS integrals– Mean value theorems –integrals as a function of the interval – Second fundamental theorem of integral calculus–Change of variable –Second Mean Value Theorem for Riemann integral– Riemann–Stieltjes integrals depending on a parameter– Differentiation under integral sign–Lebesgue criteriaon for existence of Riemann integrals.

## UNIT IV

(18 Hours)

Double sequences – Double series – Rearrangement theorem for double series – A sufficient condition for equality of iterated series – Multiplication of series – Cesaro summability – Infinite products – Multiplication of power series – The Taylor's series generated by a function – Bernstein's theorem – Abel's limit theorem – Tauber's theorem

## UNIT V

(18 Hours)

Pointwise convergence of sequences of functions – Examples of sequences of real – valued functions – Uniform convergence and continuity – Cauchy condition for uniform convergence – Uniform convergence of infinite series of functions – Riemann – Stieltjes integration – Non-uniform Convergence and Term-by-term Integration – Uniform convergence and differentiation – Sufficient condition for uniform convergence of a series – Mean convergence.

### Books for Study:

1. Apostol, T. M. (1974). *Mathematical analysis* (2<sup>nd</sup> ed.). Addison-Wesley Publishing Company Inc.

**Unit – I** Chapter 6(Sec 6.1 – 6.8) and Chapter 8 (8.8, 8.15, 8.17, 8.18)

**Unit – II** Chapter 7 (Sec 7.1 – 7.14)

**Unit – III** Chapter 7(Sec 7.15 – 7.26)

**Unit – IV** Chapter 8(Sec 8.20 – 8.26) and Chapter 9 (9.14 9.15, 9.19, 9.20, 9.22, 9.23)

**Unit – V** Chapter -9 (Sec 9.1 to 9.6, 9.8,9.9,9.10,9.11, 9.13)

### Books for Reference:

1. Bartle, R. G. (1976). *Real analysis*. John Wiley & Sons Inc.
2. Rudin, W. (1976). *Principles of mathematical analysis* (3<sup>rd</sup> ed.). McGraw Hill Company.
3. Malik, S. C. & Arora, S. (1991). *Mathematical analysis*. Wiley Eastern Limited.
4. Arora, S. & Lal, B. (1991). *Introduction to real analysis*. Satya Prakashan.
5. Gelbaum, B. R. & Olmsted, J. (1964). *Counter examples in analysis*. Holden day.
6. Gupta, A. L. & Gupta, N. R. (2003). *Principles of real analysis*. Pearson Education (Indian print).

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to :	
CO1	acquire knowledge of functions of bounded variation, Riemann-Stieltjes, and uniform convergence	K1
CO2	understand the concepts of Riemann- Stieltjes integral, uniform convergence and its properties.	K2
CO3	apply the properties of bounded variation, Riemann integral in convergence of sequence of functions.	K3
CO4	evaluate the properties of convergence of series and Riemann integrability of functions	K4
CO5	analyze the functions of bounded variation, Riemann integral and double series.	K5
CO6	construct proofs and examples of Riemann- Stieltjes integration, convergence of sequence of functions and double series	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PMA1CC02		Core Course - 2: Real Analysis -I							6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	3	3	2	3	3	3	3	2	2.7
CO2	3	2	3	3	2	2	3	2	3	3	2.6
CO3	3	3	3	2	3	3	3	2	3	3	2.8
CO4	3	2	3	3	2	3	2	3	3	3	2.7
CO5	3	3	3	2	3	3	3	3	3	3	2.9
CO6	3	3	3	3	2	2	3	2	2	3	2.6
Mean overall Score											2.7 (High)

Semester	Course code	Title of the Course	Hours	Credits
1	23PMA1CC 03	Core Course - 3: Ordinary Differential Equations	6	4

Course Objectives
Develop strong background on finding solutions to linear differential equations with constant and variable coefficients and also with singular points
Understanding the concepts of Linear dependence and independence, Wronskian, Singular points, Bessel function, Lipschitz condition, etc.,
Develop strong background on finding solutions to Legendre equation, Euler equation, Exact equation and its applications
Give a depth knowledge of solving initial value problems in ordinary differential equations
Skill to study the existence and uniqueness of solution in first and higher order differential equations

#### **UNIT I: Linear Equations with Constant Coefficients (18 Hours)**

Second order homogeneous equations-Initial value problems-Linear dependence and independence-Wronskian and a formula for Wronskian-Non-homogeneous equation of order two. **Chapter 2: Sections 1 to 6**

#### **UNIT II: Linear Equations with Constant Coefficients (18 Hours)**

Homogeneous and non-homogeneous equation of order n –Initial value problems-Annihilator method to solve non-homogeneous equation - Algebra of constant coefficient operators. **Chapter 2: Sections 7 to 12**

#### **UNIT III: Linear Equation with Variable Coefficients (18 Hours)**

Initial value problems -Existence and uniqueness theorems – Solutions to solve a non-homogeneous equation – Wronskian and linear dependence – reduction of the order of a homogeneous equation – homogeneous equation with analytic coefficients-The Legendre equation. **Chapter: 3 Sections 1 to 8 (Omit section 9)**

#### **UNIT IV: Linear Equation with Regular Singular Points (18 Hours)**

Euler equation – Second order equations with regular singular points –Exceptional cases – Bessel Function. **Chapter 4: Sections 1 to 4 and 6 to 8 (Omit sections 5 and 9)**

#### **UNIT V (18 Hours)**

Existence and uniqueness of solutions to first order equations: Equation with variable separated – Exact equation – method of successive approximations – the Lipschitz condition – convergence of the successive approximations and the existence theorem.

**Chapter 5: Sections 1 to 6 ( Omit Sections 7 to 9)**

<b>Teaching Methodology</b>	Chalk and talk, Lectures, Demonstrations, PPT.
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### **Books for Study**

1. Coddington, E. A. (1987). *An introduction to ordinary differential equations* (3<sup>rd</sup> ed.). Prentice-Hall of India.

### **Books for Reference**

2. Boyce, W. E. & Prima, R. C. D (1967). *Elementary differential equations and boundary value problems*. John Wiley & Sons, New York.
3. Simmons, G. F. (1974). *Differential equations with applications and historical notes*. Tata McGraw Hill, New Delhi.
4. Lebedev, N. N. (1965). *Special functions and their applications*. Prentice Hall of India, New Delhi.
5. Reid, W.T. (1971). *Ordinary differential equations*. John Wiley & Sons, New York.
6. Raisinghania, M. D. (2001). *Advanced differential equations*. S. Chand & Company Ltd, New Delhi.
7. Rai, B., Choudary, D. P. & Freedman, H. I. (2002). *A course in ordinary differential equations*. Narosa Publishing House, New Delhi.

### **Web Source**

1. <http://mathforum.org>, <http://ocw.mit.edu/ocwwweb/Mathematics>,
2. <http://www.opensource.org>, [www.mathpages.com](http://www.mathpages.com)

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	establish the qualitative behaviour of solutions of systems of differential equations	K1
CO2	recognize the physical phenomena modelled by differential equations and dynamical systems.	K2
CO3	analyse solutions using appropriate methods and give examples	K3
CO4	formulate Wronskian for initial value problems	K4
CO5	understand and use various theoretical ideas and results that underlie the mathematics in this course.	K5
CO6	formulate and solve the different kinds of ordinary differential equations.	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PMA1CC03		Core Course - 3: Ordinary Differential Equations							6	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	3	3	3	3	3	2	3	2.8
CO2	2	2	2	3	3	3	3	3	2	3	2.6
CO3	2	2	3	3	3	3	3	3	3	3	2.8
CO4	3	3	2	3	3	3	3	3	2	3	2.8
CO5	2	2	3	2	3	2	3	3	2	3	2.5
CO6	2	2	3	3	3	3	3	3	3	3	2.8
Mean overall Score											2.7 (High)



Semester	Course code	Title of the Course	Hours\Week	Credits
1	23PMA1ES01	Elective - 1: Graph Theory and Applications	5	3

Course Objectives
To introduce the basic concepts of graphs and digraphs
To introduce the notion of connectivity in graphs and the concept of trees
To familiarize on the ideas of independent sets, coverings, matchings and factors
To acquaint on Eulerian, Hamiltonian and planar graphs and the concept of graph colorings, and the notion of duality in graphs
To develop the skill of formulating real life problems to graphical models and finding solutions

### UNIT I (15 Hours)

Basic concepts – Subgraphs – Degrees of vertices – Paths and connectedness – Operations on graphs - Directed graphs: Basic concepts.

### UNIT II (15 Hours)

Vertex cuts and Edge cuts – Connectivity and Edge – Connectivity – Trees: Definition, Characterization and Simple Properties – Applications: Prim's Algorithm.

### UNIT III (15 Hours)

Vertex Independent sets and Vertex Coverings – Edge Independent sets – Matching's and Factors – Eulerian graphs – Hamiltonian graphs.

### UNIT IV (15 Hours)

Vertex colorings - Applications of Graph Coloring – Critical graphs – Edge colorings of graphs.

### UNIT V (15 Hours)

Planar and nonplanar graphs – Euler formula and its consequences –  $K_5$  and  $K_{3,3}$  are nonplanar Graphs – Dual of a plane Graph - The Four-Color theorem and the Heawood Five-Color theorem.

**Note:** Theorems, propositions and results which are starred in the book are to be omitted.

Teaching Methodology	Chalk and Talk and PPT
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**Books for Study**

1. Balakrishnan, R. & Ranganathan, K. (2000). *A Textbook of graph theory*. Springer (India) Private Limited.

**Unit I:** Chapter I: 1.1 - 1.4, 1.7, Chapter II: 2.1, 2.2

**Unit II:** Chapter III: 3.1, 3.2, Chapter IV: 4.1, 4.3, 4.4, Chapter X: 10.3

**Unit III:** Chapter V: 5.1 to 5.3, Chapter VI: 6.1, 6.2

**Unit IV:** Chapter VII: 7.1, 7.2 and 7.4

**Unit V:** Chapter VIII: 8.1 to 8.5

**Books for Reference**

1. Bondy, J. A. & Murty, U. S. R. (1976). *Graph theory with applications*. Macmillan Press Ltd.
2. Harary, F. (1969). *Graph theory*. Addison – Wesley Publishing Company Inc.
3. Chartrand, G., Lesniak, L. & Zhang, P. (2010). *Graphs and digraphs*. CRC press.

**Web Sources**

1. [https://onlinecourses.nptel.ac.in/noc20\\_ma05/preview](https://onlinecourses.nptel.ac.in/noc20_ma05/preview)
2. [https://onlinecourses.swayam2.ac.in/cec20\\_ma03/preview](https://onlinecourses.swayam2.ac.in/cec20_ma03/preview)

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	acquire in-depth knowledge on vital concepts in graph theory.	K1
CO2	understand the graphs, its types and on the theory of connectivity, colorings and planarity.	K2
CO3	apply the imbibed knowledge on the concepts to categorize graphs.	K3
CO4	analyze and infer properties of graphs and its associated concepts.	K4
CO5	evaluate various parameters of a graph.	K5
CO6	construct graphs with specific properties.	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PMA1ES01		Elective - 1: Graph Theory and Applications							5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	3	2	3	3	2	2	2	3	2.5
CO2	3	2	2	3	2	2	3	2	2	3	2.4
CO3	2	3	2	2	2	3	3	3	2	2	2.4
CO4	2	2	3	2	2	2	2	3	3	2	2.3
CO5	3	2	2	3	2	3	2	2	2	3	2.4
CO6	3	2	3	3	2	2	3	2	2	2	2.4
Mean overall Score											2.4 (High)

Semester	Course code	Title of the Course	Hours	Credits
1	23PMA1ES02	Elective - 2: Fuzzy Sets and Their Applications	5	3

Course Objectives
To enable the students to understand the concept of fuzzy logic, fuzzy sets, properties of $\alpha$ -cuts, extension principles
To enable the students to understand the generalized concepts of fuzzy complements, t-norm and t-conorm
To provide the idea of fuzzy numbers, fuzzy relations, fuzzy equivalence relations
To distinguish possibility theory and probability theory
To understand the decision-making process and apply them to real life problems

#### **UNIT I: Basics of Fuzzy Sets: (15 Hours)**

Fuzzy sets – introduction, Basic types and Basic concepts, Additional properties of  $\alpha$ -cuts, Representation of fuzzy sets, Extension principles

#### **UNIT II: Operations on Fuzzy Sets (15 Hours)**

Type of operators on fuzzy sets and fuzzy complements, Fuzzy intersection and fuzzy unions, Combination of operations

#### **UNIT III: Fuzzy Arithmetic and Fuzzy Relations (15 Hours)**

Fuzzy numbers, arithmetic operations on intervals, Arithmetic operations on fuzzy numbers, Fuzzy equations, fuzzy relations: Binary fuzzy relations and binary relation on a single set, Fuzzy equivalence relations

#### **UNIT IV: Possibility Theory (15 Hours)**

Fuzzy measures - Evidence theory - Possibility theory - Fuzzy sets and Possibility theory - Possibility theory versus Probability theory

#### **UNIT V: Fuzzy Decision making (15 Hours)**

Introduction, Individual Decision Making, Multiperson decision Making, Multicriteria decision Making, Fuzzy ranking methods

<b>Teaching Methodology</b>	Chalk and Talk, PPT
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#### **Books for Study:**

1. Klir, G. J. & Yuan, B. (1997). *Fuzzy sets and Fuzzy logic – Theory and applications*. Prentice Hall India.

**Unit I:** Chapter 1 and Chapter 2: Sections 1.3, 1.4, 2.1 to 2.3

**Unit II:** Chapter 3: Sections 3.1 to 3.5

**Unit III:** Chapter 4 and Chapter 5: Sections 4.1, 4.3, 4.4, 5.1 to 5.5

**Unit IV:** Chapter 7: Sections 7.1 to 7.5

**Unit V:** Chapter 15: Sections 15.1 to 15.6

### Books for Reference

1. Zimmermann, H. J. (1987). *Fuzzy sets, decision making and expert systems*. Kluwer.
2. Chen, S. J. & Hwang, C. L. (1992). *Fuzzy multiple attributes decision making*. Springer Verlag.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	acquire the knowledge of various types of fuzzy sets, $\alpha$ -cuts and its properties and extension of functions.	K1
CO2	understand various operations (fuzzy complements, fuzzy intersections and fuzzy unions) on fuzzy sets and symbolic computations.	K2
CO3	apply the concepts of fuzzy decision-making methods in engineering and management problems.	K3
CO4	distinguish possibility theory and probability theory	K4
CO5	Explain various fuzzy related concepts	K5
CO6	Create the fuzzy relations and identify the different types of fuzzy relations and their applications numbers, divisors, modulo arithmetic, primitive roots and quadratic residues.	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PMA1ES02		Elective - 2: Fuzzy Sets and Their Applications							5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	1	2	2	3	2	2	3	3	2.2
CO2	2	1	2	1	2	2	3	3	3	2	2.1
CO3	1	2	2	3	1	2	3	3	3	2	2.2
CO4	3	2	1	2	3	2	3	3	2	1	2.2
CO5	2	3	2	3	1	3	3	2	3	3	2.5
CO6	1	2	2	3	1	2	3	3	3	2	2.2
Mean overall Score											2.2 (High)

Semester	Course code	Title of the Course	Hours	Credits
1	23PMA1AE01	<b>Ability Enhancement Course:</b> Problem Solving in Advanced Mathematics	2	1

Course Objectives
To understand the concepts in Real Analysis, Algebra and Ordinary differential equations
To recall the fundamental ideas in various interpretations of the problems
To create many examples to justify the answers
To analyze and apply the results and techniques to get solutions
To train the students in problem-solving as a preparatory to NET/SET

### UNIT I (6 Hours)

Sets – open – closed – compact – connected - Sequences and series.

### UNIT II (6 Hours)

Continuity – uniform continuity – differentiability – mean value theorems – Riemann integral – Uniform convergence.

### UNIT III (6 Hours)

Groups – subgroups – normal subgroups – cyclic groups – quotient groups – homomorphisms – permutation groups.

### UNIT IV (6 Hours)

Cayley's theorem – class equations – Sylow theorems – Rings – ideals – quotient rings – prime and maximal ideals.

### UNIT V (6 Hours)

Wronskian – Existence and uniqueness of solutions of initial value problems for first order ordinary differential equations.

<b>Teaching Methodology</b>	Chalk and talk, Lectures, Demonstrations, PPT.
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### Books for Study

- Singh, A.P. (2017). *Info study's real analysis*. Info study Publications  
**Unit I:** Chapter 1: 1.1, 1.24 – 1.40, Chapter 2: 2.1 – 2.2  
**Unit II:** Chapter 3: 3.1 – 3.3, 3.5.3,  
Chapter 2: 2.3, Chapter 5: 5.1
- Singh, A.P. (2017). *Info study's modern algebra*. Info study Publications  
**Unit III:** Chapter 1: 1.1 – 1.2, 1.5 – 1.7, 1.10

Chapter 2: 2.1 – 2.4

**Unit IV:** Chapter 2: 2.5 – 2.7, 3.5.3,

Chapter 3: 3.1 – 3.8, 3.10, 3.11, 3.15.6, 3.15.7

3. Singh, A.P. (2017). *Info study's differential equation*. Info study Publications

**Unit V:** Chapter 2: 2.10, Chapter 3: 3.1

### Books for Reference

1. Rudin, W. (1976). *Principles of mathematical analysis* (3<sup>rd</sup> ed.). McGraw-Hill International Book Company.
2. Gallian, J. A. (2012). *Contemporary abstract algebra* (7<sup>th</sup> ed.). Katherine Tegan Books.
3. Coddington, E. A. (1992). *An introduction to ordinary differential equations*. Prentice-Hall of India.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	analyze the efficiency of a specific technique when solving a problem.	K4
CO2	evaluate various interpretations of the problems	K5
CO3	develop new problem-solving methodology to tackle problems in Advanced Mathematics	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PMA1AE01		Ability Enhancement Course: Problem Solving in Advanced Mathematics							2	1
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	2	2	1	3	3	3	2	3	2.3
CO2	1	3	2	1	1	2	3	3	1	2	1.9
CO3	2	2	2	2	2	3	3	3	2	2	2.3
Mean overall Score											2.2 (High)



## DEPARTMENT OF STATISTICS St. JOSEPH'S COLLEGE (Autonomous)

*Special Heritage Status awarded by UGC Accredited at A++ Grade (4<sup>th</sup> Cycle) by NAAC  
College with Potential for Excellence by UGC DBT-STAR & DST-FIST sponsored College*

TIRUCHIRAPPALLI - 620 002.

Phone : 0431 - 4226400, 2700320, Fax : 0431 - 2701501

Website : [www.sjctni.edu](http://www.sjctni.edu)


### Board of Studies Meeting Minutes

The Board of Studies Meeting was conducted in our department on 21.07.2023 at 11.30am. All the staff members from our department and Dr. T. Jaisankar, University expert attended the meeting in person. Dr. S. Ravisankar, Subject expert has participated in the discussion via Google meet. Mr. S. Lawrence, Industry expert was absent. All the members are actively participated in the discussion.

As per the agenda, given in the notice from Fr. Principal, a deliberate discussion was carried out and the following resolutions were made:

- ❖ In TANSCHS syllabus for I UG Statistics, decided to change the content of Descriptive Statistics (23UST13CC01) by removing “principles of least squares for first degree, second degree, Exponential and power curves” in Unit – IV.
- ❖ No changes in the remaining courses viz., (i) Probability Theory and (ii) Mathematics for Statistics – I.
- ❖ The Board has approved the syllabus for the courses:
  - SEC – 1 – NME (Basics of Statistics - 23UST14SE01).
  - Foundation Course – Statistics for Beginners (23UST14FC01).
- ❖ Revised Evaluation Pattern for the courses has been approved by the Board.

The meeting came to end at 12.30pm.

BOARD OF STUDIES MEETING HELD ON 21.07.2023		
DEPARTMENT OF STATISTICS		
St. JOSEPH'S COLLEGE(AUTONOMOUS)		
TIRUCHIRAPPALLI - 620002		
S. No.	Name and address	Signature
1.	Dr. T. Jaisankar, Assistant Professor and Head, Department of Statistics, Bharathidasan University, Tiruchirappalli - 620 024 (University Representative)	
2.	Dr. S. Ravindran, Assistant Professor, Dept. of Statistics, Govt. Arts College, Coimbatore - 641 018. (Subject Expert)	Attended [online]
3.	Mr. S. Lawrence Joseph, Managing Director, Quantitative Research Consulting Pvt. Ltd. 2/133, 1 <sup>st</sup> Floor, Raja Street, Thirunagar, Ponmalaiapatti, Trichy - 620 004.	Absent
4.	Dr. R. Vijayakumar	R. Vijayakumar
5.	Dr. Lilly George	Lilly GJ
6.	Dr. J. Glyceria	J. Glyceria
7.	Dr. T. Venkatesan	T. Venkatesan
8.	Dr. A. Philip Aruldas	A. Philip Aruldas



PROGRAMME PATTERN				
B. Sc. STATISTICS				
Part	Course Code	Title of the Course	Hours	Credits
<b>I</b>	23UTA11GL01A	<b>General Tamil - 1</b> தமிழ் இலக்கிய வரலாறு - 1	5	3
	23UFR11GL01	French-1		
	23UHI11GL01	Hindi-1		
	23USA11GL01	Sanskrit-1		
<b>II</b>	23UEN12GE01	General English-1	5	3
<b>III</b>	23UST13CC01	<b>Core Course - 1:</b> Descriptive Statistics	5	5
	23UST13CC02	<b>Core Course - 2:</b> Probability Theory	5	5
	23UST13AC01	<b>Allied Course - 1:</b> Mathematics for Statistics -1	4	3
<b>IV</b>	23UST14FC01	<b>Foundation Course:</b> Statistics for Beginners	2	2
	23UST14SE01	<b>Skill Enhancement Course - 1(Non Major Elective):</b> Basics of Statistics	2	2
	23UHE14VE01	<b>Value Education:</b> Essentials of Humanity	2	1
<b>Total</b>			<b>30</b>	<b>24</b>

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UST13CC01	Core Course - 1: Descriptive Statistics	5	5

Course Objectives
It explains the important concepts of statistics and statistical data.
It provides to formulate the visualization of frequency distribution.
Also they measure the averages, dispersions, lack of symmetry, moments, relationship among variables.
Estimate and predict the unknown and future values.
Study of non-linear and consistency of the data.

### UNIT I (15 Hours)

Statistics: Introduction - Definition – Functions - Applications - Limitations. Organizing a Statistical Survey: Planning the survey - Executing the survey-Collection of Data: Primary and secondary data - Methods of collecting primary data - Sources of secondary data. Sampling: Census and Sample methods. Classification-Types - Formation of frequency distribution-Tabulation - parts of a Table - Types. Diagrammatic representation – Types. Graphical representation - Graphs of frequency distributions. Merits and Limitations of diagrams and graphs.

### UNIT II (15 Hours)

Measures of Central tendency: Introduction-Definitions-Types - Mean-Median-Mode-Geometric mean-Harmonic Mean-Weighted mean - Merits and Demerits-Measures of Dispersion: Introduction – Definition – Types – Range - Quartile deviation - Mean deviation - Standard deviation - Co-efficient of variation – Lorenz curve - Merits and Demerits.

### UNIT III (15 Hours)

Skewness: Introduction-Definition-Types-Karl Pearson's – Bowley's - Kelly's methods – Their merits and demerits. Kurtosis: Introduction-Definition-Types-Its merits and demerits. Moments: Introduction - Definition-Types - Raw, Central moments and their relations.

### UNIT IV (15 Hours)

Correlation analysis: Introduction - Definition - Types – Ungrouped and Grouped data – Probable error – properties - Rank correlation – Partial and Multiple correlations - Regression analysis: Introduction - Definition – Regression Equations -Multiple regression.

### UNIT V (15 Hours)

Theory of Attributes: Introduction – Definition-Classes and Class frequencies-Consistency of data-Independence of attributes-Association of attributes-Yule's coefficient and -Coefficient of Colligation.

<b>Teaching Methodology</b>	YouTube videos, PPT, Black Board teaching and Handouts.
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### **Books for Study**

1. Gupta, S.P. (2017). *Statistical methods* (35<sup>th</sup> Rev. ed). Sultan Chand & Sons Pvt Ltd.
2. Gupta S. C & Kapoor, V.K. (2002). *Fundamentals of mathematical statistics*. Sultan Chand & Sons Pvt. Ltd.

### **Books for Reference**

1. Goon, A.M., Gupta, A.K. & Dasgupta, B. (1987). *Fundamental of Statistics* (vol.:2). World Press Pvt. Ltd., Kolkatta.
2. Yule, G. U. & Kendall, M.G. (1956). *An introduction to the theory of statistics*. Charles Griffin.
3. Spiegel, M.R. (1961). *Theory and problems of statistics*. Schaum's outline series.
4. Anderson, T.W. & Sclove, SL. (1978). *An introduction to statistical analysis of data*. Houghton Mifflin & co.
5. Pillai, R.S., & Bagavathi. (2003). *Statistics*. S. Chand and Company Ltd., New Delhi.

### **Web Sources**

1. e-books, tutorials on MOOC/SWAYAM courses on the subject
2. <https://en.wikipedia.org/wiki/Statistics>
3. [https://en.wikipedia.org/wiki/Descriptive\\_statistics](https://en.wikipedia.org/wiki/Descriptive_statistics)
4. <https://socialresearchmethods.net/kb/statdesc.php>
5. <http://onlinestatbook.com/2/introduction/descriptive.html>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	acquire the knowledge of Statistics and its scope and importance in various areas	K1
CO2	draw and explain the visual representation of the given set of data	K2
CO3	compute the various measures of averages, dispersions, lack of symmetry, moments and relationship among variables	K3
CO4	distinguish between different types and classification of data	K4
CO5	execute and analyse a sample survey.	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UST13CC01		Core Course - 1: Descriptive Statistics							5	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	2	2	2	3	3	2	1	1	2.1
CO2	3	2	3	3	1	2	2	2	2	2	2.2
CO3	3	3	2	3	1	2	3	3	3	2	2.5
CO4	3	2	3	3	2	3	2	3	2	2	2.5
CO5	3	3	3	3	3	3	3	3	3	3	2.46
Mean overall Score											2.46 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UST13CC02	Core Course - 2: Probability Theory	5	5

Course Objectives
To describe the importance and scope of probability theory and to predict the chance of an experimental outcomes.
Distinguish between discrete and continuous random variables.
Understand the joint probability mass function and joint density function with two dimensional random variables.
To learn and be able to apply the properties of mathematical expectation.
Compute the probability values for sum of random variables using central limit theorem

#### UNIT I (15 Hours)

**Theory of Probability:** Introduction-Basic terminology- Definition - Axiomatic approach – Types of Events - Conditional Probability - Addition and Multiplication theorems of Probability for ‘two’ and ‘n’ events (Statement and Proof) - Boole’s inequality (Statement and Proof)- Bayes’ theorem of Probability (Statement and Proof with numerical illustration - very simple problems)

#### UNIT II (15 Hours)

**Random variables and Distribution functions:** Introduction - Discrete random variable: Probability mass function- Discrete distribution function, Properties. Continuous random variable : Probability density function and properties, measures of central tendency, dispersion, Skewness and kurtosis for continuous Probability distribution.

#### UNIT III ( 15 Hours)

**Two dimensional random variables:** Joint probability mass function- Marginal probability function, Conditional probability function. Two dimensional distribution functions-Marginal distribution functions - Joint density function-Marginal density function - Conditional distribution function - Conditional probability density function. Transformation of One - Dimensional and Two Dimensional random variable (concept only).

#### UNIT IV (15 Hours)

**Mathematical Expectations:** Introduction- Expected value of a random variable (Discrete and Continuous)-Expected value of function of a random variable - Properties of Expectation-Properties of variance- Covariance. Inequalities involving expectation: Cauchy Schwartz and Markov inequalities.

## UNIT V

(15 Hours)

**Generating functions:** M.G.F - Properties - Uniqueness theorem - C.G.F – Properties - P.G.F -Properties. Characteristic Function: Properties–Inversion theorems (Statement only) - Uniqueness theorem (Statement only). Chebychev's Inequality (Statement and Proof). Law of Large Numbers (L.L.N): Convergence in probability - Properties: Weak L.L.N - properties- Bernoulli's L.L.N (Statement and Proof) - Khinchin's theorems (Statement only).

<b>Teaching Methodology</b>	YouTube videos, PPT and Handouts.
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### Books for Study

1. Gupta S.C. & Kapoor V.K. (2015). *Fundamentals of mathematical statistics*. Sultan Chand & Sons.

### Books for Reference

1. Rohatgi, V.K. (1984). *An introduction to probability theory and mathematical statistics*.
2. Hogg, R.V. & Craig, A.T. (1978). *Introduction to mathematical statistics*. McGraw Hill Publishing Co. Inc., New York.
3. Mood A.M., Graybill, F.A. & Bose, D.C. (1974). *Introduction to the theory of Statistics*. McGraw Hill Publishing Co. Inc., New York.
4. Arora, S. & Lal, B. (1989). *New mathematical statistics*. Satya Prakashan, New Delhi.

### Web Sources

1. e-books, tutorials on MOOC/SWAYAM courses on the subject
2. [www.khanacademy.org/math/statistics-probability/random-variables-stats-library](http://www.khanacademy.org/math/statistics-probability/random-variables-stats-library)
3. <https://ocw.mit.edu/courses/mathematics/18-440-probability-and-random-variables-spring-2014/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
<b>CO1</b>	match the real-life situations with probability concepts.	<b>K1</b>
<b>CO2</b>	understand the basic probability theorems and its properties.	<b>K2</b>
<b>CO3</b>	apply probability concepts into real life examples	<b>K3</b>
<b>CO4</b>	analyze discrete and continuous random variables	<b>K4</b>
<b>CO5</b>	evaluate the appropriate probability function, parameters, expectations and generating functions	<b>K5</b>

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
<b>1</b>	<b>23UST13CC02</b>		<b>Core Course - 2: Probability Theory</b>							<b>5</b>	<b>5</b>
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
<b>CO1</b>	2	3	3	1	1	3	2	3	2	1	2.1
<b>CO2</b>	2	3	3	2	3	3	3	2	3	2	2.6
<b>CO3</b>	2	3	3	2	3	3	3	2	3	2	2.6
<b>CO4</b>	3	1	1	3	3	1	2	1	3	3	2.1
<b>CO5</b>	3	1	1	3	3	1	2	1	3	3	2.1
Mean overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UST13AC01	Allied Course - 1: Mathematics for Statistics -1	4	3

Course Objectives
The overall objective of the study is to create deep interest in learning mathematics which develop broad and balance knowledge and understanding definitions, concepts, principles and theorems
It helps the students to enhance the ability of learners to apply the knowledge and skill acquired by them to solve specific theoretical and applied problems in statistics
It also encourages the students to develop a range of generic skill helpful in employment, internships in social activities

#### **UNIT I (12 Hours)**

Rational fractions: Proper and improper rational fractions. Partial fractions: Forms of partial fractions.

#### **UNIT II (12 Hours)**

Series: Summation and approximations related to Binomial, Exponential and Logarithmic series -Taylor's series, Fourier series for even and odd functions.

#### **UNIT III (12 Hours)**

Theory of equations: Polynomial equations with real coefficients- imaginary and irrational roots-solving equations with related roots-equation with given numbers as roots-equation whose roots are symmetric functions of roots.

#### **UNIT IV (12 Hours)**

Differential calculus: Functions – Different types – simple valued and many valued – Implicit and Explicit functions, Odd and even functions, periodic functions, algebraic and transcendental functions. Inverse functions, Limit of a function – Some standard limit (without proof) Differentiation of standard functions- standard rules of differentiation- Addition, subtraction, multiplication and quotient rules – function of function rule.

#### **UNIT V (12 Hours)**

Successive differentiation: Leibnitz's theorem, nth derivatives of standard functions – simple problems. Partial differentiation: Successive partial differentiation. Maxima and Minima for two variable functions. Homogenous function – Euler's theorem on homogenous function.

<b>Teaching Methodology</b>	Chalk and Talk, YouTube videos, PPT and Handouts.
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**Books for Study**

1. Duraipandian, P. & Udayabaskaran, S. (2014). *Allied mathematics* (Vols.: 1-2). S. Chand & Company Pvt. Ltd.
2. Vittal, P.R. (2012). *Allied mathematics*. Margham Publications.
3. Narayanan, S. & Manickavachagam Pillai. (1993). *Ancillary mathematics* (Book II): (Containing Differential Calculus). S. Viswanathan Pvt, Ltd.

**Books for Reference**

1. Narayanan, S. & Manickavachagam Pillai. (1993). *Ancillary mathematics* (Vol.:2, Part I): (Containing Trigonometry). S. Viswanathan Pvt. Ltd.
2. Narayanan, S. & Manickavachagam Pillai. (1993). *Ancillary mathematics* (Book I): (Containing Algebra). S. Viswanathan Pvt. Ltd.
3. Venkatesan, S. J. (2019). *Algebra*. Sri Krishna Publications.

**Web Sources**

1. e-books, tutorials on MOOC/SWAYAM courses on the subject

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	identify the types of fractions, series and roots.	K1
CO2	understand the basic concepts of functions, series, theory of equations, differential calculus and successive differentiation.	K2
CO3	apply the mathematical concepts in real life problems.	K3
CO4	Analyze the importance of functions, series, equations and differential calculus.	K4
CO5	Critical thinking of mathematical problems.	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UST13AC01		Allied Course - 1: Mathematics for Statistics -1							4	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	3	2	2	2	3	3	1	2	2.3
CO2	2	3	3	2	2	1	2	3	3	2	2.3
CO3	2	3	2	2	3	2	1	3	2	3	2.3
CO4	3	1	2	2	3	3	1	1	2	3	2.1
CO5	3	2	3	2	3	3	2	2	1	3	2.4
Mean overall Score											2.28 (High)

Semester	Course Code	Title of the Course	Hours / Week	Credits
1	23UST14FC01	Foundation Course: Statistics for Beginners	2	2

Course Objectives
To understand the concept of set theory
To know the basics of functions and relations
Acquire the knowledge of sequence and series of Arithmetic and Geometric progression
Understand the basics of differentiation and integration
To know the difference between Permutation and Combination

### UNIT I (6 Hours)

Set Theory – Subset, Types of sets, Relations, Functions – (Simple problems).

### UNIT II (6 Hours)

Sequence and Series – Introduction of sequence and series – Arithmetic and Geometric progression (Simple problems)

### UNIT III (6 Hours)

Basic principles of counting, Factorial, Permutations and Combinations - (Simple problems)

### UNIT IV (6 Hours)

Differentiation and Integration - Introduction to differentiation – introduction to integration (Simple problems)

### UNIT V (6 Hours)

Statistics – Importance of Statistics, Population, Sample – quantitative and qualitative data. Collection of primary and secondary data. Measurement Scales – Nominal, Ordinal, Interval and Ratio.

Teaching Methodology	PPT, Chalk and talk and Handouts.
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### Books for Study

1. Navaneetham, P.A. (2007). *Business mathematics and statistics*. Jai Publishers.
2. Aggarwal, R. S. (2018). *Quantitative aptitude*. S. Chand & Company PVT. Ltd.
3. Gupta, S.P. (2017). *Statistical methods* (35<sup>th</sup> Rev. ed.). Sultan Chand & Sons Pvt Ltd, New Delhi.

**Books for Reference**

1. Gupta, S.C. & Kapoor, V.K. (2002). *Fundamentals of mathematical statistics*. Sultan Chand & Sons Pvt. Ltd.
2. Pillai, R.S. & Bagavathi. (2003). *Statistics*. S. Chand and Company Ltd.

**Web Sources**

1. [https://www.icaai.org/post.html?post\\_id=17790](https://www.icaai.org/post.html?post_id=17790)
2. <https://en.wikipedia.org/wiki/Statistics>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	Acquire the knowledge of sets, sequence, permutation, combination, differential calculus, integral calculus, Statistics and its importance in various areas.	K1
CO2	Understand the data and its relevance in business and develop an understanding of quantitative problems.	K2
CO3	Apply the quantitative methods to solve the real life problems	K3

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UST14FC01		Foundation Course: Statistics for Beginners							2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	2	1	3	3	2	1	2	2.2
CO2	2	3	2	3	2	2	3	2	2	3	2.4
CO3	3	2	3	2	2	3	2	1	3	2	2.3
Mean overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UST14SE01	<b>Skill Enhancement Course – 1 (Non Major Elective):</b> Basics of Statistics	2	2

Course Objectives
To learn the basic Statistical concepts
It will help the students in the field of data collection
To solve specific theoretical and applied problems in statistics
It also encourages the students to develop a range of generic skill helpful in employment, internships in job opportunities
To know the relationships of the variables

#### **UNIT I (6 Hours)**

Statistics - Introduction, Origin, Meaning, Scope, Uses, Misuses and Limitations.  
Primary data - Methods of collection - Secondary data sources.

#### **UNIT II (6 Hours)**

Classification and Tabulation of data - Formation of frequency tables - Univariate and Bivariate Cases – Types of presentation - Diagrammatic representation.

#### **UNIT III (6 Hours)**

Measures of Central Tendency: Arithmetic Mean, Median, Mode, Geometric mean, Harmonic mean - Characteristics of a good average.

#### **UNIT IV (6 Hours)**

Measures of Dispersion: Range - Quartile deviation - Mean deviation – Standard deviation

#### **UNIT V (6 Hours)**

Correlation: Introduction – Types of correlation – Karl Pearson's coefficient of correlation - Spearman's rank correlation coefficient.

<b>Teaching Methodology</b>	Chalk and Talk, YouTube videos, PPT and Handouts.
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#### **Books for Study**

1. Gupta, S.P. (2021). *Statistical methods* (46<sup>th</sup> ed). Sultan Chand & Sons Educational Publisher.

#### **Books for Reference**

1. Gupta, S.C & Kapoor, V.K. (2002). *Fundamentals of mathematical statistics*. Sultan Chand & Sons Pvt. Ltd.

## Web Sources

1. e-books, tutorials on MOOC/SWAYAM courses on the subject

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
<b>CO1</b>	Compute various measures of averages, dispersion and relationships among the variables	<b>K3</b>
<b>CO2</b>	Distinguish between types and classification of data	<b>K4</b>
<b>CO3</b>	Analyse the importance of variables	<b>K5</b>

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
<b>1</b>	<b>23UST14SE01</b>		<b>Skill Enhancement Course – 1 (Non Major Elective):</b> Basics of Statistics							<b>2</b>	<b>2</b>
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
<b>CO1</b>	3	2	3	2	3	2	1	3	3	2	2.4
<b>CO2</b>	2	3	2	2	3	1	3	3	2	3	2.4
<b>CO3</b>	3	3	3	2	2	1	2	3	3	3	2.5
Mean overall Score											<b>2.43 (High)</b>

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### Minutes of the Board of Studies Meeting

Venue: English Department

Date: 21-07-2023

#### Agenda: Board of Studies – TANSCHÉ syllabus

The meeting began with a short silent prayer at 11.40 am. Dr. V. L. Jayapaul, HoD, Department of English welcomed the University representative Dr. D. E. Benet, Dean, IQAC, National College, Trichy and the subject expert Dr. J. John Sekar, Associate Professor, Former Head, Department of English, The American College, Madurai. He then welcomed all the staff members from both Shift I & II to the board of studies meeting. The Head of the department announced that one hour is taken from both General English and General Tamil and given to Foundation course. The following were the suggestions provided by the board and accepted by the members of the board. The house accepted to follow the TANSCHÉ syllabus with maximum of 25% of changes where ever needed.

UG/ PG	Course code and course title	Changes suggested
UG	23UEN13CC01- Introduction to Literature	Unit 2- "Elegy Written in a Country Churchyard" can be replaced with "O Captain, My Captain" Unit 4 – "Bliss" from <i>Bliss and Other Stories</i> is taken instead of the whole collection Genres can be mentioned after the units
UG	23UEN13CC02 – Indian Writing in English	Unit 1 – correction – "Night Train at Deoli" not 'to Deoli' Unit 2 – Pearl S Buck is removed – not an Indian writer- replaced by Swami Vivekananda's text Web sources – Remove - Dickens, Charles. "Fifty-Two." <i>A Tale of Two Cities</i> , 2008.
UG	23UEN13GE01 - Social History of England	Unit 1 – History of England before the Renaissance period till Norman's Conquest of 1066, can be added and titled as Introduction to Early English Society
UG	23UEN14SE01 - SEC 1: (NME) English For Communication	Unit 5 – Rephrase "application of learning" Each unit can have language specific topics
UG	23UEN14FC01 - Foundation Course: Writing about Literature	Syllabus was not provided by TANSCHÉ and hence the faculty were asked to frame a syllabus

		Experts suggested – change title into Reading Literature, Each unit can use one literary piece to be analyzing. – Change title into Reading Literature
UG	23UEN12GE01 - General English - I	Faculty members can take up synonyms and antonyms from the texts of unit 1, 2 & 3 and supply it to students
PG	23PEN1CC01 - ENGLISH POETRY – From Chaucer to 20th Century	Unit 2 – one of Spenser's poems can be removed Unit 3 – <i>Paradise Lost</i> book IX lines can be reduced Unit 5 – Remove W.H.Auden: "Elegy on the Death of W.B. Yeats"
PG	23PEN1CC02 - Drama I- Elizabethan Age to 20th Century	Unit 2 – Ben Jonson comes under Jacobean Drama
PG	23PEN1CC03 - ENGLISH FICTION	Unit 1 – The Pilgrim's Progress is put under allegory and satire as it is not a novel.
PG	23PEN1ES01 - Indian Writing in English Elective Courses 1 (Generic/ Discipline specific)	Unit 1 – add 'sri' before Aurobindo Unit 1 & 2 can be combined and some poems may be removed. Short stories can be added and put as a separate unit with more writers. Unit 5 - Anita Desai can be replaced with any other Booker prize writers
PG	23PEN1ES02 – Theatre art Elective Courses 1 (Generic/ Discipline specific)	Unit 2 - Broadway musicals can be added in the types of dramas. Students can be made to watch the dramas. Unit 2 – topics can be put in bulletins
PG	AECC- 1: Soft Skills- 1 Technical Writing (Ability Enhancement Compulsory Course)	Unit 3 – replace 'Letters: Kings and Mechanics' with 'Mechanics of Writing'

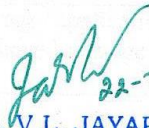
Question pattern for the mid semester and the semester Exam also were passed in the meeting.

AECC, NME and Foundation Courses are to be conducted as purely internal.

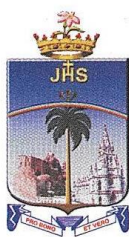
Since the Certificate Courses offered by the department were already approved in the previous Board of Studies meeting, the same courses could be offered without any change.

Finally Head of the department thanked all members of the Board of Studies for their support and contribution.

The meeting ended by 1.40 p.m.

  
 22-7-2023  
**Dr. V.L. JAYAPPAUL**  
 Associate Professor & Head  
 PG & Research Dept. of English  
 St. Joseph's College (Autonomous)  
 Tiruchirappalli - 620 002.





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### Minutes of the Board of Studies Meeting

Venue: English Department

Date: 01-08-2023

#### Agenda: Board of Studies – TANSCHÉ syllabus (Revised)

The meeting began at 12.30 pm with a short silent prayer. Dr. V. L. Jayapaul, Head of the Department of English, welcomed the staff members of both shift 1&2 to the board of studies meeting. General English revised syllabus by TANSCHÉ was approved for the year 2023-24. Staff incharges of individual courses were asked to make necessary changes as suggested by external experts in the previous board of studies meeting. The rectified papers were presented before the house for finalising.

UG/ PG	Course code and course title	Changes suggested
UG	23UEN12GE01 - General English - I	This paper has been revised by TANSCHÉ and the new topics are entirely different from the old topics. As mid-semester exams are approaching, the house decided to reduce the portions. Portions omitted for this semester only - 1.2, 1.4, 2.2, 2.4, 4.5, 4.6, 4.7. Unit 3 and 4 will be swapped; Unit 3 - parts of speech Unit 4 - critical and creative thinking
UG	23UEN13CC01- Introduction to Literature	Hours should be allotted to every unit
UG	23UEN13CC02 – Indian Writing in English	K levels need to be added
UG	23UEN13GE01 - Social History of England	Alignment needs to be done
UG	23UEN14SE01 - SEC 1: (NME) English For Communication	Add skill based components to the units in alignment with the title and nature of the course
UG	23UEN14FC01 - Foundation Course: Reading Literature	No changes suggested
PG	23PEN1CC01 - ENGLISH POETRY – From Chaucer to 20th Century	Portions under the title "Further Reading" need not be included for exam.

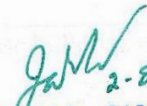
PG	23PEN1CC02 - Drama I - Elizabethan Age to 20 <sup>th</sup> Century	No changes suggested
PG	23PEN1CC03 - ENGLISH FICTION	No changes suggested
PG	23PEN1ES01 - Indian Writing in English Elective Courses 1 (Generic/ Discipline specific)	Unit 3 - 11. R. K. Narayan's <i>Astrologer's Day</i> is already available in UG syllabus, hence it is replaced with <i>Engine Trouble</i> by R. K. Narayan
PG	23PEN1ES02 – Theatre art Elective Courses 1 (Generic/ Discipline specific)	No changes suggested
PG	AECC- 1: Soft Skills- 1 Technical Writing (Ability Enhancement Compulsory Course)	Materials given for reference is not relevant, hence the staff in-charge has to look into the issue and suggest relevant materials could be added.

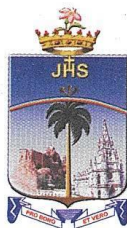
**General Instruction:**

- Rev. Fr. Principal's notice to the faculty members, to increase the endowment amount by contacting the endowment holder's family or by some other contribution.
- Head of the department asked the faculty members to send 100 MCQs for 2021 syllabus within a week.
- Head of the department reminded the faculty members to send the Mid-Semester question papers before 7th August, 2023.

Head of the department finally thanked all the faculty members for their support and contribution.

The meeting was over by 1.20 p.m.

  
2-8-2023  
Dr. V.L. JAYAPPAUL  
Associate Professor & Head  
PG & Research Dept. of English  
St. Joseph's College (Autonomous)  
Tiruchirappalli - 620 002.



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## Department Staff Meeting Attendance Sheet for Staff (Shift-I)

Date: 01-08-2023

S. No	Name of the Staff	Signature
1	Dr. V.L. Jayapaul - Head	
2	Dr. V. Francis	
3	Dr. J. John Love Joy	
4	Dr. R. Qurshid Begum	
5	Dr. M. John Britto	
6	Rev. Dr. S. Paul Pragash	
7	Dr. D. R. Edwin Christy	
8	Dr. R. Jayakanth	
9	Dr. S. John Bosco	-
10	Dr. Cheryl Davis	
11	Dr. M. Amutha	
12	Mr. A. Abraham	
13	Dr. S. Jerald Sagaya Nathan	
14	Mr. B. Sam Jerome Sharone	
15	Dr. J. Amalaveenus	
16	Dr. S. Sajeev	
17	Dr. M.S. Xavier Pradheep Singh	
18	Prof. K. Primrose	
19	Prof. G. Annie Rose	
20	Prof. A. Nepolian	
21	Prof. S. Ignatius Richard	





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## Department Staff Meeting Attendance Sheet for Staff (Shift-II)

Date: 01-08-2023

S. No	Name of the Staff	Signature
1	Dr. Johnson Francis A.	
2	Dr. D. Loyola Innaci	ABSENT
3	Dr. J. Charles Arockiasamy (Co-Ordinator)	
4	Dr. A. Ezhugnayiru	
5	Dr. G. Kannaiyan	
6	Prof. I. Christhuraj	
7	Prof. S. Yasmeenbanu	
8	Prof. S. Thiyagarajan	
9	Prof. A. Ukkirapandian	ABSENT
10	Prof. K. M. Vargeesh	
11	Prof. D. Prasanth Arokiasamy	
12	Prof. M. Anitha	
13	Prof. A. Sangeeth Kumar	
14	Dr. J. Gilbert Mary	
15	Prof. L. Virgin Francy	

PROGRAMME PATTERN				
B. A. ENGLISH				
Part	Course Code	Title of the Paper	Hours	Credits
I	23UTA11GL01A	General Tamil- 1 (தமிழ் இலக்கிய வரலாறு-1)	5	4
	23UFR11GL01	French-1		
	23UHI11GL01	Hindi-1		
	23USA11GL01	Sanskrit-1		
II	23UEN12GE01	General English-1	5	3
III	23UEN13CC01	<b>Core Course - 1:</b> Introduction to Literature	5	5
	23UEN13CC02	<b>Core Course - 2:</b> Indian Writing in English	5	4
	23UEN13AC01	<b>Allied Course - 1:</b> Social History of England	4	4
IV	23UEN14FC01	<b>Foundation Course:</b> Reading Literature	2	2
	23UEN14SE01	<b>Skill Enhancement Course – 1 (Non Major Elective):</b> English for Communication	2	2
	23UHE14VE01	<b>Value Education:</b> Essentials of Humanity	2	1
		<b>Total</b>	30	24

Semester	Course Code	Title of the course	Hours/ Week	Credits
1	23UEN13CC01	<b>Core Course 1:</b> Introduction to Literature	5	5

Course Objectives
To introduce the different forms of literature
To provide learners with the background knowledge of literature
To enable learners to understand the different genres of writing
To examine the various themes and methodologies present in literature
To create the ability of critically examining a text

**UNIT I: Introduction (15 Hours)**

- Poetry – Different forms of poetry – Sonnet, Ode, Elegy, Lyric Ballad
- Prose – Short Story, Novella, Novel
- Drama – Comedy, Tragedy, Tragi-Comedy

**UNIT I: Poetry (15 Hours)**

- Michael Drayton – *The Parting*
- William Shakespeare – *Sonnet 18, Sonnet 116*
- John Milton – *When I Consider How My Light is Spent*
- William Wordsworth - *Daffodils*
- John Keats – *Ode to Nightingale*
- Walt Whitman – *O Captain! My Captain!*
- Robert Frost – *Mending Wall*

**UNIT III: Play (15 Hours)**

- J.M. Barrie – *The Admirable Crichton*
- Lady Gregory – *The Rising of the Moon*

**Unit IV: Novel (15 Hours)**

- Manohar Malgonkar – *Spy in Amber*
- Don Quixote – *Tilting at the Windmills*

**Unit V: Short Story (15 Hours)**

- Saki – *The Open Window*
- Emmy Laybourne – *Sweet*
- Jerome K. Jerome – excerpt from *Three Men in a Boat* – *Packing*
- Katherine Mansfield – *Bliss* (1918) from *Bliss and Other Stories*

<b>Teaching Methodology</b>	Lecture method, multimedia presentations, literary analysis writing assignments, close reading of texts
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### Books for Study

1. Kennedy, X. J. (2016). *Backpack Literature: An Introduction to Fiction, Poetry, Drama, and Writing*. Pearson.
2. Kirsznner, L. (2016). *Portable Literature: Reading, Reacting, Writing* (9<sup>th</sup> ed.). Cengage Learning.

### Books for Reference

1. Adamson, H. D. (2019). *Linguistics and English Literature: An Introduction*. Cambridge University Press.
2. Campbell, J. (2021). *Introduction to Literature: Excellence in Literature English 1* (4<sup>th</sup> ed.). Everyday Education, LLC.
3. Herawati, H., et al. (2021). *Introduction to Literature*. Sanata Dharma University Press, October.
4. Meyer, M. D. & Miller, Q. (2021). *The Compact Bedford Introduction to Literature* (with 2021 MLA Update). Bedford/St. Martin's.
5. Mund, S.(2021). *The Making of Indian English Literature*. Taylor & Francis Ltd.
6. Titjen, F., et al. (2020). *Teaching English Language and Literature*. Taylor & Francis.

### Web Sources

1. ASIATIC: IITUM Journal of English Language & Literature  
<https://journals.iium.edu.my/asiatic/index.php/AJELL>
2. The English Historical Review (EHR)

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will be able to	
CO1	appreciate and analyse and the basic elements of poetry, including meter, rhyme, and theme.	K1
CO2	gain knowledge of the elements of fiction including narrative structure, character analysis and comparison between different but related texts.	K2
CO3	explore the dramatic storytelling including play structure, monologues, dialogue, and scene setting.	K3
CO4	use library resources to research and develop arguments about literary works.	K4
CO5	work skillfully within a team, respect coworkers, delegate work and contribute to a group project.	K5

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23UEN13CC01	Core Course I: Introduction to Literature								5	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	3	3	3	3	3	3	3	3	3
CO2	2	3	3	3	2	3	3	3	3	3	2.8
CO3	3	3	3	2	3	3	3	3	3	3	2.9
CO4	3	3	3	3	3	3	3	3	3	3	3
CO5	3	2	3	3	3	3	3	3	3	3	2.9
Mean overall Score											2.92 (High)



Semester	Course Code	Title of the course	Hours/Week	Credits
1	23UEN13CC02	<b>Core Course 2:</b> Indian Writing in English	5	4

Course Objectives
To familiarize the students with the emergence and growth of Indian Writing in English in the context of colonial experience
To help in understanding issues concerning Indian Writing in English such as the representation of culture, identity, history, constructions of nation, (post)national and gender politics, cross-cultural transformations
To enable learners to appreciate Nation-Nationalism; Counter Discourse; Subalternity; Identity Movements
To closely examine the various themes and methodologies existing in Contemporary Indian Writing in English
To help learners apply the ideas encapsulated in Indian Aesthetics to literary texts

#### **UNIT I (15 hours)**

- Panchathantra Tales -Winning of Friends (Four Stories)
- Ruskin Bond - Night Train at Deoli
- R.K. Narayan – An Astrologer’s Day
- K.A. Abbas – Sparrows

#### **UNIT II (15 hours)**

- Rabindranath Tagore - Khabhuliwala.
- Swami Vivekananda - Why We Disagree
- Nirad C. Chaudhuri – The Continent of Circe
- Dr. S. Radhakrishnan - Science, Humanities and Religion

#### **UNIT III (15 hours)**

- Toru Dutt - The Lotus
- Sri Aurobindo - The Tiger and the Deer.
- Nissim Ezekiel – Night of the Scorpion
- Kamala Das - Invitation

#### **UNIT IV (15 hours)**

- Sarojini Naidu- The Village Song
- A.K. Ramanujam - Still Another View of Grace
- Shiv K Kumar - Indian Women
- Mirza Ghalib - It is not Love, it is Madness

#### **UNIT V (15 hours)**

- Rabindranath Tagore - Mukhthadhara
- Girish Karnad - Hayavadana

<b>Teaching Methodology</b>	Lecture method, multimedia presentations, literary analysis writing assignments, close reading of texts
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### Books for Study

1. Kenneth, R. (1976). *The New British Poets: An Anthology*. Granger Books.
2. Pandit, V., & Sharma. (1991). *Panchatantra*. (G. L. Chandiramani., Trans.). Rupa & Co.

### Books for Reference

1. Bhattacharya, B. (2006). *Contemporary Indian Short Stories: Series II*. Sahitya Akademi.
2. Dalmia, V., & Sadana, R. (2012). *The Cambridge Companion to Modern Indian Culture*. Cambridge University Press.
3. Paul, S. K., & Prasad, A. N. (2007). *Indian Poetry in English: Roots and Blossoms*. Sarup & Sons.
4. Singh, B. (2014). *Indian Writing in English Critical Insights*. Authorspress.
5. Singh, S., & Prakash, R. (2013). *Indian English poetry*. Chandralok Prakashan.

### Web Sources

1. Mishra, Sunil, et al. "Desires and Ecstasies of Women in the Plays of Girish Karnad." *International Journal of English Language, Literature and Humanities*, Apr. 2014. [ijellh.com/wp-content/uploads/2014/04/Desires-and-Ecstasies-of-Women-in-The-Plays-Of-Girish-Karnad.pdf](http://ijellh.com/wp-content/uploads/2014/04/Desires-and-Ecstasies-of-Women-in-The-Plays-Of-Girish-Karnad.pdf).
2. Pareek, Shreya. "20 Must Read Gems of Indian English Literature." *The Better India*, 20 June 2014. [www.thebetterindia.com/11594/20-gems-indian-literature-must-read/](http://www.thebetterindia.com/11594/20-gems-indian-literature-must-read/).
3. Varma, Shraddha. "5 Rabindranath Tagore Poems that Capture the Essence of Love." *Idivi*, 9 May 2019. [www.idivi.com/entertainment/books/5-of-the-best-rabindranath-tagore-poems-on-love/17075960](http://www.idivi.com/entertainment/books/5-of-the-best-rabindranath-tagore-poems-on-love/17075960).

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will be able to	
CO1	appreciate the historical trajectory of various genres of Indian Writing in English from colonial times to till the present	K1
CO2	analyze Indian literary texts written in English in terms of colonialism, postcolonialism, regionalism, and nationalism	K2
CO3	understand the role of English as a medium for political awakening and the use of English in India for creative writing	K3
CO4	analyze how the sociological, historical, cultural and political context impacted the texts selected for study	K4
CO5	evaluate critically the contributions of major Indian English poets and dramatists	K5

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23UEN13CC02	Core Course 2: Indian Writing in English								5	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	3	3	3	3	3	3	3	3	3
CO2	2	3	3	3	2	3	3	3	2	3	2.6
CO3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3	3
Mean overall Score											2.9 (High)

Semester	Course Code	Title of the course	Hours/ Week	Credits
1	23UEN13GE01	Allied 1: Social History of England	4	4

Course Objectives
To help students identify the facts and events in the social history of England
To help students understand the important social issues covered in the syllabus
To help the students classify the events in a chronological order and associate the historical influence on the literary works
To analyse and associate the causes and effects of the multiple incidents that affect the social history of England
To create the ability to assess and recommend significant events by making connections and drawing contrasts of the various trends within the periods and over long arcs of time

### UNIT I (12 Hours)

- Introduction: Original Inhabitants, Roman invasion, Germanic invasion, Sixth Century, Ninth Century, Alfred the Great, William of Normandy, Feudal System
- The Renaissance and its Impact on England
- The Reformation - causes and effects

### UNIT II (12 Hours)

- The Commonwealth of Nations
- The Restoration
- Coffee-houses and their Social Relevance

### UNIT III (12 Hours)

- Impact of the Industrial, Agrarian and the French Revolutions on the English Society
- Humanitarian Movements in England

### UNIT IV (12 Hours)

- The Reform Bills and the Spread of Education
- Social impact of the Two World Wars
- The Labour Movement
- The Welfare State

### UNIT V (12 Hours)

- The Cold War (1985-1991)
- The Falkland War (1981)
- The Gulf War (1991)

<b>Teaching Methodology</b>	Lecture Method, Multimedia Presentations, Project Method, Discussion Method
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### Books for Study

1. Ashok, P. (2018). *Social History of England*. Orient Blackswan Pvt Ltd.
2. Houts, E. & Crick, J. (2012). *A Social History of England, 900-1200*. Cambridge University Press.
3. Xavier, A.G. (1982). *Introduction to the Social History of England* (4<sup>th</sup> ed.). S.Viswanathan Publishers.
4. Wrightson, K. (2018). *A Social History of England, 1500-1750*. Cambridge University Press.

### Books for Reference

Horrox, R., & Ormrod, W. M. (2006). *A Social History of England: 1200-1500*. Cambridge University Press.

### Web Sources

*A social history of England : Briggs, Asa, 1921- : Free Download, Borrow, and Streaming : Internet Archive*

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will be able to	
CO1	identify the facts and events in the social history of England	K1
CO2	understand the important social issues covered in the syllabus	K2
CO3	classify the events in a chronological order and associate the historical influence on the literary works	K3
CO4	analyse and associate the causes and effects of the multiple incidents that affect the social history of England	K4
CO5	assess and recommend significant events by making connections and drawing contrasts of the various trends within the periods and over long arcs of time	K5

Relationship Matrix												
Semester	Course code	Title of the Course									Hours	Credits
1	23UEN13GE01	Allied 1: Social History of England									4	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	3	3	3	3	3	3	3	3	3	3	
CO2	2	3	3	3	2	3	3	3	2	3	2.7	
CO3	3	3	3	2	3	3	3	3	3	3	2.9	
CO4	3	3	3	3	3	3	3	3	3	3	3	
CO5	3	2	3	3	3	3	3	3	3	3	2.9	
Mean overall Score											2.9 (High)	

Semester	Course Code	Title of the course	Hours/ Week	Credits
1	23UEN14FC01	Foundation Course: Reading Literature	2	2

Course Objectives
To impart necessary knowledge and skills to read and interpret literary works effectively
To enable students to engage thoughtfully with literature and communicate their insights on literature with clarity and precision
To aid students in recognizing and differentiating the main literary genres and elements

### UNIT I: Poetic Elements (6 Hours)

- Sound and Rhythm: Meter, Stanza, Rhyme, Alliteration, and Assonance
- Poetic devices: imagery, metaphor, simile, and personification
- Text for analysis: “A Poison Tree” by William Blake

### UNIT II: Narrative Elements (6 Hours)

- Plot Structure: Exposition, Rising Action, Climax, Falling Action, and Resolution
- Setting: Time, Place, and Atmosphere
- Text for analysis: “Gateman’s Gift” by R. K. Narayan

### UNIT III: Narrative Elements (6 Hours)

- Characters: Protagonists, Antagonists, and Foil Characters
- Point of View: First-Person, Third-Person Limited, and Omniscient Narrators
- Text for analysis: “The Gift of the Magi” by O. Henry

### UNIT IV: Dramatic Elements (6 Hours)

- Dramatic Structure: acts, scenes, and dialogue
- Character motivations and conflicts in drama
- Text for analysis: “A Marriage Proposal” by Anton Chekhov

### UNIT V: Non-fictional Elements (6 Hours)

- Author's voice, tone, and diction
- Rhetorical devices: Anaphora, Metaphor, Parallelism, Rhetorical Questions, and Hyperbole
- Text for analysis: "I Have a Dream" by Martin Luther King Jr.

<b>Teaching Methodology</b>	Interactive lectures, group discussions, guided readings, close reading activities, literary analysis writing assignments, guest speakers/author visits, multimedia presentations, and online discussions.
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### Books for Study

- 1 Mays, K. J. (2016). *The Norton Introduction to Literature*. W. W. Norton & Company.
- 2 Foster, T. C. (2014). *How to Read Literature Like a Professor: A Lively and Entertaining Guide to Reading Between the Lines*. Harper Perennial.
- 3 Gardner, J. E., et al. (2016). *Writing about Literature: A Portable Guide*. Bedford/St. Martin's.

## Books for Reference

- 1 Addonizio, K. & Laux, D. (1997). *The Poet's Companion: A Guide to the Pleasures of Writing Poetry*. W. W. Norton & Company.
- 2 Adler, M. J. & Doren, C.V. (1972). *How to Read a Book: The Classic Guide to Intelligent Reading*. Touchstone.
- 3 Barnett, S. et al. (2017). *An Introduction to Literature* (17<sup>th</sup> ed.). Pearson.
- 4 Barnett, S. (2017). *A Short Guide to Writing about Literature* (12<sup>th</sup> ed.). Pearson.
- 5 Egri, L. (2004). *The Art of Dramatic Writing: Its Basis in the Creative Interpretation of Human Motives*. Touchstone.
- 6 Kennedy, X. J. & Gioia, D. (2016). *Literature: An Introduction to Fiction, Poetry, Drama, and Writing* (13<sup>th</sup> ed.). Pearson.
- 7 Arp, T. R., & Johnson, G. (2002). *Sound and Sense: An Introduction to Poetry*. Heinle & Heinle.
- 8 Roberts, E. V., & Jacobs, H. E. (2015). *Literature: An introduction to reading and writing*. Prentice Hall.

## Web Sources

- Poetry Foundation. [www.poetryfoundation.org](http://www.poetryfoundation.org).
- Literary Devices. [www.literarydevices.com](http://www.literarydevices.com).
- Literary Hub. [www.lithub.com](http://www.lithub.com).
- The Poetry Archive. [www.poetryarchive.org](http://www.poetryarchive.org).

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will be able to	
CO1	Identify and define the key literary elements, genres, and poetic devices discussed in the course.	K1
CO2	Describe the narrative elements, including plot structure, characters, setting, and different points of view.	K2
CO3	Apply knowledge of dramatic elements to analyze and discuss character development and the impact of conflict on a dramatic work.	K3

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23UEN14FC01	Foundation Course: Reading Literature								2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	3	3	3	3	3	3	3	3	3
CO2	2	3	3	3	3	3	3	3	2	3	2.9
CO3	3	3	3	3	3	3	3	3	3	3	3
Mean overall Score											3 (High)

Semester	Course Code	Title of the course	Hours/ Week	Credits
1	23UEN14SE01	Skill Enhancement Course 1 (Non Major Elective): English For Communication	2	2

Course Objectives
To enhance the ability to communicate in English
To develop the presentation skills.
To help them draft formal letters

### **Unit I: Introduction to Communication (6 Hours)**

- Communication Models
- Basic Communication Styles – Passive, Aggressive, Assertive
- Significance of communication

### **Unit II: Verbal Communication (6 Hours)**

- Aspects of Pronunciation
- Intelligibility in Pronunciation
- Word Appropriacy

### **Unit III: Non-Verbal Communication (6 Hours)**

- Tone of Voice
- Facial Expression
- Gestures and Postures

### **Unit IV: Presentation Skills (6 Hours)**

- 7 C's of Communication
- Storytelling
- Drafting and Delivering a Speech

### **Unit V: Writing Skills (6 Hours)**

- Writing Short Paragraphs
- Report Writing
- Drafting Letters

### **Books for Study**

1. Seely, J. (1998). *Oxford Guide to Effective Writing and Speaking*. Oxford University Press.
2. Rizvi, A.M. (2005). *Effective Technical Communication*. The McGraw-Hill companies.
3. Pease, A & Pease, B. (2004). *The Definitive Book of Body Language*. Pease International Publishers.



## Books for Reference

1. Hancock, M. (2009). *English Pronunciation in Use: Intermediate*. Cambridge University Press.
2. Rai, U. (2010). *English Language Communication Skills*. Himalaya Publishing House, Mumbai
3. Koneru, A. (2011). *English Language Skills*, McGraw-Hill.
4. Leech, G. and Svartik, I. (1975). *Communicative Grammar of English*. Pearson Education Ltd.
5. O'Connor, J.D. (1980). *Better English Pronunciation* (2<sup>nd</sup> Ed.). Cambridge University.

## Web Sources

- <https://www.bbc.co.uk/bitesize/courses/zh86hew>
- <https://youtu.be/oV1h7n0HcTE>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	to draft paragraphs and formal letters.	K3
CO2	examine their tone of voice.	K4
CO3	evaluate their presentations made in English.	K5

Relationship Table							
Semester	Course code		Title of the Course			Hours	Credits
1	23UEN14SE01		Skill Enhancement Course 1 (Non Major Elective): English For Communication			2	2
Course Outcomes	Programme Outcomes (POs)			Programme Specific Outcomes (PSOs)			Mean Score of COs
	PO1	PO2	PO3	PSO1	PSO2	PSO3	
CO1	2	3	2	2	3	3	2.5
CO2	3	3	3	3	3	3	3
CO3	3	3	2	2	3	2	2.5
Mean overall Score							2.7 (High)

PROGRAMME PATTERN			
M. A. ENGLISH			
Course Code	Title of the Paper	Hours	Credits
23PEN1CC01	<b>Core Course - 1:</b> English Poetry	6	5
23PEN1CC02	<b>Core Course - 2:</b> English Drama	6	5
23PEN1CC03	<b>Core Course - 3:</b> English Fiction	6	4
23PEN1ES01	<b>Elective - 1:</b> Indian Writing in English	5	3
23PEN1ES02	<b>Elective - 2:</b> Theatre Arts	5	3
23PEN1AE01	<b>Ability Enhancement Course:</b> Technical Writing	2	1
<b>Total</b>		<b>30</b>	<b>21</b>

Semester	Course Code	Title of the course	Hours/ Week	Credits
1	23PEN1CC01	Core Course - 1: English Poetry	6	5

Course Objective
To familiarize students with English Poetry starting from Medieval England to 17 <sup>th</sup> Century.
To introduce the students to different types of poetry
To enable the students to develop aesthetic sense and love for poetry.
To familiarize the students with the poetic devices and their significance.
To enable the students to critically appreciate poetry.

### UNIT I: Middle English Poetry (18 Hours)

- Geoffrey Chaucer: *Prologue to the Canterbury Tales*: ‘The Pardoner,’
- ‘The Nun,’ ‘The Friar,’ ‘The Doctor’

### UNIT II: Elizabethan Poetry (18 Hours)

- Edmund Spenser: “Epithalamion”
- John Donne: “A Valediction: Forbidding Mourning”

### UNIT III: Seventeenth Century Poetry (18 Hours)

- John Milton: *Paradise Lost* (Book IX: Lines 412-794)
- Andrew Marvell: “To His Coy Mistress”

### UNIT IV: Eighteenth Century Poetry (18 Hours)

- John Dryden : “Absalom and Achitophel” (Lines 150-229)
- Thomas Gray : “Elegy Written in a Country Churchyard”
- Robert Burns : “Auld Lang Syne”

### UNIT V: Modern Poetry (18 Hours)

- Rupert Brooke : “The Soldier”
- Wilfred Owen : “Anthem for Doomed Youth”
- W. H. Auden : “Musee des Beaux Arts”
- Dylan Thomas : “Do Not Go Gentle into That Good Night”
- Philip Larkin : “Whitsun Weddings”
- Ted Hughes : “Hawk Roosting”
- Seamus Heaney : “Digging”
- Carol Ann Duffy : “Standing Female Nude”
- Eavan Boland : “Achilles Woman”

### For Further Reading

- John Donne : “The Canonization”
- Thomas Gray : “The Bard”
- : “On a Favourite Cat Drowned in a tub of Goldfishes”
- Robert Burns : “Holy Willie's Prayer”

- W. H. Auden : “Elegy on the Death of W. B. Yeats”
- Dylan Thomas : “Poem in October”
- Ted Hughes : “Life After Death”

<b>Teaching Methodology</b>	Lecture method, multimedia presentations, literary analysis writing assignments, close reading of texts
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### Book for Study

- Hollander, J., Kermode, F., & Trapp, J. B. (1973). *The Oxford Anthology of English literature*. Oxford University Press. Standard editions of texts

### Books for Reference

- Eliot, T.S. (1932). *The metaphysical poets from selected essay*. Faber & Faber limited.
- Bennett, H.S. (1970). *Chaucer and the fifteenth Century*. Clarendon Press.
- Bradbury, M., & Palmer, D ed., (1970). *Metaphysical poetry, stratford – upon – avon studies* Vol. II, Edward Arnold.
- Keats, W. R. ed., (1971). *Seventeenth century English poetry: Modern essays in criticism*. Oxford University Press.
- George, A.G. (1971). *Studies in poetry*. Heinemann Education Books Ltd.
- Daiches, D. (1981). *A critical history of English literature* Vols. I &II., Secker & Warburg.
- Corns, T. N. ed., (1993). *The cambridge companion to English poetry: Donne to Marvell*. Cambridge University Press.

### Web Sources

- <https://www.english/.org.uk/chaucer/htm>
- <https://www.britannica.com/topic/The-Canonization>
- [https://www.worldhistory.org/Elizabethan\\_Theatre/https://www.britannica.com/topic/Paradise-Lost-epic-poem-by-Milton](https://www.worldhistory.org/Elizabethan_Theatre/https://www.britannica.com/topic/Paradise-Lost-epic-poem-by-Milton)
- <https://www.britannica.com/topic/Absalom-and-Achitophel>
- [https://www.cs.mcgill.ca/~rwest/wikispeedia/wpcd/wp/m/Modernist\\_poetry\\_in\\_English.htm](https://www.cs.mcgill.ca/~rwest/wikispeedia/wpcd/wp/m/Modernist_poetry_in_English.htm)

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will be able to	
CO1	define the different types of poetry	K1
CO2	outline the aesthetic taste for reading poems.	K2
CO3	identify the poetic devices employed in poetry.	K3
CO4	compare major poets and their significant works	K4
CO5	critically appreciate poetry.	K5
CO6	discuss the nuances versification.	K6

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23PEN1CC01	Core Course - 1: English Poetry								6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO 2	PSO3	PSO4	PSO5	
CO1	3	3	3	3	3	3	3	3	3	3	3.0
CO2	2	3	3	2	2	2	3	3	2	3	2.5
CO3	3	3	2	2	3	3	3	3	3	3	3.0
CO4	3	3	3	3	2	3	3	3	3	3	3.0
CO5	2	2	3	3	2	3	3	3	2	2	2.5
CO6	2	2	2	3	2	3	3	3	2	3	2.5
Mean overall Score											2.75 (High)

Semester	Course Code	Title of the course	Hours/ Week	Credits
1	23PEN1CC02	Core Course - 2: English Drama	6	5

Course Objectives
To acquaint the students with the origin of drama in Britain.
To instruct the students regarding the different stages of British Drama and its evolution in the context of theatre.
To help the students to comprehend the socio-cultural scenario through the study of representative texts from the Elizabethan age to the 20th century.
To evaluate the different forms of drama from the study of their historical background.
To enhance the understanding of the students about the dramatic techniques implied by the pioneers of English drama.
To help students

#### **UNIT I: Beginnings of Drama (18 Hours)**

- Miracle and Morality Plays - *Everyman*
- The Senecan and Revenge Tragedy - Thomas Kyd: *The Spanish Tragedy*

#### **UNIT II: Elizabethan Theatre (18 Hours)**

- Theatres, Theatre groups, Audience, Actors and Conventions: Tragedy and Comedy.
- William Shakespeare: *As You Like It*
- Christopher Marlowe: *The Jew of Malta*

#### **UNIT III: Jacobean Drama (18 Hours)**

- Ben Jonson: *Volpone*
- John Webster: *The White Devil*

#### **UNIT IV: Restoration Drama (18 Hours)**

- William Congreve: *The Way of the World*
- **Irish Dramatic Movement** - J.M Synge: *The Playboy of the Western World*

#### **UNIT V: Epic Theatre (18 Hours)**

- Bertolt Brecht: *Mother Courage and her Children*
- **Comedy of Menace** - Harold Pinter: *Birthday Party*
- **Post-Modern Drama** - Samuel Beckett: *Waiting for Godot*

<b>Teaching Methodology</b>	Lecture Method, Multimedia Presentations, Project Method, Discussion Method
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### Books for Study

1. Bradbrook, M. C. (1955). *the growth and structure and Elizabethan comedy*, Shakespeare Quarterly, Volume 7, Issue 4, Autumn 1956, Pages 436 437, <https://doi.org/10.2307/2866373>)
2. Tillyard, E. M. W. (1958). *The nature of comedy & Shakespeare*, London. (<https://archive.org/details/shakespearesear1000783mbp>)

### Books for Reference

1. Fermor, U. E. (1965). *The Jacobean drama: An interpretation*, Methuen & Co. (<https://archive.org/details/jacobeandramaint0000elli/page/n5/mode/2up>)
2. Bradbrook, M. C. (1979). *Themes and conventions of Elizabethan tragedy* (6th ed), Vikas Publishing House Pvt., Ltd.
3. Hathaway, M. (1982). *Elizabethan popular theatre: Plays in performance*. Routledge.
4. Kinney, A. F. (2004). *A companion to renaissance drama*. Blackwell Publishing.
5. Hecht, W. (1961). *The development of Brecht's theory of the epic theatre, 1918-1933*. Tulane Drama Review, vol. 6, no. 1, 1961, pp. 40–97., doi:10.2307/1125006.

### Web Sources

#### Unit I

- <http://www.questia.com> (online library for research)
- [https://devikapanikar.com/the-origin-of-drama/?doing\\_wp\\_cron=1690152766.0363829135894775390625](https://devikapanikar.com/the-origin-of-drama/?doing_wp_cron=1690152766.0363829135894775390625)
- <https://owlcation.com/humanities/Origin-of-Drama-in-English-Literature>
- <https://www.ugcsetnet.com/origins-and-development-of-drama/>

#### Unit II

- <https://nosweatshakespeare.com/resources/era/elizabethan-theatre-drama/>
- <https://www.encyclopedia.com/arts/educational-magazines/elizabethan-drama>

#### Unit III

- <https://nosweatshakespeare.com/resources/era/jacobean-drama-theatre/>
- <https://www.studysmarter.co.uk/explanations/english-literature/literary-movements/jacobean-drama/>
- <https://englishsummary.com/lesson/jacobean-drama/>

#### Unit IV

- <https://www.britannica.com/art/English-literature/The-Restoration>
- <https://sites.udel.edu/britlitwiki/restoration-and-eighteenth-century-drama/>
- <https://englishsummary.com/lesson/restoration-drama/>
- <https://www.britannica.com/event/Irish-literary-renaissance>
- <https://poemanalysis.com/movement/the-irish-literary-revival/>

## 5. Unit V

- <https://www.britannica.com/art/epic-theatre>
- <https://poemanalysis.com/movement/epic-theatre/>
- <https://www.britannica.com/art/Theatre-of-the-Absurd>
- <https://sites.udel.edu/britlitwiki/the-theatre-of-the-absurd/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will be able to	
CO1	recall the important aspects related to the origin of drama in Britain.	K1
CO2	compare the different stages of British Drama and its evolution in the context of theatre.	K2
CO3	apply the socio-cultural principles on the representative texts from the Elizabethan age to the 20th century.	K3
CO4	analyse the different forms of drama from the study of their historical background.	K4
CO5	assess the dramatic techniques implied by the pioneers of English drama.	K5
CO6	combine theory and stage practices related to drama in Britain.	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PEN1CC02		Core Course - 2: English Drama							6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	3	3	3	3	3	3	3	3	3.0
CO2	2	3	3	3	2	3	3	3	3	3	2.8
CO3	3	3	3	2	3	3	3	3	2	2	2.8
CO4	3	3	3	3	3	3	3	3	3	3	3.0
CO5	3	2	3	3	3	3	3	3	3	3	3.0
CO6	2	3	3	3	2	3	3	3	3	3	2.8
Mean overall Score											2.9 (High)



Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PEN1CC03	Core Course - 3: English Fiction	6	4

Course Objectives
To familiarize the students with the origin and development of the British Novel up to the 20 <sup>th</sup> Century
To throw light on various concepts and theories of the novel
To understand the social background base on the prescribed novels
To identify and differentiate various forms of novels
To know the basic principles of English fiction
To try writing a piece of work on their own

#### UNIT I: (18 Hours)

- Novel as a Form, Concepts and Theories about the Novel; Poetics of the Novel – definition, types, narrative modes: omniscient narration.

Allegory and Satire

- John Bunyan : *The Pilgrim's Progress*
- Jonathan Swift : *Gulliver's Travels*

#### UNIT II: The New World Novel (18 Hours)

- Daniel Defoe : *Robinson Crusoe*
- Laurence Sterne : *Tristram Shandy*

#### UNIT III: Middle Class Novel of Manners (18 Hours)

- Jane Austen : *Emma*

#### UNIT IV: Women's Issues (18 Hours)

- Charlotte Bronte : *Jane Eyre*

#### UNIT V: Liberal Humanism, Individual Environment and Class Issues (18 Hours)

- D.H. Lawrence : *The Rainbow*
- James Joyce : *Portrait of the Artist as a Young Man*

Teaching Methodology	Lecture Method, Multimedia Presentations, Project Method, Discussion Method
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#### Books for Study

1. Booth, W. C. (1961). *The rhetoric of fiction*. Chicago University Press.
2. Leavis, F.R. (1973). *The great tradition*, Chatto & Windus.

### Books for Reference

1. Watt, I. (1974). *Rise of the English novel*. Chatto & Windus.
2. Karl, F. R. (1977), *Reader's guide to the development of the English novel till the 18th century*, The Camelot Press Ltd.
3. Kettle, A. (1967). *An introduction to English novel* Vol. II, Universal Book Stall.
4. Williams, R. (1973). *The English novel: From Dickens to Lawrence*, Chatto & Windus.
5. Milligan, I. (1983). *The novel in English: An introduction*. Macmillan.

### Web Sources

1. <http://www.bl.uk/collection-guides/english-literature>
2. <http://www.booksummaryclub.com/>
3. <https://www.britannica.com/art/picaresque-novel>
4. <https://www.britannica.com/art/novel-of-manners>
5. <https://www.britannica.com/topic/Jane-Eyre-novel-by-Bronte>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will be able to	
CO1	relate the art of writing different forms of novels with the learned notions.	K1
CO2	infer the social problems from the themes of the novels in English.	K2
CO3	apply philosophical and political underpinnings of Victorian morality, Anti Victorian realities on the aesthetic movement.	K3
CO4	classify themes relating to the turn of the century events through close reading of text.	K4
CO5	compare different types of novels and their themes	K5
CO6	create a piece of art on their own	K6

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23PEN1CC03	Core Course - 3: English Fiction								6	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	3	2	2	3	2	3	2	3	2.7
CO2	2	3	3	3	2	3	3	3	3	3	2.8
CO3	3	3	3	2	3	2	3	2	2	2	2.7
CO4	3	3	3	3	3	3	3	3	3	3	3.0
CO5	3	2	3	3	3	3	3	2	2	2	2.9
CO6	2	3	3	3	2	3	3	3	3	3	2.8
Mean overall Score											2.8 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PEN1ES01	Elective - 1: Indian Writing in English	5	3

Course Objectives
To enabling the students to understand the evolution of Indian Writing in English
To enable the learners to get exposed to the historical movements of the Indian subcontinent
To comprehending different genres through the representation of different texts
To inculcate in the students the cultural significance of Indian English literature
To comprehend Indian writing in English with its dual focus on the influence of classical Indian tradition and the impact of the West
To analyse the literary movements in India

### Unit I: Poetry

(15 Hours)

- Toru Dutt: “The Tree of Life”, “The Casuarina Tree”
- Rabindranath Tagore: *Gitanjali* (Lyrics 11 – 20)
- Sri Aurobindo: “Tiger and the Deer”, “Rose of God”
- Sarojini Naidu: “Palanquin Bearers”, “Coromandel Fishers”
- Kamala Das: “Looking Glass”, “An Introduction”
- Parthasarathy: “River Once”, “Under Another Sky”
- Nissim Ezekiel: “Morning Prayer”, “Enterprise”

### Unit II: Prose

(15 Hours)

- Sri Aurobindo: “The Essence of Poetry, Style and Substance” (from ‘The Future Poetry’)
- Dr. S. Radhakrishnan: “Emerging World Society”
- Dr. A. P. J. Abdul Kalam: “Orientation” (*Wings of Fire*)

### Unit III: Short Story

(15 Hours)

- R. K. Narayan: “Engine Trouble”
- Khushwant Singh: “The Mark of Vishnu”
- Ruskin Bond: “The Tiger in the Tunnel”

### Unit IV: Drama

(15 Hours)

- Asif Currimbhoy: *Inquilab*
- Mahesh Dattani: *Seven Steps Around the Fire*

### Unit V: Novel

(15 Hours)

- Shashi Deshpande: *Roots and Shadows*
- Salman Rushdie: *Midnight's Children*

Teaching Methodology	Lecture Method, Multimedia Presentations, Project Method, Discussion Method
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**Books for study**

Ramamurti, K.S. (ed.). (1995). *Twenty five Indian poets in English*. Macmillan.

**Books for reference**

1. Iyengar, K. R. S. (1962). *History of Indian writing in English*. Sterling Publishers.
2. Gowen, H. H. (1975). *A history of Indian literature*. Seema Publications.
3. Satchidanandan, K. (2003). *Authors, texts, issues: Essays on Indian literature*. Pencraft International.
4. Chandri, A. (2001). *The Picador book of modern Indian literature*. Macmillan.
5. Khair, T. (2001). *Babu fictions: Alienation in contemporary Indian English. novels*.

**Web Sources:**

1. [http://en.wikipedia.org/wik/indian\\_writing\\_in\\_english](http://en.wikipedia.org/wik/indian_writing_in_english)
2. <https://www.thehindu.com/books/books-children/short-history-of-indian-writing-in-english/article5226149.ece/amp/>
3. <https://www.britannica.com/biography/Sri-Aurobindo>
4. <https://www.literaryladiesguide.com/author-biography/kamala-das-indian-poet/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will be able to	
CO1	understand the evolution of Indian Writing in English	K1
CO2	compare the historical movements of the Indian subcontinent	K2
CO3	apply the ideas of different genres through the representation of different texts	K3
CO4	analyse the cultural significance of Indian English literature	K4
CO5	compare Indian writing in English with its dual focus on the influence of classical Indian tradition and the impact of the West	K5
CO6	discuss the literary movements in India	

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23PEN1ES01	Elective - 1: Indian Writing in English								5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO 2	PSO3	PSO 4	PSO5	
CO1	3	3	3	3	3	3	3	3	3	3	3
CO2	2	3	3	2	2	3	3	3	2	3	2.9
CO3	3	3	2	2	3	3	3	3	3	3	2.9
CO4	3	3	3	3	2	2	2	3	3	3	2.9
CO5	3	3	3	3	3	3	3	3	3	3	3
CO6	3	3	3	3	3	3	3	3	3	3	3
Mean overall Score											2.95 (High)

Semester	Course Code	Title of the course	Hours/ Week	Credits
1	23PEN1ES02	Elective - 2: Theatre Arts	5	3

To introduce the learners to the literary aspect of dramas.
To familiarize Theatre as an art form.
To introduce the concepts of directing and stage management.
To inculcate in the students the role of Theatre in society.
To familiarize the students with the components of acting.

#### UNIT I (15 Hours)

- Drama as a performing art
- Relation between drama and theatre
- The role of theatre
- The need for permanent theatres.

#### UNIT II (15 Hours)

- Greek Theatre
- The Absurd Theatre
- The Multipurpose Theatre
- The Eastern Theatre
- Folk Theatre
- Third Theatre
- Broadway Musicals
- Shakespearean Theatre
- The Epic Theatre
- Designing For a Particular Theatre
- Conventional And The Non-Conventional Theatre
- Urban Theatre
- Other Theatres in Vogue.

#### UNIT III (15 Hours)

Fundamentals of Play directing:

- Concept
- Technique
- Physical balance
- Demonstration
- The director and the stage

#### UNIT IV (15 Hours)

Components of acting:

- Gesture
- Voice
- Costume
- Make-Up
- Mask and Different Styles an Acting as an Art Form
- Violence in The Theatre
- Need For Censorship
- Managing Time and Space.

#### UNIT V (15 Hours)

- Theatre of illusion

- Expressionism and dramatic symbolism
- Stage design in the modern world
- Lighting in the modern world
- Word versus spectacles.

<b>Teaching Methodology</b>	Group discussions, monologue practice, recreate scenes, rehearsing, no audience performance, drama circle, inquiry based learning.
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### Books for Study

1. Sangeetha, K & Selvalakshmi, A. (2015). *An introduction to theatre art*. New Century Book House (P) Ltd.
2. Kenrick, J. (2010). *Musical theatre: A history*. Continuum.

### Books for Reference

1. Balme, C. B. (2008). *The Cambridge introduction to theatre studies*. Cambridge University Press.
2. Leach, R. (2013). *Theatre studies: The basics*. Routledge.

### Web Sources:

- [https://paradisevalley.libguides.com/the111/theatre\\_history\\_websites](https://paradisevalley.libguides.com/the111/theatre_history_websites)
- <https://www.britannica.com/place/England/Performing-arts>
- [https://www.worldhistory.org/Greek\\_Theatre/](https://www.worldhistory.org/Greek_Theatre/)
- [https://archive.org/details/fundamentalsopl0000dean\\_y3x3](https://archive.org/details/fundamentalsopl0000dean_y3x3)
- <http://scriptclickcreate.weebly.com/acting.html>
- [https://www.britannica.com/art/theater-building/Production-aspects-of- Expressionist-theatre](https://www.britannica.com/art/theater-building/Production-aspects-of-Expressionist-theatre)

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will;	
CO1	Identify the diversity of theatrical experiences and the role of theatre in society	K1
CO2	Understand a broad range of theatrical disciplines and Experiences	K2
CO3	Experiment various theatrical elements through the knowledge acquired	K3
CO4	Discover the relationships among the various facets of Theatre	K4
CO5	Develop new methods of theatrical arts based on the learned experience	K5
CO6		



Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23PEN1ES02	Elective - 2: Theatre Arts								5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO 2	PSO3	PSO4	PSO5	
CO1	3	3	3	3	3	3	3	3	3	3	3
CO2	2	3	3	3	3	3	3	3	2	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3	3
CO6	3	3	3	3	3	3	3	3	3	3	3
Mean overall Score											3 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PEN1AE01	<b>Ability Enhancement Course:</b> Technical Writing	2	1

Course Objectives
To convey complex information with clarity and precision
To communicate a message from the reader's perspective
To use current technologies, skills and tools necessary for writing purposes

#### **UNIT I (15 Hours)**

- Technical Writing: A Curtain Raiser, P-W-R and BPS, From Sentences to paragraphs

#### **UNIT II (15 Hours)**

- The Know-How of Technical Description, Document Design, Graphics: Enhancing Content

#### **UNIT III (15 Hours)**

- Letters: Kings and Mechanics
- The Summary: The Art of Brevity
- Written Reports: The Basics

#### **UNIT IV (15 Hours)**

- Proposals, Brochures, User Manuals

#### **UNIT V (15 Hours)**

- White Paper, CVs: Drafting the Blueprint of Your Future, On the Track: You a Tech-Writer!

#### **Books for Study**

1. Hamlin, A., Rubio, C., & DeSilva, M. (2016). Technical writing. Open Oregon Educational Resources.
2. Fleming, W. (2020). *Technical writing at LBCC*. Linn -Benton Community College, Albany, Oregon (eBook).

#### **Books for Reference**

1. Catford, J. C. (1965). *A linguistic theory of translation: An essay in Applied Linguistics*. Oxford University Press.
2. Duff, A. (1989) *Translations*. OUP.

#### **Web sources**

- <http3://www.tech-tav.com/technical-writing-resources>
- <http3://guides.library.unt.edu/c.php?g=528500&p=6841451>
- <http3://pressbooks.bccampus.ca/technicalwriting/part/documentdesign/>
- <http3://www.utley3trategie3.com/blog/propo3al-writing?format=amp>

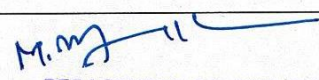
Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will be able to	
CO1	Examine the basic technical writing concepts and terms, such as audience analysis, jargon, format, visuals and presentation.	K4
CO2	Evaluate material on technology.	K5
CO3	create documents related to technology and writing in the workplace	K6


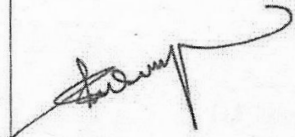
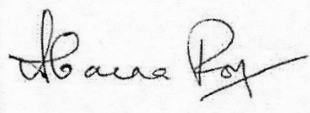

Relationship Matrix							
Semester	Course code		Title of the Course			Hours	Credits
1	23PEN1AE01		Ability Enhancement Course: Technical Writing			2	1
Course Outcomes	Programme Outcomes (POs)			Programme Specific Outcomes (PSOs)			Mean Score of COs
	PO1	PO2	PO3	PSO1	PSO2	PSO3	
CO1	3	3	3	3	3	3	3
CO2	2	2	3	3	2	2	2.5
CO3	3	3	3	3	3	3	3
Mean overall 3core							2.8 (High)

**DEPARTMENT OF FRENCH**  
**ST. JOSEPH'S COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-2**  
**MINUTES OF BOARD OF STUDIES**

The Board of studies in French met on 21<sup>th</sup> July 2023 (Friday) at 11.35 A.M in the Department of Other languages at St. Joseph's College (Autonomous), Trichy-2. The Tansche syllabus for Part-I French for the first semester was discussed. As per the agenda, the board discussed some of the possible questions to be asked for 3 marks and 6 marks after reviewing the evaluation template provided by the Coe office. Additionally, the board inquired about an hour's reduction in light of the tansche's six-hour workload. The Board has resolved to approve the semester- I syllabus without any changes. The meeting came to an end at 12.45

<b>BOARD OF STUDIES MEETING - HELD ON 21-07-2023</b>		
<b>DEPARTMENT OF FRENCH</b> <b>St. JOSEPH'S COLLEGE(AUTONOMOUS)</b> <b>TIRUCHIRAPPALLI -620002</b>		
<b>S. No.</b>	<b>Name and address</b>	<b>Signature</b>
1.	Dr. T. Priya Assistant Professor, Centre for French School of English and Foreign Languages Bharathidasan University, Tiruchirappalli - 620 024 E-Mail ID: <a href="mailto:priya.t@bdu.ac.in">priya.t@bdu.ac.in</a> Mobile No: 9787733497 <b>(University Representative)</b>	PRESENT
2.	Dr. C. Thirumurugan Associate Professor & Head, Dept of French, School of Humanities Pondicherry University Pondicherry - 605014 F-mail ID : <a href="mailto:frenchmurgan@yahoo.co.in">frenchmurgan@yahoo.co.in</a> Mobile: 9442787609 <b>(Subject Expert)</b>	PRESENT
3.	Dr. Abarna Roy, Assistant Professor, Dept of Foreign Languages, Loyola College Chennai – 600 034 E-mail ID: <a href="mailto:abarnaroy@hotmail.com">abarnaroy@hotmail.com</a> Mobile: 9841202614 <b>(Industrial Expert)</b>	PRESENT
4.	Ms. M. Mohanalakshmi	PRESENT

  
DEPARTMENT OF FRENCH,  
ST. JOSEPH'S COLLEGE (AUTONOMOUS)  
TIRUCHIRAPPALLI - 620002

BOARD OF STUDIES MEETING HELD ON 21.07.2023		
DEPARTMENT OF FRENCH		
St. JOSEPH'S COLLEGE(AUTONOMOUS)		
TIRUCHIRAPPALLI -620002		
S. No.	Name and address	Signature
1.	Dr. T. Priya Assistant Professor, Centre for French, School of English and Foreign Languages, Bharathidasan University, Tiruchirappalli - 620 024 (University Representative)	
2.	Dr. C. Thirumurugan Associate Professor & Head, Dept of French, School of Humanities, Pondicherry University, Pondicherry. (Subject Expert)	
3.	Dr. Aparna Roy, Assistant Professor & Head, Dept of Foreign Language, Loyola College Chennai – 600 034	
4.	Ms. M. Mohanalakshmi	

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UFR11GL01	French – I	5	3

Course Objectives
To identify the basic sentence structure of the French language
To define and describe the various grammatical tenses and use them to communicate in French
To examine the documents presented and discuss/reply to the questions asked
To analyze and interpret expressions used to convey the cause, the effect, the purpose and the opposition in French
To evaluate the grammatical nature of a given passage

#### Unit I (15 hours)

1. Salut !
2. Enchanté

#### Unit II (15 hours)

3. J'adore

#### Unit III (15 hours)

4. Tu veux bien ?

#### Unit IV (15 hours)

5. On se voit quand ?

#### Unit V (15 hours)

6. Bonne idée

<b>Teaching Methodology</b>	Videos, Audios, PPT presentation, Role-play, Quiz
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#### Book for Study

Mérieux, R & Loiseau, Y. (2017). *Latitudes -1- (A1 /A2)*, méthode de français, Didier, (Units 1-6 only)

#### Books for Reference

1. Dauda, P, Giachino, L and Baracco, C. (2020). *Generation AI*. Didier, Paris.
2. Girardet, J and Pecheur, J. (2017). *Echo AI* (2<sup>nd</sup> ed.). CLE International.
3. Fournier, I. (2011). *Talk French*. Goyal Publishers.

#### Websites and eLearning Sources

1. <https://www.wikihow.com/Pronounce-the-Letters-of-the-French-Alphabet>
2. <https://français.lingolia.com/en/grammar/tenses/le-present>
3. <https://www.lawlessfrench.com/grammar/articles/>
4. <https://www.frenchpod101.com/french-vocabulary-lists/10-lines-you-need-for-introducing-yourself>
5. <https://www.tolearnfrench.com/exercices/exercice-french-2/exercice-french-3295.php>

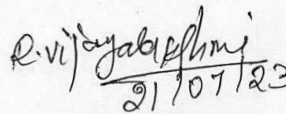
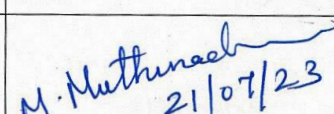
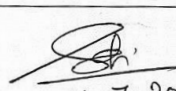
Course Outcomes		
CO No.	CO–Statements	Cognitive Levels (K –Levels)
	On successful completion of this course, students will be able to	
<b>CO1</b>	recall the usage of grammatical tenses during conversations.	<b>K1</b>
<b>CO2</b>	apply the grammar rules in practice exercises	<b>K3</b>
<b>CO3</b>	explain the nuances in the usage of various grammatical tenses and their aspects	<b>K2</b>
<b>CO4</b>	demonstrate knowledge of various expressions used to express opinions, emotions, cause, effect, purpose and hypothesis in French	<b>K4</b>
<b>CO5</b>	communicate in French and summarize a given text	<b>K5</b>


Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
<b>1</b>	<b>21UFR11GL01</b>		<b>French – I</b>							<b>5</b>	<b>3</b>
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
<b>CO1</b>	3	3	1	3	1	3	3	2	3	2	2.4
<b>CO2</b>	2	3	3	2	1	3	3	3	3	2	2.5
<b>CO3</b>	1	3	2	1	2	2	2	2	3	2	2.0
<b>CO4</b>	3	3	3	3	3	3	3	2	3	2	2.8
<b>CO5</b>	3	3	3	3	2	3	3	3	3	2	2.8
Mean overall Score											<b>2.5 (High)</b>



**DEPARTMENT OF HINDI**  
**ST. JOSEPH'S COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-2**  
**MINUTES OF BOARD OF STUDIES**

The Board of studies in Hindi met on 21<sup>st</sup> July 2023 (Friday) at 11.35 A.M in the Department of Other Languages at St. Joseph's College (Autonomous), Trichy-2. The TANSCHS syllabus for Part-I Hindi for the First Semester was discussed. As per the agenda, the Board discussed on the evaluation pattern provided by the CoE office and has resolved to approve it without any changes. The meeting came to an end at 12.45 P.M.

<b>BOARD OF STUDIES MEETING - HELD ON 21-07-2023</b>		
<b>DEPARTMENT OF HINDI</b>		
<b>St. JOSEPH'S COLLEGE(AUTONOMOUS)</b>		
<b>TIRUCHIRAPPALLI -620002</b>		
<b>S. No.</b>	<b>Name and address</b>	<b>Signature</b>
1.	<b>Dr. R.Vijayalakshmi (University Representative)</b> Assistant Professor & Head, Dept of Hindi, Cauvery College for Women(Autonomous), Annamalai Nagar, Tiruchirappalli-620 018 E-mail ID : <a href="mailto:gvmadhu16@gmail.com">gvmadhu16@gmail.com</a> Mobile No.9585337214	 21/07/23  PRESENT
2.	<b>Dr. E. Supriya (Subject Expert)</b> Assistant Professor & Head, Dept of Hindi, Fatima College(Autonomous) Madurai 625 018 E.mail ID : <a href="mailto:Supriyapreman10@gmail.com">Supriyapreman10@gmail.com</a> Mobile No. 8848021650	ABSENT
3.	<b>Mrs. M. Muthunachammai (Industrial Expert)</b> Hindi Pracharak, M.S.P. Hindi Shikshalay, No. 16, Marudham Apartment, 7 <sup>th</sup> Cross, Thillai Nagar, Tiruchirappalli 620 018 E.mail ID : <a href="mailto:Muthunachammai2017@gmail.com">Muthunachammai2017@gmail.com</a> Mobile No. 9842503745	 21/07/23  PRESENT
4.	<b>Dr. S. Sreedevi. S (Faculty)</b> Assistant Professor and Head, Department of Hindi, St. Joseph's College (Autonomous) Tiruchirappalli-620 002. E.mail.ID : <a href="mailto:sreedevi_hi1@mail.sictni.edu">sreedevi_hi1@mail.sictni.edu</a> Mobile No.9495243814	 21-7-2023  PRESENT

  
21-7-2023

**Dr. S. Sreedevi, M.A., B.Ed., N.P.H., Ph.D.**  
**Assistant Professor and Head**  
**Department of Hindi**  
**St. Joseph's College (Autonomous)**  
**Trichy - 620 002**



Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UHI11GL01	Hindi - I	5	3

Course Objectives
To understand the basics of the Hindi Language
To make the students familiar with the Hindi words
To enable the students to develop their effective communicative skills in Hindi.
To introduce the socially relevant subjects in Modern Hindu Literature
To empower the students with globally employable soft skills

**Unit I: Buniyadi Hindi (15 Hours)**

1. Swar
2. Vyanjan
3. Barah Khadi
4. Shabd aur
5. Vakya Rachna

**Unit II: Hindi Shabdavali (15 Hours)**

6. Rishto ke Naam
7. Gharelu padartho ke Naam

**Unit III: Vyakaran (15 Hours)**

8. Sadharan Vakya aur Sangya
9. Sarvanam
10. Visheshan
11. Kriya aadi shabdo ka prayog

**Unit IV: Chote Gadyansh ka pattan (15 Hours)**

12. Bachom ki Kahaniyam
13. Patra-Patrikao mein Prakashit Gadyansho ka Pattan

**Unit V: Nibandh (15 Hours)**

14. Sant Tiruvalluvar
15. E.V.R Thandai Periyar
16. Naari Sashakthikaran
17. Paryavaran Sanrakshan
18. Vibhinna pratiyogi parikshao ke bare mein jaankari dena
19. Pratiyogi priksa par adharit nibandho dwara bhasha ki kshamta badhane vale prashikshan kary.

<b>Teaching Methodology</b>	Videos, PPT, Quiz, Group Discussion, Project Work.
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## Books for Study

1. *Prathamik Patya Pusthak* (2022). Dakshina Bharath Hindi Prachara Sabha, Chennai,
2. Chandran, R.M. (2017). *Concise Trilingual Dictionary*, Lotus Publications, Madurai.
3. Gupth, K.M. (2020). *Hindi Vyakaran*, Anand Prakashan, Kolkatta.
4. *Madyama Patya Pusthak* (2022). Dakshina Bharath Hindi Prachara Sabha, Chennai.

## Books for Reference

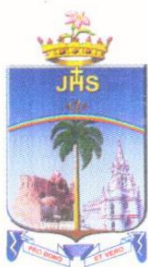
1. Abdul Kalam, A.P.J. (2020). *Mere sapnom ka Bharath*. Prabath Prakashan, Noida.
2. *Meri Pratham Hindi Sulekh Shabd Gyaan*, Wonder House Books, Noida.
3. Kumar, A. (2019). *Sampoorna Hindi Vyakaran our Rachana*. Lucent publisher.
4. *Adhunik Hindi Vyakaran our Rachana*. (2018). Bharati Bhavan Publishers & distributors.
5. Shukla, A.R. (2021). *Hindi Sahitya Ka Itihas*. Prabhat Prakashan.

## Websites and e-Learning Sources

1. <https://learningmole.com/hindi-alphabet-letters-pronunciation-guide/>
2. <https://www.careerpower.in/hindi-alphabet-varnamala.html>
3. <https://www.youtube.com/watch?v=b0UvXnIC8qc>
4. <https://www.importanceoflanguages.com/learn-hindi-language-guide/>
5. <https://parikshapoint.com/hindi-sahitya/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	match the sounds of Hindi letters with their written counterparts.	K1
CO2	infer the meaning of unknown words from the given context	K2
CO3	construct sentences in Hindi	K3
CO4	analyse stories and other passages	K4
CO5	interpret general essays given in competitive exams	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UHI11GL01		Hindi - I							5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	2	1	3	3	3	1	3	2	2.3
CO2	2	3	2	3	1	2	3	3	3	2	2.4
CO3	3	2	2	2	1	3	2	3	2	3	2.3
CO4	3	1	2	3	2	3	2	3	3	2	2.4
CO5	2	3	3	2	3	2	3	3	1	3	2.5
Mean overall Score											2.38 (High)



# DEPARTMENT OF HISTORY

## St. JOSEPH'S COLLEGE (Autonomous)

Accredited at A\*\* Grade (Cycle IV) by NAAC  
College with Potential for Excellence by UGC

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TIRUCHIRAPPALLI - 620 002.

Phone : 0431 - 4226396, 2700320, Fax : 0431 - 2701501

Website : [www.sjctni.edu](http://www.sjctni.edu)

24 - 07 - 2023

### Minutes of Board of Studies Meeting held on 21<sup>st</sup> July, 2023

Board of Studies meeting was held at Department AV Hall between 11.30 am and 1.00 pm. The meeting began with silence prayer and Dr. J. Santhosh Kumar, Head of the Department welcomed all the external and internal members. Head of the Department introduced the TANSCHS syllabus and the main agenda for the BoS meeting 2023. It was informed by the HOD that we might add our suggestions and not permitted to do any deletion in the syllabus. Dr. S. Manikandan, Assistant Professor of History presented 2023 UG TANSCHS Syllabus to the members.

#### **The following decisions were taken during the BoS Meeting:**

- In the paper titled **History of Ancient India**, it was decided to make change Jainism and Buddhism instead Buddhism and Jainism. All the members agreed to include **Aaseevagam** in between Jainism and Buddhism in the **II - Unit**. In the same unit to make spelling correction in Naalanda and Vallabhi.
- It was decided to change the year 1363 found in the title of the paper **History of Tamil Nadu upto 1363 AD** into 1311 as per the course pattern of the syllabus. All the members unanimously agreed to include Literary Contributions of Kalabaras in the paper titled **History of Tamil Nadu upto 1311 AD** in Unit - II. In Unit IV, it was decided to include (Aimpon Sculptures) followed by Bronze sculptures.

The following decision was taken on the method of evaluation:

- All the members agreed to keep 25 marks for Internal Assessment which includes Mid-Semester, End-Semester and other Internal Assessment pattern.

The BoS meeting came to an end at 1.00 PM. Finally the Head of the Department proposed vote of thanks.

The following ~~both~~ members were present in the meeting.

#### External Members


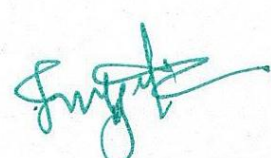
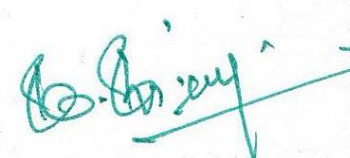


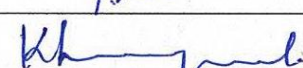
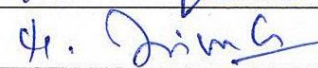
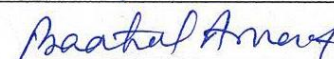
1. Dr. A. Akbar Hussain, Associate Professor and Head, Department of History, Jamal Mohamad College, Tiruchirappalli. (University Representative)
2. Dr. Jeyakumari Gnanadeepam, Assistant Professor, Department of History, MAM College, Dindigul. (Subject Expert)
3. Dr. R. Ramachandran, Advocate, Tiruchirappalli District Court, Tiruchirappalli. (Industrial Expert)

#### Internal Members

- Dr. J. Santhosh Kumar
- Dr. S. Manikandan
- Dr. K. Lingammal
- Dr. M. Britto Stalin
- Ms. T. Beatinal Amalorpava Mary

  
**HEAD OF THE DEPARTMENT**

Dr. J. SANTHOSH KUMAR  
Head  
Department of History  
St. Joseph's College  
Tiruchirappalli

BOARD OF STUDIES MEETING HELD ON 21.07.2023		
DEPARTMENT OF HISTORY		
St. JOSEPH'S COLLEGE(AUTONOMOUS)		
TIRUCHIRAPPALLI -620002		
S. No.	Name and address	Signature
1.	Dr. A.Akbar Hussain, Associate Professor & Head, Department of History, Jamal Mohamed College (Autonomous), Tiruchirappalli – 620 020 (University Representative)	 21/7/23
2.	Dr. Jayakumari Gnanadeepam, Assistant Professor, Department of History, MVM Govt. Arts College, Dindigul. (Subject Expert)	
3.	Dr. R. Ramachandran, Advocate, St. Ann's Complex, Melapudur, Tiruchirappalli – 620 001. E-mail: ramadvocate75@gmail.com Mobile: 9488683399	
4.	Rev. Dr. M. Arockiasamy Xavier SJ	
5.	Dr. J. Santhosh Kumar	
6.	Dr. S. Manikandan	
7.	Dr. K. Lingammal	
8.	Dr. M. Britto Stalin	
9.	T. BEATINAL ANALORPAMAMAY	



Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UHS13CC01	Core Course 1: History of Ancient India up to 1206 CE	5	4

Course Objectives
To understand the characteristics of pre and proto-historic cultures in India.
To study the impact of Vedic culture on society, religion and culture.
To analyse the emergence of a Centralized State under the Mauryas and Ashoka's Dhamma.
To describe the achievements of the Guptas and their contribution to literature, art and architecture.
To outline the Post-Gupta polity and the invasions of Mahmud of Ghazni and Muhammed of Ghor.

### UNIT I (15 hours)

Geographical Features – Sources of Indian History – Pre- and Proto History - Harappan Civilization - Megalithic Culture– Ancient Tamil Civilization – Early Vedic Age – Later Vedic Age.

### UNIT II (15 hours)

Jainism, Aaseevagam and Buddhism – Greek and Persian Invasions of India– Alexander's Invasion - Rise of Mahajanapadas - Magadhan Empire – Nandas - Mauryas – Chandragupta Maurya – Asoka – Mauryan Administration – Art and Architecture.

### UNIT III (15 hours)

Satavahanas – Kushanas – Kanishka-I – Gupta Empire – Chandragupta Vikramaditya - Samudragupta –Kumara Gupta - Administration – Social, Economic and Cultural Developments – Vakatakas - Nalanda, Vikramasila and Vallabhi Universities

### UNIT IV (15 hours)

Vardhanas - Harshavardhana – Administration – Religious Contributions –Provincial Dynasties – Chalukyas – Rashtrakutas - Paramaras – Palas – Senas - Art and Architecture - Cultural contributions.

### UNIT V (15 hours)

Rajputs – Cultural Contributions - Arab Conquest of Sind - Mahmud of Ghazni – Invasions – Mohammed of Ghor – Battles of Tarain

Teaching Methodology	Videos, PPT, Quiz, Group Discussion, Project Work.
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### Books for Study

1. Chakravarti, R. (2016). *Exploring Early India up to c. AD 1300*. Primus Books, New Delhi.
2. Khurana, K.L. *History of India: Earliest times to 1526 A.D.* Lakshmi Narain Agarwal, Agra.
3. Majumdar, R.C., et. al. (1974). *An Advanced History of India*. MacMillan, Delhi.
4. Sharma, L.P. (2008). *History of Ancient India*. Konark Pub. Pvt. Ltd., New Delhi.

5. Sharma, R.S. (2017). *India's Ancient Past*. Oxford University Press, New Delhi.
6. Singh, U. (2008). *A History of Ancient and early Medieval India*. Pearson and Longman, Delhi.
7. Thapar, R. (2002). *The Penguin History of Early India: From the origin to A.D. 1300*, Penguin Books, New Delhi.
8. Venkatesan, G. (2018). *Cultural History of India*. Varthamanan Pathipagam. (in Tamil)

### Books for Reference

1. Basham, A.L. (2004). *The Wonder that was India*. London, Macmillan.
2. Luniya, B.N. (2005). *Evolution of Indian Culture*. Agra, Lakshmi Narain Publication.
3. Pillay, K.K. (1967). *A Social History of the Tamils*. University of Madras, Madras.
4. Pillay, K.K. (1979). *Studies in Indian History: With Special Reference to Tamil Nadu*. K.K. Pillay, Madras.
5. Pillay, K.K. (2021). *Historical Heritage of Tamils*. MJP Publishers, Chennai.
6. Sathianathaier, R. (1980). *Political and Cultural History of India*. Vol. I, Viswanathan & Co., Chennai.

### Web Resources

<https://archive.org/details/in.ernet.dli.2015.279506/page/n1/mode/2up>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	recall the characteristic features of pre and proto-historic cultures in India.	K1
CO2	explain the impact of the Vedic culture on Indian society and religion.	K2
CO3	interpret Ashoka's policy of Dhamma.	K3
CO4	classify the salient features of Gupta's Age.	K4
CO5	justify the nature of Post-Gupta polity and the invasions of Mahmud of Ghazni and Muhammed of Ghor.	K5

Relationship Matrix											
Semester	Course code	Title of the Course									Credits
1	23UHS13CC01	Core Course 1: History of Ancient India up to 1206 CE									4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	2	3	3	3	2	3	2	2.6
CO2	3	3	2	2	3	3	3	3	3	3	2.8
CO3	3	3	2	2	3	3	3	3	3	3	2.8
CO4	3	3	2	2	3	3	3	3	3	3	2.8
CO5	3	3	2	2	3	3	3	2	3	2	2.6
Mean overall Score											2.7 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UHS13CC02	Core Course 2: History of Tamil Nadu up to 1311 CE	5	4

Course Objectives
To know the sources and geography of Tamil Nadu
To understand polity, society and economy of the Sangam period
To examine the contribution of Pallavas in the field of art and architecture
To appreciate the achievements and contribution of the Imperial Cholas
To identify the factors for the decline of the Pandyas

#### **UNIT I: Pre-History (15 hours)**

Geography - Sources for the study of history of Tamil Nadu – Pre & Proto history of Tamil Nadu – Ancient Tamil Civilization

#### **UNIT II: Sangam Age (15 hours)**

Historicity – Early Cholas – Karikala – Cheras – Senguttuvan – Pandyas – Nedunchezian – Polity – Society – Economy – Foreign Trade – Religion – Literature – Kalabhra Interregnum – Literary Contributions of Kalabhras – Impact of their rule

#### **UNIT III: The Pallavas and The Pandyas (15 hours)**

Origin: Early Pallavas – Later Pallavas – Political, Social and Economic Conditions – Growth of Literature and Education – Art and Architecture – Sculpture – Paintings & Fine arts – Early Bakthi Movement - The First Pandyan Empire – Sources – Triangular conflict between Pallavas, Pandyas and Western Chalukyas – Administration – Art and Architecture

#### **UNIT IV: Later Cholas (15 hours)**

Raja Raja Chola I – Rajendra Chola I – Overseas Expansion – Kulothunga – Chalukya-Chola relations – Administrative System – Land Grants and Temple Administration – Social and Economic life – Maritime Trade & Commerce – Religion – Literature – Art and Architecture – Aimpom Sculptures - Bronze Sculptures

#### **UNIT V: The Second Pandyan Empire (1190-1312 CE) (15 hours)**

Triangular conflict among Cholas, Pandyas and Hoysalas – Social and Economic Life – Malik Kafur's Invasion

<b>Teaching Methodology</b>	Videos, PPT, Quiz, Group Discussion, Project Work.
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#### **Books for Study**

1. Chellam, V.T. (1981). *New Light on the Early History of Tamil Nadu*, Vijay Publications, Trichy.
2. Chellam, V.T. (2016). *Tamil Nadu: History and Culture* (in Tamil). Manivasagar Pathipakam.
3. Eraiyanarasan, B. (2017). *The History of Tamil Nadu (The Only Surviving Classical Civilization)*. International Institute of Tamil Studies, Chennai.
4. Karashima, N. (ed.) (2014). *A Concise History of South India: Issues and Interpretations*. Oxford University Press, New Delhi.
5. NilakantaSastri, K.A. (1997). *A History of South India: From Prehistoric Times to the Fall of Vijayanagar*. Oxford University Press, Chennai.



6. Ramasamy, A. (2012). *A History of Ancient Tamil Civilization*. New Century Book House, Chennai
7. Subramanian, N. (1977). *History of Tamil Nadu*. Koodal Publishers, Madurai.

### Books for Reference

1. Kanakasabhai, V. (1982). *Tamils Eighteen Hundred Years Ago*. Asian Educational Service, New Delhi.
2. Minakshi, C. (1938). *Administration and Social Life Under the Pallavas*. University of Madras, Madras.
3. Pillai, A.D. (2020). *History of the Chera King*. Saran Books, Chennai.
4. Pillay, K.K. (1967). *A Social History of the Tamils*. University of Madras, Madras.
5. Pillay, K.K. (1979). *Studies in Indian History: With Special Reference to Tamil Nadu*. K.K. Pillay, Madras.
6. Pillay, K.K. (2021). *Historical Heritage of Tamils*. MJP Publishers, Chennai.
7. Rajamanickanar, Ma. (2022). *History of Cholas*. Saran Books, Chennai.
8. Rajamanickanar, Ma. (2022). *History of Pallavas*. Saran Books, Chennai.
9. Sastri, N.K.A. (1984). *The Cholas*. University of Madras, Madras, 1984
10. Srinivasalyengar, P.T. (2001). *History of the Tamils: From the Earliest Times to 600 A.D.* Asian Educational Services, New Delhi.
11. Subbarayalu, Y. (2012). *South India under the Cholas*. Oxford University Press, New Delhi.
12. Subramanian, N. (1966). *Sangam Polity*. Asia Publishing House, Bombay.

### Web Resources

<https://www.tamildigitallibrary.in/bookdetail.php?id=jZY9lup2kZl6TuXGlZQdjZt9lJpd#book1/>

<http://www.historydiscussion.net>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	recall the various sources for the study of history of Tamil Nadu.	K1
CO2	outline the various aspects of Sangam Age.	K2
CO3	explain the rise of Pallavas and their cultural contribution.	K3
CO4	analyse the supremacy of the Chola power.	K4
CO5	appraise the achievements of the Second Pandyan Empire.	K5

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23UHS13CC01	Core Course 2: History of Ancient India up to 1206 CE								5	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	2	3	3	3	2	3	2	2.6
CO2	3	3	2	2	3	3	3	3	3	3	2.6
CO3	3	3	3	2	3	3	3	3	3	3	2.8
CO4	3	3	2	2	3	3	3	3	3	3	2.9
CO5	3	3	3	2	3	3	3	3	3	2	2.8
Mean overall Score											2.74 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UHS13AC01	Allied Course - 1: Introduction to Archaeology	4	3

Course Objectives
To study the meaning of archaeology, kinds of archaeology and its relations with allied disciplines
To trace the archaeological developments in the world and India
To examine the early archaeologists and the status of archaeological studies
To understand the methods and techniques of archaeology
To interpret artefacts

### **UNIT I: Basic Concepts (12 hours)**

Definition, Nature, Aim and Scope of Archaeology - Archaeology as a Source of Cultural Studies- Different kinds of Archaeology - Marine Archaeology, Aerial Archaeology, New Archaeology - Archaeology and its relations with allied disciplines

### **UNIT II: Beginnings in Archaeology (12 hours)**

From Antiquarianism to Archaeology - Process of Archaeology in the West - Growth of Archaeology in India- Archaeological Survey of India.

### **UNIT III: Archaeological Studies (12 hours)**

Educational Institutions - Early Archaeologists in India –Robert Bruce Foote – Alexander Rae – Alexander Cunningham, Sir John Marshall, Sir Mortimer Wheeler, Jean Mariacastle, H.D. Sankalia.

### **UNIT IV: Exploration (12 hours)**

Aims – Methods - Manual and Scientific Excavation – Methods of Excavation – Vertical, Horizontal, Quadrant Method, Underwater Archaeology; Stratigraphy: Definition, Scope and Methodology; Recording Methods: Photography, Plan and Section Drawing, Three Dimensional Measurements; Dating Methods: Absolute Dating Methods: Radio Carbon and AMS Dating – Thermo luminescence and OSL Dating – Potassium Argon – Uranium Series – Fission Track – Electronic Spin Resonance – Dendrochronology – Relative Dating: Flouing Method – Nitrogen Method – Varve Analysis – Stratigraphy – Seriation – Historical Dating

### **UNIT V: Interpretation of Artefacts (12 hours)**

Classification of Artifacts - Contextual and Site Catchment Analysis; Pottery and Antiquities: Description and Analysis - Scientific Analysis of Organic Materials.

Archaeological excavations in Tamil Nadu – Arikamedu – Adichanallur – Korkai – Keezhadi – Mayiladumparai – Sivagalai – other sites

<b>Teaching Methodology</b>	Video, PPT, Quiz, Group Discussion, Project Work.
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## Books for Study

1. Raman, K.V. (1986). *Principles and Methods of Archaeology*. Parthajan Publications, Madras.
2. Rajan, K. (2002). *Archaeology: Principles and Methods*. Manoo Pathippakam, Thanjavur.
3. Rajan, K. (2016). *Understanding Archaeology: Field Methods, Theories and Practices*. Manoo Pathippakam, Thanjavur.

## Books for Reference

1. Dillon, B.D. (ed.) (1989). *Practical Archaeology: Field and Laboratory Techniques and Archaeological Logistics*. Institute of Archaeology, University of California, Los Angeles.
2. Fleming, S. (1978). *Dating in Archaeology: A Guide to Scientific Techniques*. J.M. Dent, London.
3. Heizer, R.F. (ed.) (1969). *The Archaeologist at Work: A Source Book in Archaeological Method and Interpretation*. Harper & Row, New York.
4. Renfrew, C. & Bahn, P. (2012). *Archaeology: Theories, Methods and Practice*. Thames & Hudson, London.
5. Roy, S. (2011). *The Story of Indian Archaeology 1784-1947*. Archaeological Survey of India, New Delhi.

## Web Resources

<http://www.arch.cam.uk>  
<http://archaeological.org>  
<http://www.tnarch.gov.in>  
<https://radiocarbon.com>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	define archaeology and explain different kinds of archaeology.	K1
CO2	trace the archaeological developments from its inception.	K2
CO3	describe the contribution of early archaeologists in India	K3
CO4	explain the methods and techniques of archaeology.	K4
CO5	interpret the artefacts and the various types of analysis used.	K5

## Mapping Table

Semester	Course code	Title of the Course									Hours	Credits
1	23UHS13AC01	Allied Course - 1: Introduction to Archaeology									5	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	3	3	3	2	3	3	2	3	3	2.8	
CO2	3	3	3	3	3	3	3	3	3	3	3	
CO3	3	3	3	3	3	3	3	3	3	3	3	
CO4	3	3	3	3	2	3	3	3	3	3	2.9	
CO5	3	3	3	3	3	3	3	3	3	3	3	
Mean overall Score											2.9	(High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UHS14FC01	Foundation Course-1: Introduction to History	2	2

Course Objectives
To introduce the meaning and nature of history
To comprehend the different kinds of history and its relationship with other disciplines
To use facts in writing history
To introduce the concepts in history.
To know various sources for the study of history and documentation techniques.

### **UNIT I: Basics of History (6 hours)**

History – Meaning & Definitions– Nature and Scope of History – Uses and Abuses of History – Lessons in History

### **UNIT II: Nature of History (6 hours)**

Kinds of History – History and Allied Disciplines – Debates on history: Science or an Art

### **UNIT III: Select Historiographers (6 hours)**

Herodotus – Thucydides – Livy – Tacitus – St. Augustine – IbnKhalidun – Alberuni – Voltaire – Ranke – Hegel – Marx – Antonio Gramsci – Michel Foucault – E.H. Carr

### **UNIT IV: Indian Historiographers (6 hours)**

Jadunath Sarkar – R.C. Majumdar – D.D. Kosambi – Romila Thapar – R.S. Sharma – Irfan Habib – Bipan Chandra – Ranajit Guha P.T. Srinivasa Iyyangar– C.S. Srinivasachari – K.A. Nilakanta Sastri – K.K. Pillai-N. Subramaniam – K.A. Rajayyan- G. Venkatesan

### **UNIT V: Sources and Documentation (6 hours)**

Repositories of Sources: Archaeological – Epigraphical – Numismatic – Material Remains – Literary – Oral Sources - Archival and Government Records – Use of Footnotes and Bibliography in writing assignments.

Field Visit & Report: Nearest archaeological/historical site, museum, archives and libraries

### **Books for Study**

1. Ali, S. (2019). *History: Its Theory and Method*. Laxmi Publications.
2. Carr, E.H. (2018). *What is History?* Penguin Books Ltd., New Delhi.
3. Manikam, S. *On History & Historiography*. Padumam Publishers, Madurai.
4. Rajayyan, K. (1982). *History in Theory and Method: A Study in Historiography*. Raj Publications, Madurai.
5. Sreedharan, E. (2004). *A Textbook of Historiography, 500 BC to AD 2000*. Orient Longman, New Delhi.
6. Venkatesan, G. (2018). *A Study of Historiography (History of Historical Knowledge)*. V.C. Publications.

### Books for Reference

1. Bloch, M. (2017). *The Historian's Craft*. Aakar Books, Delhi.
2. Collingwood, R.G. (1994). *The Idea of History*. OUP, Delhi.
3. Thapar, (2000). R. *History and Beyond*. Taylor and Francis, Oxford University of Press.
4. Webster, J.C.B. (2019). *Studying History*. Primus Books, Delhi.

### Web Resources

<https://archives.history.ac.uk/history-in-focus/Whatishistory/index.html>  
<http://d-nb.info>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	describe the meaning and definition of history.	K1
CO2	find the relationship between history and allied disciplines.	K1
CO3	illustrate the use of facts in writing history.	K2
CO4	identify the concept of causation in history.	K3
CO5	apply the learnt ideas while writing an essay using footnotes and bibliography.	K3

### Mapping Table

Semester	Course code	Title of the Course									Hours	Credits
1	23UHS14FC01	Foundation Course-1: Introduction to History									2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	3	3	3	2	3	3	2	3	3	2.8	
CO2	3	3	3	3	3	3	3	3	3	3	3	
CO3	3	3	3	3	3	3	3	3	3	3	3	
CO4	3	3	3	3	3	3	3	3	3	3	3	
CO5	3	3	3	3	3	3	3	3	3	3	3	
Mean overall Score											2.9 (High)	

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UHS14SE01	<b>Skill Enhancement Course-1:</b> Introduction to Tourism	2	2

Course Objectives
To understand the basic components and elements of tourism
To know different types and forms of tourism
To gain knowledge on the role of Travel Agents
To understand the role of Tour Operators
To know about travel documents

### **UNIT I: Introduction (6 hours)**

Concepts of Tourism: Definition of Tourism – Traveller – Tourist – Excursionist – Travel Motivations: Push and Pull Motivations of Travel – Basic Components of Tourism: Transport, Attraction, Accommodation – Elements of Tourism: Weather, Amenities, Accessibility, Historical and Cultural Factors

### **UNIT II: Types and Forms of Tourism (6 hours)**

Domestic and International Tourism – Long Haul and Short Haul Tourism – Leisure Tourism – Pilgrimage Tourism – Special Interest Tourism – Adventure Tourism – Eco Tourism – Cultural Tourism – Desert Tourism – Agro Tourism – Culinary Tourism – Medical Tourism – Sustainable Tourism

### **UNIT III: Travel Agency (6 hours)**

Meaning of Travel Agent – Types of Travel Agency – Roles of Large Travel Agent – Characteristics of a Professional Travel Agent

### **UNIT IV: Tour Operator (6 hours)**

Meaning of Tour Operator – Types of Tour Operator: Inbound, Outbound, Domestic, Ground and Specialized – Role of Tour Operators – Itinerary Planning: Principles, Resources and Guidelines

### **UNIT V: Travel Documents (6 hours)**

Passport – VISA – Health Certificates – Tax – Customs – Currency – Travel Insurance – Role of Information Technology in Tourism related Services – Computerized Reservation System (CRS) and Global Distribution System (GDS)

### **Books for Study**

1. Bhatia, A.K. (2016). *Tourism Management*. Sterling Publications, New Delhi.
2. Bhatia, A.K. (2014). *The Business of Travel Agency and Tour Operations Management*. Sterling Publications, New Delhi.

### **Books for Reference**

1. Mancini, M. (2000). *Conducting Tours: A Practical Guide*. Cengage Learning Publications, New Zealand.
2. Negi, J. (2004). *Travel Agency and Tour Operation: Concepts and Principles*. Kanishka Publisher, New Delhi.

3. Seth, P. (2008). *Successful Tourism Management: Fundamentals of Tourism*, Sterling Publications, New Delhi, 2008.

### Web Resources

[https://www.academia.edu/14264572/Basic\\_Concept\\_on\\_Tourism](https://www.academia.edu/14264572/Basic_Concept_on_Tourism)

<http://bieap.gov.in/Pdf/TTPaperIIYR2.pdf>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	List out the various components and elements of tourism	K1
CO2	Explain the types and forms of tourism.	K2
CO3	Describe the roles of Travel Agent	K2
CO4	Apply the roles of Tour Operators	K3
CO5	Identify the importance of travel documents	K3


Relationship Table											
Semester	Course code		Title of the Course							Hours	Credits
1	23UHS14FC01		Foundation Course-1: Introduction to History							2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	3	3	2	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	2	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3	3
Mean overall Score											3 (High)

**DEPARTMENT OF SANSKRIT**  
**ST. JOSEPH'S COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-2**

**MINUTES OF BOARD OF STUDIES**

The Board of studies in Sanskrit met on 21<sup>th</sup> July 2023 (Friday) at 11.35 A.M in the Department of Other Languages at St. Joseph's College (Autonomous), Trichy-2. The TANSCHS syllabus for Part-I Sanskrit for the First Semester was discussed. As per the agenda, the Board discussed on the evaluation pattern provided by the CoE office and has resolved to approve it without any changes. The meeting came to an end at 12.45 P.M.

<b>BOARD OF STUDIES MEETING - HELD ON 21-07-2023</b>		
<b>DEPARTMENT OF SANSKRIT</b>		
<b>St. JOSEPH'S COLLEGE(AUTONOMOUS)</b>		
<b>TIRUCHIRAPPALLI -620002</b>		
<b>S. No.</b>	<b>Name and address</b>	<b>Signature</b>
1.	<b>Dr. S. Usha (University Representative)</b> Associate Professor, Dept of Sanskrit, Seethalakshmi Ramaswami College (Autonomous), Tiruchirappalli – 620 002	PRESENT
2.	<b>Dr. Latha Sreedhar (Subject Expert)</b> Assistant Professor, Sri Sarada College for Women, Salem – 620 016	ABSENT
3.	<b>Dr.M.S.Madhavachari</b>	PRESENT

  
**Dr. M.S. MADHAVACHARI, M.A., Ph.D.,**  
Head, Department of Sanskrit  
St. Joseph's College (Autonomous)  
Tiruchirappalli - 620 002, Tamilnadu, India.



Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23USA11GL01	Sanskrit- I	5	3

Course Objectives
To help students learn the Sanskrit alphabet.
To understand Sanskrit grammar and <i>sabdas</i> .
To have an idea of the epics.
To closely understand the literary works in Sanskrit with special reference to <i>Pancamahakavyas</i> .
To understand the <i>Raghuvasa Mahakava</i> and <i>Kalidasa</i> .

**Unit I: Introduction to Sanskrit (15 Hours)**  
**(Alphabet, Two letter words and three letter words) Grammar**

*akārāntaḥpumliṅgaḥśabda-s* - 1. बाल (Bāla) and  
2. देव (Deva) *ākārāntaḥstrīliṅgaḥśabda-s* - 1. बाला (Bālā) and  
2. लता (Latā) *akārāntaḥnapuṃsakaliṅgaḥśabda-s* - 1. फल (Phala) and 2. वन (Vana)

**Unit II: Introduction to *Rāmāyana*, *Kālidāsa* and his poetic works (15 Hours)**  
*Raghuvaṃśa* (Canto I) Verses 1-15

**Unit III: Introduction to the Works of *Bhāravi* (15 Hours)**  
*Raghuvaṃśa* (canto I) Verses 16-30

**Unit IV: Introduction to the works of *ŚrīHarṣa* (15 Hours)**  
*Raghuvaṃśa* (Canto I) Verses 31-45

**Unit V: Grammar (15 Hours)**

Conjugations -*Laṭlakāra-s* – (Present tense)

- (i) गच्छत (Gacchati)
- (ii) तिष्ठत (Tiṣṭhati)
- (iii) पठत (Paṭhati)
- (iv) नृत्यत (Nr̥tyati)
- (v) कुप्यत (Kupyati)
- (vi) कथयत (Kathayati) गणयत (Gaṇayati)
- (viii) अस्त (Asti)
- (ix) करोत (Karoti)
- (x) शृणोत (Śṛṇoti) Indeclinables (Avyayaani) - अतप (api), कदा (kadā), च (ca), अद्य (adya), तवना (vinā), सह (saha), तत्र (tatra), कम् (kim), यद् (yadi) - तर्हि (tarhi), यथैवा (yathā) - तथा (tathā) Prefixes (*Upasargas*) - आङ् (āñ), त्व (vi), पर (pari), अनु (anu), अधि (adhi), उत (ut), प्र (prati), उप (upa), प्र (pra) तन (nir)

<b>Teaching Methodology</b>	Videos, PPT, demonstration.
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### Books for Study

Murugan, C., et al. (eds.). (2022) *Kalasala-Samskrta-Sukhabodhini-I* (For Undergraduate Foundation Course). University of Madras, Chennai.

### Books for Reference

Vadhyar, R. S. (2017). *Sabdha Manthari*. Vadhyar & Sons. Palakkad.

### Websites and e-Learning Sources

1. <https://www.arlingtoncenter.org/Sanskrit%20Alphabet.pdf>
2. <https://courses.lumenlearning.com/suny-hccc-worldcivilization/chapter/sanskrit/>
3. [https://www.newworldencyclopedia.org/entry/Sanskrit\\_literature](https://www.newworldencyclopedia.org/entry/Sanskrit_literature)
4. <https://archive.org/details/AShortHistoryOfsanskritLiterature>
5. [https://archive.org/details/raghuvamsha\\_with\\_sanjivini\\_edited\\_by\\_mr\\_kale](https://archive.org/details/raghuvamsha_with_sanjivini_edited_by_mr_kale)

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	remember the usage of grammatical tenses in constructing sentences in dialogue.	K1
CO2	apply the rules of usage in practice exercises and spot the errors	K2
CO3	explain the nuances in the usage of various grammatical tenses and aspects	K3
CO4	demonstrate knowledge of various expressions of opinion, emotions, cause, effect, purpose, and hypothesis in Sanskrit	K4
CO5	communicate in Sanskrit and summarize a given text	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23USA11GL01		Sanskrit – I							5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	1	3	2	3	1	3	2	3	2	2	2.2
CO2	2	3	2	3	1	2	2	3	2	3	2.3
CO3	3	2	2	2	2	2	3	2	3	2	2.3
CO4	3	2	3	2	2	3	3	2	3	2	2.3
CO5	3	2	3	3	2	2	3	2	3	3	2.6
Mean overall Score											2.38 (High)



## DEPARTMENT OF TAMIL St. JOSEPH'S COLLEGE (Autonomous)

Accredited at A++ Grade (4<sup>th</sup> Cycle) by NAAC Special Heritage Status awarded by UGC  
College with Potential for Excellence by UGC DBT-STAR & DST-FIST sponsored College

TIRUCHIRAPPALLI - 620 002.

Phone : 0431 - 4226401, 2700320, Fax : 0431 - 2701501

Website : www.sjctni.edu

### பாடத்திட்டக்குழுக்கூட்டம்

02-08-2023 புதன்கிழமை நண்பகல் 12.30 மணி

கூட்ட பொருண்மை :

- ❖ 2023-2024ஆம் கல்வியாண்டின் முதல்பருவத்திற்குரிய பாடத்திட்டத்திற்கு ஏற்பளிப்பு பெறுதல்
- ❖ 2021-2022ஆம் கல்வியாண்டு பாடத்திட்டத்தில் மாற்றங்கள் மேற்கொள்ளல்
- ❖ பின்னூட்டம்

பங்கேற்றோர்:

- ❖ பல்கலைக்கழகப் பிரதிநிதி முனைவர் நா.சிவாஜிகபிலன் (தமிழ்த்துறைத்தலைவர், அ.வீ.வா.நினைவு திருப்புபம் கல்லூரி, பூண்டி, தஞ்சாவூர் மாவட்டம்)
- ❖ பாடப்பிரிவு வல்லுநர் முனைவர் இரா.குறிஞ்சிவேந்தன், (துறைத்தலைவர், அயல்நாட்டுத் தமிழ்க் கல்வித்துறை, தமிழ்ப் பல்கலைக்கழகம், தஞ்சாவூர்)
- ❖ தொழிலக வல்லுநர் முனைவர் க.சிராஜுதீன் (உதவிப்பேராசிரியர், தமிழ்த்துறை, ஜமால் முகம்மது கல்லூரி, திருச்சிராப்பள்ளி)
- ❖ மாற்றுப்பணியில் இருந்த முனைவர் டே.வில்சன், தற்செயல் விடுப்பில் இருந்த முனைவர் ஆ.ஜோசப் சகாயராஜ், முனைவர் கு.அந்தோணிராஜா தவிர துறைப்பேராசிரியர்கள் அனைவரும் இக்கூட்டத்தில் பங்கேற்றனர்.

பாடத்திட்டக்குழுக் கூட்டம் 02-08-2023 புதன்கிழமை நண்பகல் 12.30 மணிக்கு அமைதி இறைவேண்டலுடன் தொடங்கியது. தமிழாய்வுத்துறைத் தலைவர் முனைவர் ஞா.பெஸ்கி அனைவரையும் வரவேற்றதோடு பாடத்திட்டக்குழுக் கூட்டத்தின் நோக்கத்தை எடுத்துரைத்தார்.

அதனைத் தொடர்ந்து கூட்டப் பொருண்மைகள் குறித்துக் கலந்துரையாடல் நிகழ்த்தப்பெற்றுப் பின்வரும் முடிவுகள் பெறப்பட்டன.

அ) 2023-2024 கல்வியாண்டின் முதல்பருவத்திற்குரிய பாடத்திட்டத்திற்கு ஏற்பளிப்பு பெறுதல்

தமிழ்நாடு மாநில உயர்கல்வி மன்றத்தால் (TANSCH) முன்வைக்கப்பெற்ற பாடத்திட்டத்தை அடியொற்றிய முதல் பருவத்திற்கான கீழ்க்கண்ட பாடத்திட்டத்திற்கு



Part	Course Code	Course Title	Hours	Credit
I	23UTA11GL01A	General Tamil -I (தமிழ் இலக்கிய வரலாறு-1)	5	3
	23UTA11GL01B	General Tamil -I (தமிழியல் கல்வி வள ஆதாரங்கள்)		
	23UFR11GL01	French-I		
	23UHI11GL01	Hindi-I		
	23USA11GL01	Sanskrit-I		
II	23UEN12GE01	General English-I	5	3
III	23UTA13CC01	Core Courses 1(CC-1) இக்கால இலக்கியம்-1	5	5
	23UTA13CC02	Core Courses 2 (CC-2) நன்னூல்- எழுத்து	5	5
	23UTA13AC01	தமிழக வரலாறும் பண்பாடும்	4	3
IV	23UTA14FC01	Foundation Course (Major) தமிழில் சிறார் இலக்கியம்	2	2
	23UTA14SE01	SEC -1: (NME) பேச்சுக்கலைத் திறன்	2	2
	23UHE14VE01	Value Education	2	1
		TOTAL	30	24

தொடர்ந்து ஒவ்வொரு தாள்களுக்குரிய பாடத்திட்டத்தைப் பொறுப்பாசிரியர்கள் வாசித்தளித்தபின்னர் கலந்துரையாடல் நிகழ்த்தப்பெற்றுப் பின்வரும் முடிவுகள் பெறப்பட்டன  
பொதுத்தமிழ்-1 (23UTA11GL01A) & பொதுத்தமிழ்-1 (23UTA11GL01B)

❖ இளங்கலைத் தமிழ் வகுப்புக்கு மட்டும் மொழிப்பாடமானது “பொதுத்தமிழ்-1 (தமிழியல் கல்வி வள ஆதாரங்கள்)” என்றும், ஏனைய அனைத்து இளநிலை வகுப்புகளுக்கும் பொதுத்தமிழ்-1 (தமிழ் இலக்கிய வரலாறு-1) என்றும் இரு வகைகளாக அமைகின்றது.

❖ இவ்விரு தாள்களின் பொருண்மையில் எவ்வித மாற்றமில்லை.

இக்கால இலக்கியம்-1 (23UTA13CC01)

❖ பாடத்திட்டத்தில் இடம்பெற்றுள்ள ஆழியாளின் மன்னம்பேரிகள் கவிதை இடம்பெற்றுள்ள “உரத்துப் பேசு” என்னும் கவிதைத்தொகுப்பு அலகு-4 இல் சேர்க்கப்படுகிறது.

நன்னூல் -எழுத்து (23UTA13CC02)

❖ இரா.இளங்குமரனின் இலக்கண வரலாறு , கோ.வில்வபதியின் நன்னூல் மூலமும் உரையும் ஆகிய இரு நூல்கள் மட்டுமே பாடநூல்களாக இடம்பெறுகின்றன.



- ❖ சோம.இளவரசுவின் நன்னூல் எழுத்ததிகாரம், திருஞானசம்பந்தத்தின் நன்னூல் எழுத்ததிகாரம் காண்டிகை உரை ஆகியன பார்வை நூல்களாக மாற்றியமைக்கப்படுகின்றன.

தமிழக வரலாறும் பண்பாடும் (23UTA13AC01)

- ❖ இத்தாளின் பொருண்மையில் எவ்வித மாற்றமுமில்லை.

தமிழில் சிறார் இலக்கியம் (23UTA14FC01)

- ❖ பூவண்ணன் எழுதிய சிறுவர் இலக்கிய வரலாறு, சா.கலைப்புனிதன் எழுதிய குழந்தை இலக்கியங்கள் -ஓர் திறனாய்வு ஆகியன பாடநூல்களாக இடம்பெறுகின்றன.
- ❖ அலகு-4 இல் இடம்பெற்றுள்ள பாவண்ணன் எழுதிய 8 மாம்பழங்கள், எஸ்.ராமகிருஷ்ணன் எழுதிய மீசை இல்லாத ஆப்பிள், நாராயணி சுப்ரமணியன் எழுதிய ஆழ்கடல் - குழலும் வாழிடங்களும், பூவண்ணன் எழுதிய பொம்மைத் தேர் ஆகியனவும் பாடநூல்களில் சேர்க்கப்படுகின்றன. ( எஸ். ராமகிருஷ்ணனின் கால் இல்லாத ஆப்பிள் என்னும் நூற்பெயர் மீசையில்லாத ஆப்பிள் எனத் திருத்தப்படுகிறது)
- ❖ ஏனைய நூல்கள் அனைத்தும் பார்வை நூல்களாக மாற்றியமைக்கப்படுகின்றன.

பேச்சுக்கலைத்திறன் (23UTA14SE01)

- ❖ இத்தாளின் பொருண்மையில் எவ்வித மாற்றமுமில்லை

ஆ) 2021-2022ஆம் கல்வியாண்டு பாடத்திட்டத்தில் மாற்றங்கள்

2022-2022ஆம் கல்வியாண்டு முதல் நடைமுறையில் உள்ள பாடத்திட்டத்தில் சங்க இலக்கியம் (21UTA53CC09) என்னும் தாளில் சிற்சில மாற்றங்கள் மேற்கொள்ளப்பெறுகின்றன.

அலகு-3இல் இடம்பெற்றுள்ள கோவூர்கிழார் பாடல்கள் என்னும் தலைப்பில் உள்ள 41-50 என்னும் பாடல்எண்ணிக்கை 41,44,45,46,47 என மாற்றியமைக்கப்படுகிறது. அவ்வாறே ஒளவையார் பாடல்கள் என்னும் தலைப்பில் உள்ள 5,8,12,45,46,47, 74,75,83,91,92,93,94,95,96 என்னும் பாடல்எண்ணிக்கை 87,88,89,90,91,92,93,94,95, 96,97,98,99,100,101 என்று மாற்றியமைக்கப்படுகிறது.

இ) பின்னூட்டம்

“தத்தம் பாடத்திட்டத்தை அந்தந்த பேராசிரியர்களே பாடத்திட்டக்குழுக் கூட்டத்தில் வாசித்தளித்தது சிறப்பான நடைமுறை” என்று முனைவர் நா.சிவாஜி கபிலன் தெரிவித்தார். “தமிழ்நாடு மாநில உயர்கல்வி மன்றத்தின் பாடத்திட்டம் இக்கல்வியாண்டில் நடைமுறைக்கு வந்தபோதிலும் அதனைக் கல்லூரி நிர்வாகம் வடிவமைத்த வரைசட்டத்திற்கு ஏற்பத் தெளிவாகத் துறைப்பேராசிரியர்கள் சமர்ப்பித்துள்ளனர். பாடத்திட்டத்தின் வடிவமைப்பு பிற



கல்லூரிகளுக்கு முன்மாதிரியாக அமைகிறது” எனத் தங்களின் பாராட்டுதலை முனைவர் இரா.குறிஞ்சிவேந்தன், முனைவர் க.சிராஜுதீன் ஆகியோர் தெரிவித்தனர்.

இறுதியில் பணிமுறை-2 தமிழ்த்துறை ஒருங்கிணைப்பாளர் முனைவர் சு.சீனிவாசன் அவர்களின் நன்றியுரையுடன் கூட்டம் பிற்பகல் 1.30 மணிக்கு நிறைவுற்றது.

02/08/23

**Dr. G. BESCHI**

Associate Professor & Head

Department of Tamil

St. Joseph's College (Autonomous)

Tiruchirappalli-620 002

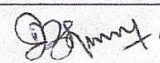
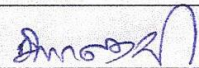
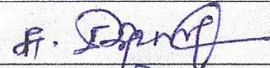


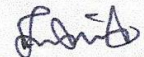
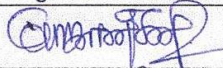
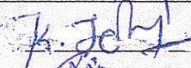



**BOARD OF STUDIES MEETING HELD ON 02-02-2023**

**DEPARTMENT OF TAMIL**  
**St. JOSEPH'S COLLEGE(AUTONOMOUS)**  
**TIRUCHIRAPPALLI -620002**

S. No.	Name and address	Signature
1.	Dr. N. Sivajikabilan, Associate Professor & Head, Department of Tamil, A.V.V.M. Sri Pushpam College (Autonomous), Poondi – 613 503, Thanjavur District (University Representative)	Dr. N. Sivajikabilan முனைவர் நா. சிவாஜிகபிலன் எம். ஏ., எம். பி. எல்., பி. எட்., பி. எச்., இணைப்பேராசிரியர், ஆய்வு நெறியாளர் தலைவர் தமிழ்த்துறை அ. வி. வா. நி. திரு புய்யம் கல்லூரி (கு) புண்டி - 613 503, தஞ்சாவூர் (மே)
2.	Dr. R. Kurinchiventhan, Professor & Head, Dept. of Tamil Studies in Foreign Countries Tamil University, Thanjavur – 5. (Subject Expert)	Dr. R. Kurinchiventhan முனைவர் ரா. குறிஞ்சிவேந்தன் தமிழ்நாடு பல்கலைக்கழகம் தமிழ்நாட்டில் தமிழ்த்துறை தமிழ் மொழியியல் தஞ்சாவூர் - 613 010.
3.	Dr. K. Sirajudheen, Asst. Professor of Tamil, Jamal Mohammed College, Trichy – 620 020	Dr. K. Sirajudheen அ. அ. க. சிராஜுதீன்
4.	Dr. G. Beschi	Dr. G. Beschi 02/08/23
5.	Dr. A. Joseph Sahayaraj	- ABSENT -
6.	Dr. D. Wilson	- ABSENT -
7.	Dr. J. Benjamin Aron Titus	Dr. J. Benjamin Aron Titus
8.	Dr. A. Rajathi	Dr. A. Rajathi
9.	Dr. S. Shagilabanu	Dr. S. Shagilabanu
10.	Dr. A. Maria Dhanabal	Dr. A. Maria Dhanabal
11.	Dr. R. Nallamuthu	Dr. R. Nallamuthu
12.	Dr. K. Anthony Raja	- ABSENT
13.	Mr. A. Adaikkalaraj	Mr. A. Adaikkalaraj
14.	Dr. J. Saleth	Dr. J. Saleth



15.	Dr. S. Arockia Dhanaraj	
16.	Ms. S. Backya Selva Rathi	
17.	Dr. S. Srinivasan	
18.	Dr. R. Murali Krishnan	
19.	Mr. I. Yogaraj	
20.	Dr. L. Charles	
21.	Dr. B. Johnson	
22.	Dr. K. John Kennedy	
23.	Mr. M. Raja	

24. Dr. J. Stellamary

24. Dr. J. Stellamary

25. Dr. M. Dhanalakshmi

25. Dr. M. Dhanalakshmi

26. Dr. P. Lenin

26. Dr. P. Lenin



PROGRAMME PATTERN				
B. A. TAMIL				
Part	Course Code	Title of the Course	Hours	Credit
I	23UTA11GL01A	<b>General Tamil – 1:</b> தமிழ் இலக்கிய வரலாறு - 1	5	3
	23UTA11GL01B	<b>General Tamil - 1:</b> தமிழியல் கல்வி ஆதார வளங்கள்		
	23UFR11GL01	French-1		
	23UHI11GL01	Hindi-1		
	23USA11GL01	Sanskrit-1		
II	23UEN12GE01	General English-1	5	3
III	23UTA13CC01	<b>Core Course - 1:</b> இக்கால இலக்கியம் -1	5	5
	23UTA13CC02	<b>Core Course - 2:</b> நன்னூல் - எழுத்து	5	5
	23UTA13AC01	<b>Allied Course - 1:</b> தமிழக வரலாறும் பண்பாடும்	4	3
IV	23UTA14FC01	<b>Foundation Course:</b> தமிழில் சிறார் இலக்கியம்	2	2
	23UTA14SE01	<b>Skill Enhancement Course - 1 (Non Major Elective):</b> பேச்சுக்கலைத் திறன்	2	2
	23UHE14VE01	<b>Value Education:</b> Essentials of Humanity	2	1
<b>Total</b>			<b>30</b>	<b>24</b>

**Course offered to other Departments**

Part	Course Code	Title of the Course	Hours	Credit
I	23UTA11GL01A	<b>General Tamil – 1:</b> தமிழ் இலக்கிய வரலாறு - 1	5	3

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UTA11GL01A	General Tamil – 1: தமிழ் இலக்கிய வரலாறு - 1	5	3

கற்றலின் நோக்கங்கள்				
தமிழ்ச் செவ்வியல் இலக்கியங்களையும் காப்பியங்களையும் மாணவர்கள் அறிந்துகொள்ளல்				
தமிழர் பேணி வளர்த்த அறம்சார் விழுமியங்களை மாணவர்கள் தம் வாழ்வில் பின்பற்றுதல்				
தமிழில் பக்திஇயக்கப் பங்களிப்பையும் பகுத்தறிவுச் சிந்தனை மரபையும் உணர்தல்				
மாணவர்கள் தம் எழுத்தாற்றலையும் மொழிப்புலமையையும் வளர்த்தெடுத்தல்				
போட்டித்தேர்வுகளை எதிர்கொள்ளும் வகையில் இலக்கணம், இலக்கியம் கற்றல்				

**அலகு I: தமிழ் இலக்கிய, இலக்கண வரலாறு அறிமுகம்**

**(15 மணி நேரம்)**

**1. இலக்கணம் :**

- அ. தொல்காப்பியம், இறையனார் களவியல் உரை , நம்பியகப் பொருள், புறப்பொருள் வெண்பா மாலை, நன்னூல், தண்டியலங்காரம், யாப்பருங்கலக்காரிகை- நூல்கள்
- ஆ. மொழிப் பயிற்சி- ஒற்றுப்பிழை தவிர்த்தல்
  - வல்லினம் மிகும் இடங்கள்
  - வல்லினம் மிகா இடங்கள்
  - ஈரொற்று வரும் இடங்கள்
  - ஒரு, ஓர் வரும் இடங்கள்
  - அது, அஃது வரும் இடங்கள்
  - தான், தாம் வரும் இடங்கள்

**பயிற்சி :** வல்லினம் மிகும் இடங்கள், மிகா இடங்கள் தவறாக வரும்வகையில் ஒரு பத்தி கொடுத்து ஒற்றுப் பிழை திருத்தி எழுதச் செய்தல்.

2. சங்க இலக்கியம் - எட்டுத்தொகை, பத்துப்பாட்டு
3. அற இலக்கியம்-பதினெண்கீழ்க்கணக்கு நூல்கள்
4. காப்பிய இலக்கியம் - ஐம்பெருங் காப்பியங்கள், ஐஞ்சிறு காப்பியங்கள், சமயக் காப்பியங்கள்
5. பக்தி இலக்கியமும் (பன்னிரு திருமுறைகள், நாலாயிர திவ்வியப் பிரபந்தம் -- பகுத்தறிவு இலக்கியமும் (சித்தர் இலக்கியங்கள், புலவர் குழந்தையின் இராவண காவியம்)

**அலகு II: சங்க இலக்கியம்**

**(15 மணி நேரம்)**

**எட்டுத்தொகை:**

6. நற்றிணை-முதல் பாடல் -நின்ற சொல்லர்
7. குறுந்தொகை 3 ஆம் பாடல் -நிலத்தினும் பெரிதே
8. ஐங்குறுநூறு –நெல் பல பொலிக! பொன் பெரிது சிறக்க! (முதல் பாடல் )-வேட்கைப் பத்து
9. கலித்தொகை- 51 - சுடர்த்தொடிக் கேளாய் -குறிஞ்சிக் கலி
10. புறநானூறு -189 தெண்கடல் வளாகம் பொதுமையின்றி, நாடா கொன்றோ -187

**பத்துப்பாட்டு:**

11. முல்லைப்பாட்டு (முழுவதும்)

### அலகு III: அற இலக்கியம்

(10 மணி நேரம்)

12. திருக்குறள் -அறன் வலியுறுத்தல் அதிகாரம்
13. நாலடியார்-பாடல்: 131 (குஞ்சியழகும்)
14. நான்மணிக்கடிகை-நிலத்துக்கு அணியென்ப
15. பழமொழி நானூறு- தம் நடை நோக்கார்
16. இனியவை நாற்பது- 37. இளமையை மூப்பு என்று

### அலகு IV: காப்பிய இலக்கியம்

(20 மணி நேரம்)

17. சிலப்பதிகாரம் – வழக்குரைகாதை
18. மணிமேகலை- பாத்திரம் பெற்ற காதை
19. பெரியபுராணம் - பூசலார் நாயனார்புராணம்
20. கம்பராமாயணம்- குகப் படலம்
21. சீறாப்புராணம் – மானுக்குப் பிணை நின்ற படலம்
22. இயேசு காவியம் -ஊதாரிப்பிள்ளை

### அலகு V: பக்தி இலக்கியமும், பகுத்தறிவு இலக்கியமும்

(15 மணி நேரம்)

#### 23. பக்தி இலக்கியம்:

- திருநாவுக்கரசர் தேவாரம் - நாமார்க்கும் குடியல்லேம் எனத் தொடங்கும் பாடல் மட்டும்
- மாணிக்கவாசகர் திருவாசகம் - நமச்சிவாய வாழ்க நாதன்தாள் வாழ்க முதல் சிரம்குவிவார் ஓங்குவிக்கும் சீரோன் கழல் வெல்க வரை
- பொய்கையாழ்வார்-வையந் தகளியா வார்கடலே
- பூதத்தாழ்வார்-அன்பே தகளியா
- பேயாழ்வார்-திருக்கண்டேன் பொன்மேனி கண்டேன்
- ஆண்டாள் – திருப்பாவை மார்கழித் திங்கள் (முதல் பாடல்)

#### 24. பகுத்தறிவு இலக்கியம் :

- திருமூலர் – திருமந்திரம் (270,271, 274, 275 285)
- பட்டினத்தார் -திருவிடை மருதூர் (காடே திரிந்து – எனத் தொடங்கும் பாடல் பா.எண்.279, 280)
- கடுவெளி சித்தர் - பாபஞ்செய் யாதிரு மனமே (பாடல் முழுவதும்)
- இராவண காவியம் – தாய்மொழிப் படலம் - 18. (ஏடுகை யில்லா ரில்லை முதல் - 22. செந்தமிழ் வளர்த்தார் வரை)

#### பாடநூல்

பொதுத்தமிழ்-1. (தமிழ் இலக்கிய வரலாறு-1), தமிழாய்வுத்துறை, தூய வளனார் தன்னாட்சிக் கல்லூரி, திருச்சிராப்பள்ளி, 2023

#### பார்வை நூல்கள்

1. வரதராசன்.மு. (2021) தமிழ் இலக்கிய வரலாறு, சாகித்ய அக்காதெமி.
2. விமலானந்தன். மது. ச. (2019). தமிழ் இலக்கிய வரலாறு, முல்லை நிலையம்.
3. தமிழண்ணல். (2022). புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு, பாரி நிலையம்.
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கற்பித்தல் முறை	விரிவுரை (Lecture), காணொளிக் காட்சி (Videos), விளக்கக் காட்சி (PPT presentation)
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Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UTA11GL01B	General Tamil -1: தமிழியல் கல்வி ஆதார வளங்கள்	5	3

கற்றலின் நோக்கங்கள்				
பேசுதல் மற்றும் எழுதுதல் திறனை வளர்த்துக் கொள்ளுதல்				
அன்றாட மொழிப் பயன்பாட்டில் இலக்கணத்தைச் சரிவர கையாளுதல்				
வரலாற்று ஆவணங்கள் வழி தமிழின் தொல்மரபை அறிந்துகொள்ளுதல்				
மின்னணுக் கருவிகளில் தமிழைப் பயன்படுத்தும் திறன் பெறுதல்				
கல்விசார் செயல்பாடுகளில் இணைய வளங்களைப் பயன்படுத்துதல்				

### அலகு I: தமிழைப் பிழையின்றிப் பேசுதலும் எழுதலும்

(15 மணி நேரம்)

**பேசுதல் திறன்:** உரிய ஒலிப்புடன், உரிய உணர்ச்சி வெளிப்பட, பொருளுணர்வுக்கு ஏற்றாற்போல் குரல், ஏற்ற இறக்கத்துடன் தங்கு தடையின்றி, இயல்பாகப் பேசுதல், தமக்கான நடையை உருவாக்கிக் கொள்ளுதல்.

1. குறிப்பிட்ட தலைப்பில் பேசுதல்,
2. உரையாடுதல்,
3. உரையாற்றுதல்,
4. கலந்துரையாடுதல்,
5. கருத்தாடல்,
6. அறிக்கை வாசித்தல்,
7. தொகுத்துரைத்தல்,
8. செய்யுள், உரை நயங்களை எடுத்துக்கூறும் திறன்,
9. வேண்டுகோள் விடுக்கும் முறை,
10. நிகழ்வுகளை ஒருங்கிணைத்தல்,
11. அறிக்கை வாசித்தல்,
12. நிகழ்ச்சி வருணனை கூறுதல்,
13. நேர்காணல் நடத்துதல்,
14. செய்திகள், கருத்துகள், நூல்கள் ஆகியவற்றைத் திறனாய்வு செய்து பேசுதல்.

**எழுதுதல் திறன்:** பொதுத் தமிழில், எழுத்து வழக்குச் சொற்களைப் பயன்படுத்தி, பிழைகளின்றி (சந்திப் பிழை, மயங்கொலிப் பிழை, குறில்-நெடில் பிழை, தொடர்ப் பிழை) உரிய நிறுத்தக் குறிகளுடன் தெளிவாகப் பொருள் விளங்கத் தமக்கான நடையில் குறிப்பிட்ட தலைப்பில் எழுதுதல்.

1. உரையாடல்,
2. உரையாற்றுதல்,
3. கலந்துரையாடல்,
4. விவாதித்தல்,
5. அறிக்கை தயாரித்தல்,
6. கட்டுரை எழுதுதல்,
7. செய்யுள், உரையங்களை எழுதுதல்,
8. எழுத்துமொழியில் தெளிவாக விண்ணப்பித்தல் (விண்ணப்பங்கள் நிரப்புதல் / எழுதுதல்),
9. நிகழ்ச்சி நிரல் தயாரித்தல்,
10. அறிக்கை எழுதுதல்,
11. நிகழ்வறிக்கை தயாரித்தல்,
12. முடிக்கத் தொடர்கள் எழுதுதல்,
13. செய்திகள், கருத்துகள், நூல்கள் ஆகியவற்றைத் திறனாய்வு செய்து எழுதுதல்.

### அலகு II: பயன்பாட்டுத் தமிழ் இலக்கணமும் மொழிப் பயிற்சியும்

(15 மணி நேரம்)

மாற்றுப்பெயர்கள் - மாற்றுப்பெயர்களும் விகுதிகளும்

(நான்-ஏன், நீ-ஆய், நாம், நாங்கள்-ஓம், நீங்கள்-ஈர்கள், அவன்-ஆன், அவள்-ஆள், அவர்-ஆர், அவர்கள்-ஆர்கள்/அர், அது/இது-அது, அவை/இவை-அன)

பெயர்ச்சொல் வேற்றுமை ஏற்றல் - வினைச்சொல்லும் கால விகுதிகளும்

(இறந்தகாலம்: த், ட், ற் - இன், இ, ன் / நிகழ்; கிறு, கின்று / எதிர்: வ், ப்) -

வினைச்சொல்லும் எதிர்மறை விகுதிகளும்

(இறந்தகாலம்: இல்லை / நிகழ், எதிர்: மாட்டு)

### அலகு III: தொல்லியலும் அகழாய்வுகளும்

(15 மணி நேரம்)

கல்வெட்டுக்கள் - செப்பேடுகள் - சுவடிகள் - நாணயங்கள் -  
பிற ஆவணங்கள் - நூல்கள் - இதழ்கள் - நூலகங்கள் -  
அருங்காட்சியங்கள் - அகழ்வைப்பகங்கள்  
ஆகியன குறித்த அறிமுகம் - அவற்றில் மொழிப்பயன்பாடு

#### அலகு IV: மின்னணுக்கருவிகளில் தமிழ்ப் பயன்பாடு

(15 மணி நேரம்)

1. செல்பேசி - கணினி மற்றும் மின்னணுக் கருவிகளில் தமிழை உள்ளிடுதல் –
2. தமிழ் 99 தட்டச்சு முறையில் தமிழைத் தட்டச்சு செய்தல் –
3. கூகுள் ஜிபோர்டு - கூகுள் டிரான்ஸ்லேட்டர் - கூகுள் லென்ஸ் போன்றவற்றில் தமிழ்ப்பயன்பாடு

#### அலகு V: மின் நூல்கள் – தமிழ் இணையதளங்கள் - செயலிகள்

(15 மணி நேரம்)

மின்நூல்கள் - மின் நூலகங்கள் - மின் இதழ்கள் - பேசும் புத்தகங்கள் -  
விக்கிபீடியா - தமிழ் விக்சனரி - மின் அகராதிகள் - தமிழ் இணையக்  
கல்விக்கழகம் - தமிழ் மொழி தொடர்பான இணையதளங்கள் - இலக்கியம் சார்ந்த மற்றும்  
பொதுவான வலைப்பூக்கள்.

#### 21 ஆம் நூற்றாண்டுத் திறன்கள்: கற்றல் திறன்கள் (Learning Skills)

1. மாற்றுச் சிந்தனை (Critical Thinking)
2. படைப்பாக்கச் சிந்தனை (Creative Thinking)
3. கூட்டுச்செயல்பாடு (Collaborating)
4. தொடர்புகொள்ளல் (Communicating)

#### அறிவுத்திறன்கள் (Literacy Skills)

5. தகவல் (Information),
6. ஊடகம் (Media)
7. தொழில்நுட்பம் (Technology),

#### வாழ்க்கைத்திறன்கள் (Life Skills)

8. நெகிழ்வுத்தன்மை (Flexibility)
9. முன்னோக்குத்திறன் (Initiative)
10. சமூகத்திறன்கள் (Social Skills)
11. உற்பத்தித்திறன் (Productivity)
12. தலைமைப்பண்பு (Leadership)

#### பாட நூல்கள்

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2. சுந்தரம் இல. (2015). கணினித்தமிழ், விகடன் பிரசுரம்.
3. சுப்பிரமணியன் பூ., (1991). சுவடியியல், உலகத் தமிழாராய்ச்சி நிறுவனம்.

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1. வெங்கடேசன் சு., (2018). வைகை நதி நாகரிகம் (கீழடி குறித்த பதிவுகள்), விகடன் பிரசுரம்.
2. சொக்கன் என். (2016). நல்ல தமிழில் எழுதுவோம், கிழக்கு பதிப்பகம்.
3. மொழி அறக்கட்டளை, தமிழ்நடைக் கையேடு. (2004). அடையாளம் பதிப்பகம்.
4. நுஃமான் எம்.ஏ. (2013). அடிப்படைத் தமிழ் இலக்கணம் , அடையாளம் பதிப்பகம்.
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6. நன்னன் மா. (2006). தவறின்றித் தமிழ் எழுதுவோம், ஏகம் பதிப்பகம்.
7. சீனி நைனா முகம்மது செ. (2013). நல்ல தமிழ் இலக்கணம், அடையாளம் பதிப்பகம்.
8. சீனி நைனா முகம்மது செ. (2013). புதிய தமிழ்ப்புணர்ச்சி விதிகள், அடையாளம் பதிப்பகம்.
9. இளங்கோவன் மு. (2010). இணையம் கற்போம் , வயல்வெளிப் பதிப்பகம்.
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|-----------------|--|
| கற்பித்தல் முறை | விரிவுரை (Lecture), காணொளிக் காட்சி (Videos), விளக்கக் காட்சி (PPT presentation) |
|-----------------|--|

Relationship Matrix											
Semester	Course code		Title of the Paper					Hours/Week		Credits	
1	23UTA11GL01B		General Tamil -1: தமிழியல் கல்வி ஆதார வளங்கள்					5		3	
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of Cos
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	2	1	3	3	3	1	3	2	2.3
CO2	1	3	2	2	2	3	3	2	1	2	2.1
CO3	3	3	3	3	1	1	3	3	1	3	2.4
CO4	3	3	3	3	1	3	3	3	1	2	2.5
CO5	2	2	2	3	3	1	3	2	3	3	2.4
Mean overall Score											2.34 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UTA13CC01	Core Course - 1: இக்கால இலக்கியம் -1	5	5

கற்றலின் நோக்கங்கள்
இலக்கிய வரலாற்றுப் பின்னணியில் இக்காலத் தமிழ் இலக்கியங்களை அறியச் செய்தல்
கவிதை, சிறுகதை, புதினம், நாடகம் கட்டுரை ஆகிய படைப்பியல் வகைகள் குறித்த அறிவைப் பெருக்குதல்
இக்காலத் தமிழ் இலக்கியங்களின் உள்ளடக்கம், வெளியீட்டு நெறி, படைப்பியல் கொள்கை ஆகியவற்றை அறியச் செய்தல்
புதினம், சிறுகதைகள் ஆகியவற்றைத் திறனாய்வு செய்யும் திறன் வளர்த்தல்
படைப்புத் துறையிலும் ஊடகத்துறையிலும் கல்விப்புலத்திலும் அயல்நாடுகளிலும் வேலைவாய்ப்பு பெறச் செய்தல்

### அலகு I: மரபுக்கவிதைகள்

(15 மணி நேரம்)

பாரதியார் கவிதைகள்: கண்ணன் பாட்டு

கண்ணன் என் தோழன்,  
கண்ணன் என் தந்தை,  
கண்ணன் என் அரசன்

கண்ணன் என் தாய்,  
கண்ணன் என் சேவகன்,

பாரதிதாசன் கவிதைகள்: திராவிட நாடு –

இனப்பெயர்,  
தமிழனுக்கு வீழ்ச்சியில்லை.

பிரிவு தீது,

கண்ணதாசன் கவிதைகள்:

ஒரு பானையின் கதை,  
நீ மணி நான் ஒலி

கந்தல் துணியின் கதை,

### அலகு II: மரபுக்கவிதைகள்

(15 மணி நேரம்)

முடியரசன் கவிதைகள்:

திருக்குறள் நம்மறை,  
வள்ளுவன் இன்று வந்தால்,

பொதுநூல்,  
வள்ளுவர் கோட்டம்

வாணிதாசன் கவிதைகள்:

காந்தி, பாரதி,  
பேராசிரியர் சுந்தரனார்,

மறைமலையடிகள், திரு.வி.க.,  
கவிமணி, எழுத்தாளன்

சுரதா கவிதைகள் : துறைமுகம் -

தமிழில் அர்ச்சனை,

வரப்புச்சாமிகள்

### அலகு III: புதுக்கவிதைகள்

(15 மணி நேரம்)

அப்துல் ரகுமான் – பித்தன்

வைரமுத்து- சிற்பியே உன்னைச் செதுக்குகிறேன்

அ.வெண்ணிலா - ஆதியில் சொற்கள் இருந்தன ஆழியாள் – உரத்துப் பேச

### அலகு IV: சிறுகதைகள்

(15 மணி நேரம்)

புதுமைப்பித்தன் சிறுகதைகள் :

கடவுளும் கந்தசாமிப் பிள்ளையும்,  
ஞானக்குகை, கபாடபுரம்.

அகல்யை, சாப விமோசனம்,



## ஜெயகாந்தன் சிறுகதைகள்:

ஒரு பிடி சோறு,  
ஒரு வீடு பூட்டிக் கிடக்கிறது,

குரு பீடம் அக்னி பிரவேசம்,  
யுகசந்தி

## அலகு V: புதினம்

(15 மணி நேரம்)

முத்துநாகு - சுருந்தீ

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கற்பித்தல் முறை	விரிவுரை (Lecture), காணொலிக் காட்சி (Videos), விளக்கக் காட்சி (PPT presentation)
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Course Outcomes		
CO No.	CO Statements	Cognitive Levels (K –Levels)
	இப்பாடத்தின் நிறைவில் மாணவர்கள்	
CO1	இக்காலத் தமிழ் இலக்கியங்களைப் பற்றிய பொதுஅறிமுகம் பெறுவர்	K1
CO2	மரபுக்கவிதை முதல் புதுக்கவிதை வரையிலான கவிதையின் பரப்பையும் வீச்சையும் உணர்ந்து கொள்வர்	K2
CO3	சமகாலப் படைப்புகள்வழி மாணவர்கள் சமூகம் பற்றிய புரிதலைப் பெறுவர்	K3
CO4	இக்கால இலக்கியங்களைத் திறனாய்வு செய்யும் திறன் பெறுவர்	K4
CO5	புனைகதைகளின் இலக்கியத்திறனை மதிப்பிடுவதோடு படைப்பாளராகவும் உருவாகுவர்	K5

Relationship Matrix											
Semester	Course code		Title of the Paper					Hours/ Week		Credits	
1	23UTA13CC01		Core Course - 1: இக்கால இலக்கியம் -1					5		5	
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of Cos
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	3	3	2	2	3	3	2	2	2.4
CO2	2	3	3	3	3	2	3	2	3	3	2.7
CO3	3	2	2	3	3	2	2	3	3	3	2.6
CO4	2	2	2	2	2	3	3	2	2	2	2.2
CO5	3	3	3	3	2	3	2	3	3	3	2.8
Mean overall Score											2.24 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UTA13CC02	Core Course - 2: நன்னூல் - எழுத்து	5	5

கற்றலின் நோக்கங்கள்				
தமிழ் இலக்கணத்தின் தொன்மையையும் தனித்தன்மையையும் அறிதல்.				
எழுத்திலக்கணக் கோட்பாட்டின் வளர்நிலைகளை அறிந்துகொள்ளுதல்				
எழுத்துகளின் பிறப்பும் மொழி கட்டமைப்பும் குறித்துத் தெளிவு பெறுதல்.				
நூலாக்க நெறிமுறைகள் வழி எந்தவொரு நூலையும் திறனாய்வு நோக்கில் அணுகுதல்				
போட்டித்தேர்வுகளை எதிர்கொள்வதற்கான இலக்கண அறிவு பெறுதல்				

**அலகு I: எழுத்திலக்கண வரலாறும் வளர்ச்சியும் (15 மணி நேரம்)**

தமிழ் இலக்கண வரலாற்றில் நன்னூல் - சமகாலப் பயன்பாட்டில் நன்னூல் - நன்னூலுக்கு முந்தைய, பிந்தைய இலக்கண நூல்கள், - எழுத்திலக்கணக் கோட்பாடு.

**அலகு II: பாயிரம் (1-55) (15 மணி நேரம்)**

சிறப்புப்பாயிரம் - பொதுப்பாயிரம் - மூவகைநூல் - பத்துக்குற்றம் - பத்து அழகு முப்பத்திரண்டு உத்திகள் - நூலின் உறுப்புகள் - நல்லாசிரியர் இலக்கணம் - ஆசிரியர் ஆகாதார் - கற்பிக்கும் முறை - மூவகை மாணாக்கர் - பாடம் கேட்டலின் இயல்பு - நூல் பயிலும் முறை - நூல் யாப்பு.

**அலகு III: எழுத்தியல் (56-127) (15 மணி நேரம்)**

எழுத்திலக்கணத்தின் பாகுபாடு - பெயர் - முறை - பிறப்பு - சார்பெழுத்துகள் - உருவம் - மாத்திரை - மொழி முதல் எழுத்துகள் - இறுதிநிலை எழுத்துகள் - மெய்ம்மயக்கம் - போலி - சாரியை.

**அலகு IV: பதவியல் (128-150), உயிரீற்றுப் புணரியல் (151-203) (15 மணி நேரம்)**

பதம் : வரையறை - ஒரெழுத்து ஒரு மொழி - பகாப்பதம் - பகுபதம் - பகுபத உறுப்புகள் - மையீற்று பண்புப்பகுதிகள் - தெரிநிலை வினைப்பகுதி - விசுதி - இடைநிலை - தற்சமம் - தற்பவம் - எழுத்துத்திரிபு - தமிழுக்குரிய சிறப்பெழுத்துகள்.

வேற்றுமை, அல்வழிப் புணர்ச்சி - தொகைநிலை, தொகாநிலைத் தொடர் - விகாரப்புணர்ச்சி - பொதுப்புணர்ச்சி - உடம்படுமெய் - மரப்பெயர் முன் வல்லினம் - உயிரீற்றுச் சிறப்பு விதி - திசைப்பெயர் புணர்ச்சி - எண்ணுப்பெயர் புணர்ச்சி - சிறப்பு விதிகள்.

**அலகு V: மெய்யீற்றுப் புணரியல் (204-239), உருபுப் புணரியல் (240-257) (10 மணி நேரம்)**

மெய்யீற்றின் முன் உயிர் புணர்தல் - தனிக்குறில் முன் ஒற்று - ணகர ணகர ஈற்றுப் புணர்ச்சி - மகர ஈற்றுப் புணர்ச்சி - யரழ ஈறு - லகர ணகர ஈற்றுப் புணர்ச்சி - உருபுப் புணரியல்.

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கற்பித்தல் முறை	விரிவுரை (Lecture), காணொளிக் காட்சி (Videos), விளக்கக் காட்சி (PPT presentation)
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Course Outcomes		
CO No.	CO Statements	Cognitive Levels (K–Levels)
	இப்பாடத்தின் நிறைவில் மாணவர்கள்	
CO1	தமிழ் இலக்கண நூல்கள் பற்றிய அறிவைப் பெறுவார்	K1
CO2	மொழியில் காலந்தோறும் ஏற்பட்டுள்ள மாற்றத்தை அறிந்துகொள்வார்	K2
CO3	பிழையின்றி எழுதும் திறன் பெறுவதோடு தம் கற்றல் திறனை வளர்த்துக்கொள்வார்	K3
CO4	நூலாக்க நெறிமுறைகளின் அடிப்படையில் நூலை ஆராயும் திறன் பெறுவார்	K4
CO5	நன்னூலின்வழி கல்வியியல் சார்ந்த திறன்களை இக்காலச் சூழலில் பொருத்தி ஆராய்வார்	K5

Relationship Matrix											
Semester	Course code		Title of the Paper					Hours/ Week		Credits	
1	23UTA13CC02		Core Course - 2: நன்னூல் - எழுத்து					5		5	
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of Cos
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO-1	3	2	1	2	2	1	3	2	2	2	2.0
CO-2	3	2	1	3	3	2	3	2	2	2	2.3
CO-3	2	2	1	3	3	2	3	3	2	2	2.3
CO-4	3	2	1	3	3	2	3	3	2	2	2.4
CO-5	3	1	1	3	2	2	2	3	2	3	2.2
Mean overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UTA13AC01	Allied Course - 1: தமிழக வரலாறும் பண்பாடும்	4	3

கற்றலின் நோக்கங்கள்
பழங்காலம் முதற்கொண்டு இக்காலம் வரையிலான தமிழக வரலாற்றை அறிதல்
தமிழரின் அரசியல், பண்பாடு, நாகரிகம் ஆகியவற்றின் செழுமையை உணர்தல்
சமூக அரசியல் எழுச்சிக்குத் தமிழ்நாடு ஆற்றிய பங்களிப்பைக் கண்டறிதல்
தமிழ்ச்சமூகத்தின் மீதான பண்பாட்டுத் தாக்குதல்களைப் புரிந்துகொள்ளல்
போட்டித்தேர்வுகளை எதிர்கொள்ளும்வகையில் வரலாற்றைக் கற்றுணர்தல்

**அலகு - 1: வரலாற்றுக் காலத்துக்கு முந்தைய தமிழகம் (கி.மு. 5000 முதல் கி.பி.1 வரை)**

**(12 மணிநேரம்)**

சிந்துவெளி, கீழடி, பொருநை அகழ்வாராய்ச்சிகள் - கற்காலம் - இரும்புக் காலம் - லெமூரியக் கண்டம் குறித்த கருத்தாக்கம் - தமிழரின் வரலாற்றுத் தொன்மை - பிறநாட்டாருடன் தமிழரின் வணிக-பண்பாட்டுத் தொடர்புகள்.

**அலகு - 2: சங்ககாலத் தமிழர்கள் (கி.பி.1 முதல் 6 ஆம் நூற்றாண்டு வரை)**

**(12 மணிநேரம்)**

பாண் மரபு - வேளிர் வரலாறு - அரசுகளின் தோற்றம் - மூவேந்தர்கள் - அகப்புறப் பண்பாடு - சங்கப் பிற்காலம் (கலப்பிரர்கள் காலம்) அற இலக்கியத் தோற்றம்.

**அலகு - 3: பல்லவர் காலத்தில் தமிழர் பண்பாடு (கி.பி.6 முதல் 9ஆம் நூற்றாண்டு வரை)**

**(12 மணிநேரம்)**

பல்லவ அரசின் தோற்றம் பல்லவ-சாளுக்கியப் போர் பல்லவர் ஆட்சிமுறை - கலைகளின் வளர்ச்சி - சிற்பம், ஓவியம் - கடற்கரைக் கோயில் - புடைப்புச் சிற்பங்கள் - பக்தி இலக்கியங்கள் (சமண, பௌத்த, சைவ, வைணவ சமயங்கள் சார்ந்த இலக்கியங்கள்).

**அலகு - 4 சோழர், பிற்காலப் பாண்டியர், நாயக்கர் காலங்கள் (கி.பி. 9 முதல் 18ஆம் நூற்றாண்டு வரை)**

**(12 மணிநேரம்)**

குலோத்துங்க சோழன் - சோழர்களின் எழுச்சி: இராசராச சோழன் - இராசேந்திர சோழன் - அயலநாட்டில் தமிழர் ஆட்சி ஆட்சிமுறை (ஊராட்சி) - தஞ்சைப் பெரிய கோயில் - கட்டடக்கலை வளர்ச்சி - பிற கலைகள் வளர்ச்சி - சோழர் வீழ்ச்சி - உரையாசிரியர்கள் - காப்பியங்கள் வளர்ச்சி - நாயக்கர்கள் வருகை - பாளையப்பட்டுகள் - மராட்டியர் ஆட்சி - சிற்றிலக்கிய வளர்ச்சி.

**அலகு - 5: அரசியல் - சமூக எழுச்சிக் காலம் (19 - 20 ஆம்நூற்றாண்டு)**

**(12 மணிநேரம்)**

ஐரோப்பியர் வருகை - ஐரோப்பியர் ஆட்சியின் விளைவுகள் - அச்ச நூல்கள் பதிப்பு - தமிழ் இலக்கிய மறுமலர்ச்சி - உ.வே.சா., சி.வை.தா. பங்களிப்பு - தேசிய இயக்கம் - பொதுவுடைமை இயக்கம் - தென்னிந்திய நல உரிமைச் சங்கத்தின் காலம் - திராவிட இயக்க (சுயமரியாதை இயக்க) காலம் - தமிழர்களின் சமூக எழுச்சி - அரசியல் விழிப்புணர்ச்சி - சமூகநீதிக் கொள்கைகள்.

**பாடநூல்கள்**

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2. தட்சிணாமூர்த்தி அ. (2011). தமிழர் நாகரிகமும் பண்பாடும், யாழ் வெளியீடு.
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**பார்வை நூல்கள்**

Relationship Matrix											
Semester	Course code		Title of the Paper					Hours/Week		Credits	
I	23UTA13AC01		Allied Course - 1: தமிழக வரலாறும் பண்பாடும்					4		3	
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of Cos
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	2	3	3	2	3	2	2	3	2.4
CO2	2	2	3	3	3	3	2	2	2	3	2.5
CO3	3	2	2	3	3	2	2	2	3	3	2.5
CO4	3	3	2	3	2	3	2	2	3	3	2.6
CO5	3	2	3	2	3	3	3	2	3	2	2.6
Mean overall Score											2.5 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UTA14FC01	Foundation Course (Major) தமிழில் சிறார் இலக்கியம்	2	2

கற்றலின் நோக்கங்கள்				
தமிழில் உள்ள சிறார் இலக்கியத்தின் தன்மைகளையும் நோக்கத்தையும் அறிதல்.				
சிறார் இலக்கியப் படைப்புகள் எடுத்துரைக்கும் மனித மதிப்பீடுகளைத் தம் வாழ்வில் கடைபிடித்தல்				
தமிழக அரசு நடத்தும் போட்டித் தேர்வினை எதிர்கொள்ளும் திறன் பெறுதல்				

#### அலகு I: சிறார் இலக்கியம் தோற்றமும் வளர்ச்சியும்

(6 மணி நேரம்)

சிறார் இலக்கியம்: வரையறை, விளக்கம். தமிழில் சிறார் இலக்கியங்கள்: தோற்றம், வளர்ச்சி, வரலாறு - சிறார் இலக்கிய வகைகள்: கதை, கவிதை, நாடகம், வாழ்க்கை வரலாறு, அறிவியல் சார்ந்த படைப்புகள் - நூல்கள், நாள்-வார-மாத இதழ்களில் சிறார் இலக்கியங்கள், மினுடகங்களான வானொலி-தொலைக்காட்சிகளில் (அரசு, தனியார்) சிறார் இலக்கிய நிகழ்ச்சிகள் - சிறார் உளவியல்: படைப்பும் கற்பனையும்.

#### அலகு II: தமிழில் சிறார் இலக்கியப் படைப்பாளர்கள்

(6 மணி நேரம்)

அவ்வையார், பாரதியார், கவிமணி தேசிக விநாயகம் பிள்ளை, அழ. வள்ளியப்பா. வாண்டுமாமா, பெ. தூரன், 'கல்வி' கோபாலகிருஷ்ணன், பாவண்ணன், விழியன், ச.மாடசாமி, எஸ். ராமகிருஷ்ணன், ஆயிஷா நடராசன், விஷ்ணுபுரம் சரவணன், உதயசங்கர், பாலபாரதி, யூமா வாசுகி முதலியோர்.

#### அலகு III: இயல்புகளும் பண்புகளும்

(6 மணி நேரம்)

தமிழில் சிறார் இலக்கியப் படைப்புகள்: பண்புகள், உருவம், உள்ளடக்கம் (அன்பு செலுத்துதல், ஒற்றுமை, பொய் கூறாமை, தன் சுத்தம், சுற்றுப்புற சுகாதாரம், நேரம் தவறாமை போன்ற நற்கருத்துகள்) உத்திகள், மொழிநடை (எளிய சொற்கள்-தொடர்கள், எளிதில் உணரும் பாடுபொருள்).

#### அலகு IV: சிறார் இலக்கியங்கள்

(6 மணி நேரம்)

எட்டு மாம்பழங்கள் (கவிதை) - பாவண்ணன்  
மீசையில்லாத ஆப்பிள் (புனைகதை) - எஸ்.ராமகிருஷ்ணன்  
ஆழ்கடல் - சூழலும் வாழிடங்களும் - நாராயணி சுப்ரமணியன்  
பொம்மைத் தேர் (நாடகம்) - பூவண்ணன்

#### அலகு V: படைப்பாக்கமும் பயிற்சியும்

(6 மணி நேரம்)

தமிழில் சிறார் இலக்கியப் படைப்பாக்கம் - இதழ்கள், மின் ஊடகங்களுக்கேற்றவாறு படைக்கக் கற்பித்தல் - சமூக ஊடகங்களில் படைப்பாக்கங்களைப் பகிரப் பயிலரங்குகள் நடத்துதல்.

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#### பார்வை நூல்கள்

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2. வாணிதாசன். (1998). குழந்தை இலக்கியம், வள்ளுவர் பண்ணை.

3. பெரியசாமித் தூரன். (2009). குழந்தைகள் கலைக்களஞ்சியம் (பத்துத் தொகுதிகள்), உலகத்தமிழாராய்ச்சி நிறுவனம்.
4. அம்புயம் யுவச்சந்திரா. (1989). குழந்தை இலக்கியமும் கவிஞர் வள்ளியப்பாவும், ஐந்திணைப் பதிப்பகம்.

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- [https:// tamilelibrary.org](https://tamilelibrary.org)
- [www.projectmadurai.or](http://www.projectmadurai.or)
- [https:// www.tamilvu.org/ta/library-libcontnt-273141](https://www.tamilvu.org/ta/library-libcontnt-273141)
- [https:// www.tamildigitallibrary.in/](https://www.tamildigitallibrary.in/)
- [https:// www.noolaham.org](https://www.noolaham.org)

கற்பித்தல் முறை	விரிவுரை (Lecture), காணொலிக் காட்சி (Videos), விளக்கக் காட்சி (PPT presentation)
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Course Outcomes		
CO No.	CO–Statements	Cognitive Levels (K –Levels)
	இப்பாடத்தின் நிறைவில் மாணவர்கள்	
CO1	தமிழில் உள்ள சிறார் இலக்கியங்களை அறிந்து கொள்வர்.	K1
CO2	சிறார் இலக்கியப் படைப்பாளர்களைப் பற்றியும் இலக்கிய வகைகளைப் பற்றியும் புரிந்து கொள்வர்.	K2
CO3	தமிழ் இலக்கியத்தில் சிறார் இலக்கியம் அடைந்த வளர்ச்சியினையும் அவற்றின் இன்றியமையாமையையும் உணர்வர்	K3

Relationship Matrix											
Semester	Course code		Title of the Paper					Hours/Week		Credits	
1	23UTA14FC01		Foundation Course (Major) தமிழில் சிறார் இலக்கியம்					2		2	
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of Cos
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PS O3	PSO4	PSO 5	
CO1	3	3	3	3	1	3	1	2	1	1	2.1
CO2	3	3	3	2	1	3	3	2	1	1	2.2
CO3	2	3	3	3	1	3	1	2	1	1	2.1
Mean overall Score											2.1 (High)



Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UTA14SE01	Skill Enhancement Course - 1 (Non Major Elective): பேச்சுக்கலைத் திறன்	2	2

கற்றலின் நோக்கங்கள்
பேச்சுக்கலையின் சிறப்புகளை அறிதல்
பேச்சாளர் ஆவதற்குரிய ஆளுமையைப் பண்புகளை வளர்த்தல்
குறிப்பெடுக்கும் தன்மையை வளர்த்தல்
பேச்சாற்றலால் கருத்தியல் தளத்தில் பரவ முடியுமென்பதை உணர்த்தல்
வாசிப்பின் அவசியத்தை உணர்ந்து வாசிப்பில் ஈடுபடுதல்

#### அலகு I: பேச்சுக்கலை விளக்கம்

(6 மணி நேரம்)

சொற்பொழிவு ஓர் அரிய கலை - வரையறை - வரலாறு - விளக்கம் - பேச்சாளர் தகுதிகள் - முன்னோடிகள் - இலக்கிய அறிவு - மொழி அறிவு - அனுபவம் - தனித்தன்மை - முன்முயற்சிகள் - மேடைப்பேச்சு வரலாறு - வகைகள்.

#### அலகு II: சொற்பொழிவின் பண்புகள்

(6 மணி நேரம்)

சமயச் சொற்பொழிவு - இலக்கியச் சொற்பொழிவு - அரசியல் சொற்பொழிவு - பொழுதுபோக்குச் சொற்பொழிவு - நகைச்சுவைச் சொற்பொழிவு - ஊடகப் பொழிவுகள் - அவையச்சம் நீங்க வழிமுறைகள் - மொழியைக் கையாளும் திறன்.

#### அலகு III: மேடையில் தோன்றுதல்

(6 மணி நேரம்)

பேச்சுநடை - உச்சரிப்பு முறை - அவையறிதல் - பொருளறிதல் - சொல்தெரிவு - மொழி ஆளுமை - இலக்கியப் புலமை - வெளிப்பாட்டுத் திறம் - தொனி - பேச்சின் தொடக்கம் - பொருள்விரித்தல் முறை - முத்தாய்ப்பாக முடித்தல் - நினைவாற்றலைப் பெருக்கும் வழிமுறைகள்.

#### அலகு IV: சிறந்த பேச்சு ஆளுமைகள்

(6 மணி நேரம்)

புகழ்பெற்ற சொற்பொழிவாளர்கள் - வ.உ.சிதம்பரனார் - திரு.வி.க. - மறைமலையடிகள் - வரதராசலு நாயுடு - ஜீவா - பெரியார் - அண்ணா - ம.பொ.சிவஞானம் - கி.ஆ.பெ. விசுவநாதன் - கலைஞர் கருணாநிதி - கிருபானந்த வாரியார் - கி.வா.ஜகந்நாதன் - புலவர் கீரன் - திருக்குறள் முனுசாமி - வம்புரிஜான் - சிலம்பொலி செல்லப்பன் - நெல்லைக் கண்ணன் - தென்கச்சி சுவாமிநாதன் - சுகி.சிவம், மேலைநாட்டுப் பொழிஞர்கள் - போன்றோர்.

#### அலகு V: பேச்சாளர் கவனிக்க வேண்டியவை

(6 மணி நேரம்)

பேச்சாளருக்குரிய நெறிமுறைகள் - பொழிவு தயாரிப்பும் உத்திகளும் - கவனத்தில் கொள்ளவேண்டிய குறிப்புகள் (பாராட்டு, வாழ்த்து, இரங்கல் கூட்டங்களில் பேசும் முறை) - சொற்போர் - பட்டிமன்றம் - வழக்காடு மன்றம் - பக்தி சொற்பொழிவு - நூல் விமர்சனம் - அவைத் தலைமை - நன்றியுரை போன்றவற்றைப் பேசும் முறை - பயிற்சி.

#### பாடநூல்

1. திருமலை, ம. (2009). பேச்சுக்கலை, மீனாட்சி புத்தக நிலையம்.
2. பரந்தாமனார், அ.கி. (2016). பேச்சாளராக, அல்லி நிலையம்.
3. பாண்டியன், தா. (2019). மேடைப் பேச்சு, நியூ செஞ்சுரி புக் ஹவுஸ்.

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2. குமரி அனந்தன், (2010). பேச்சுக்கலைப் பயிற்சி, வானதி பதிப்பகம்.

3. ஞானசம்பந்தன், கு. (2007). பேசும் கலை, நியூ செஞ்சுரி புக் ஹவுஸ்.
4. திருமலை, ம. (2019). பேச்சுக்கலை, மீனாட்சி புத்தக நிலையம்.
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7. டேல் கார்னிகி, (2012). மேடைப் பேச்சுக் கலை, கண்ணதாசன் பதிப்பகம்.
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- Project Madurai - [www.projectmadurai.org](http://www.projectmadurai.org).
- Chennai Library- [www.chennailibrary.com](http://www.chennailibrary.com) <<http://www.chennailibrary.com>>.
- Tamil Universal Digital Library- [www.ulib.prg](http://www.ulib.prg) <<http://www.ulib.prg>>.
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- Tamil Books on line- [books.tamil cube.com](http://books.tamilcube.com)
- Catalogue of the Tamil books in the Library of British Congress [archive.org](http://archive.org)
- Tamil novels on line - [books.tamilcube.com](http://books.tamilcube.com)

கற்பித்தல் முறை	விரிவுரை (Lecture), காணொளிக் காட்சி (Videos), விளக்கக் காட்சி (PPT presentation)
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Course Outcomes		
CO No.	CO Statements	Cognitive Levels (K –Levels)
	இப்பாடத்தின் நிறைவில் மாணவர்கள்	
CO1	முன்னோடிச் சொற்பொழிவாளர்களின் நுட்பங்களை உரைகளிடையே பயன்படுத்துவர்	K3
CO2	அவையறிந்து கருத்துக்களை முன்வைக்கும் திறன் பெறுவர்	K4
CO3	சொற்பொழிவு சுவைஞரைச் சென்றடைந்துள்ள தன்மையை ஆராய்வர்	K5

Relationship Matrix							
Semester	Course code			Title of the Paper			Credits
1	23UTA14SE01			Skill Enhancement Course - 1 (Non Major Elective): பேச்சுக்கலைத் திறன்			2
Course Outcomes (COs)	Programme Outcomes (POs)			Programme Specific Outcomes (PSOs)			Mean Score of COs
	PO1	PO2	PO3	PSO1	PSO2	PSO3	
CO1	1	3	2	3	3	2	2.1
CO2	2	2	3	2	3	2	2.3
CO3	1	2	2	2	2	3	2.3
Mean overall Score							2.2 (High)

# **47<sup>th</sup> ACADEMIC COUNCIL MEETING**

**8<sup>th</sup> August 2023**

**Rev. Dr. M. Arockiasamy Xavier, SJ**  
**Chairman**  
**Academic Council**

**Volume 2**



**St. JOSEPH'S COLLEGE (AUTONOMOUS)**

*Special Heritage Status awarded by UGC*  
*Accredited at A<sup>++</sup> Grade (4<sup>th</sup> Cycle) by NAAC*  
*College with Potential for Excellence by UGC*  
*DBT-STAR & DST-FIST Sponsored College*  
**TIRUCHIRAPPALLI – 620 002**

School of

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**MANAGEMENT STUDIES**

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## DEPARTMENT OF BUSINESS ADMINISTRATION

### St. JOSEPH'S COLLEGE (Autonomous)

Accredited at A++ Grade (Cycle IV) by NAAC Special Heritage Status awarded by UGC  
College with Potential for Excellence by UGC DBT-STAR & DST-FIST sponsored College

TIRUCHIRAPPALLI - 620 002.

Phone : 0431 - 4226423, 4226386, Fax : 0431 - 2701501

Website : [www.sjctni.edu](http://www.sjctni.edu)

#### Minutes of the Board of Studies Meeting

The Board of Studies Meeting for discussing and approving the Revision of 1<sup>st</sup> semester UG syllabus was held on 21<sup>st</sup> July at 11.30 a.m. in the Department of Business Administration. The meeting started with a prayer by Dr. S. Clemence Jenifer. Prof. C.F. Octovia Antony Sessammal, Head of the Department welcomed the board members.

#### External Members invited:

1. Dr. M. Babu, Associate Professor, Bharathidasan School of Management, Bharathidasan University, Tiruchirappalli- 620024. **(University Representative)**
2. Dr. C. Jothi Baskara Mohan, Associate Professor, Dept. of Business Administration, Thiagarajan College (Autonomous) **(Subject Expert)**
3. Mr. Santhosh Kumar Subash Chandra Bose, Director of Nvron Life Science Limited, Coimbatore.

The external members were not present for the meeting; hence the meeting was conducted with the internal members.

#### Internal Members participated in the Board of Studies:

1. Mrs. C.F. Octovia Antony Sessammal - Head *Octovia Antony Sessammal*
2. Dr. J. Vincent Xavier *J. Vincent Xavier*
3. Mr. S. Arputharaj *S. Arputharaj*
4. Dr. S. Clemence Jenifer *S. Clemence Jenifer*
5. Mrs. C. Annie Jane *Annie Jane*
6. Mr. D. Rinaldo De David *D. Rinaldo De David*
7. Mr. J. Inigo Papu Vinodhan *J. Inigo Papu Vinodhan*
8. Dr. Monisha Devi *Monisha Devi*



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#### Agenda for the Board of Studies Meeting

\* Revision of Semester-I Undergraduate Syllabi and Evaluation Pattern.

The members discussed on the TANSCHÉ syllabus and suggested a few corrections such as adding and removing a few topics in each subject, formatting the Textbooks and referencing style.

#### New Syllabus as per TANSCHÉ

COURSE CODE	COURSE	UNIT NUMBER	CHANGES PROPOSED IN TOPICS
23UBU13CC01	Principles of Management	3 5	Meaning of Staffing can be added. Business Ethics can be removed and controlling techniques can be added.
23UBU13CC02	Accounting for Managers I	2 4	Rectification of Errors - removed. Partnership Accounts - Removed and Accounts for Non-Profit Organization - added.
23UBU13AC01	Managerial Economics	4 5	Imperfect Competition Topic can be added National Income & Business Cycle and its Phases topics can be included
23UBU14FC01	Computer Applications In Business	4	Tally will be removed. Instead Ms-Excel will be taught in detail under two units.
23UBU14SE01A	NME Practical Advertising		New Syllabus Framed
23UBU14SE01B	Digital Marketing	1	Fundamentals of Marketing concepts added.

Suggestions received from External Members for the Paper Managerial Economics and Digital Marketing were implemented.

Website and E-learning resources should be added to all the courses.

Course objectives and Course outcomes should be rewritten for the revised units. Members of the board also discussed the percentage distribution of marks for theory and quantitative papers.



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The following recommendations are made regarding Question Paper Pattern for the Quantitative Papers for Batch 2023.

#### Mid Semester & End Semester

Section	Pattern
A	$9 * 1 = 9$ (Compulsory Questions)
B	$3 * 5 = 15$ (Internal Choice)
C	$3 * 12 = 36$ Marks (3 out of 4 Questions)
<b>Total</b>	<b>60 Marks</b>
<b>Duration</b>	<b>2 hours</b>

#### Semester

Section	Pattern
A	$10 * 2 = 20$ (Compulsory Questions)
B	$5 * 4 = 20$ (Internal Choice)
C	$4 * 15 = 60$ (4 out of 5 Questions)
<b>Total</b>	<b>100 Marks</b>
<b>Duration :</b>	<b>3 Hrs</b>

The meeting came to an end by 1.30 PM with the members approval regarding the corrections and with a note of Gratitude by the head of the department.

*Ocrand Antony Samuel*

Prof. C.F.Octavia Antony Sessommal, MBA, MPhil, NET,  
Head & Assistant Professor  
Department of Business Administration  
St. Joseph's College (Autonomous)  
Tiruchirappalli-620 002.

PROGRAMME PATTERN				
BUSINESS ADMINISTRATION:BBA				
Part	Course Code	Title of the Course	Hours	Credits
<b>I</b>	23UTA11GL01A	<b>General Tamil – 1:</b> தமிழ் இலக்கிய வரலாறு - 1	5	3
	23UFR11GL01	<b>French-1</b>		
	23UHI11GL01	<b>Hindi-1</b>		
	23USA11GL01	<b>Sanskrit-1</b>		
<b>II</b>	23UEN12GE01	<b>General English-1</b>	5	3
<b>III</b>	23UBU13CC01	<b>Core Course - 1:</b> Principles of Management	5	5
	23UBU13CC02	<b>Core Course - 2:</b> Accounting for Managers-1	5	5
	23UBU13AC01	<b>Allied Course - 1:</b> Managerial Economics	4	3
<b>IV</b>	23UBU14FC01	<b>Foundation Course:</b> Computer Applications in Business	2	2
	23UBU14SE01A	<b>Skill Enhancement Course - 1(Non Major Elective):</b> Practical Advertising	2	2
	23UBU14SE01B	<b>Skill Enhancement Course - 1(Non Major Elective):</b> Digital Marketing		
	23UHE14VE01	<b>Value Education:</b> Essentials of Humanity	2	1
<b>Total</b>			<b>30</b>	<b>24</b>



Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UBU13CC01	Core Course - 1: Principles of Management	5	5

Course Objectives
To impart knowledge about evolution of management
To provide understanding on planning process and importance of decision making in organization
To learn the application of principles in organization
To familiarize students about direction and co-ordination
To study the process of effective controlling in organization

#### **UNIT I: Management Concept (15 Hours)**

Management: Importance – Definition – Nature and Scope of Management - Process – Role of a manager – Functions of Management – Levels of Management – Development of Management thoughts – Fayol’s 14 principles of Management.

#### **UNIT II: Planning (15 Hours)**

Planning: Nature – Importance – Forms – Types – Steps in Planning – Objectives – Policies – Procedures and Methods – Natures and Types of Policies – Decision –making – Process of Decision – making – Types of Decision.

#### **UNIT III: Organizing (15 Hours)**

Organizing: Types of Organizations – Organization Structure – Span of Control and Committees – Departmentalization – Informal Organization- Authority – Delegation – Decentralization – Difference between Authority and Power – Responsibility.

#### **UNIT IV: Directing & Coordinating (15 Hours)**

Direction – Nature and Purpose. Co- ordination – Need, Type and Techniques and requisites for excellent Co-ordination

#### **UNIT V: Controlling (15 Hours)**

Controlling – Meaning and definition - Importance – Types of control – Techniques of control - Control Process – Effective controlling measures.

<b>Teaching Methodology</b>	PPTs, Role Play, Management Games
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### **Books for Study**

1. Stoner, J. A. F., Freeman, R.E & Gilbert, D. R. (2004). *Management* (6th ed.). Pearson Education.
2. Griffin, T. O. (2014). *Management*. Houghton Mifflin Company.
3. Robbins, S. A., Decenzo, D. A., & Coulter, M. (2011). *Fundamentals of Management* (7th ed.). Pearson Education.
4. Stoner, J. A. F., Freeman, R. E & Gilbert, D. R. (2014). *Management* (6th ed.). Prentice Hall.
5. Robbins, S., Coulter, M., Sidani, D., & Jamali, D. (2014). *Management: Arab World Edition*. Pearson.

### **Books for Reference**

1. Tripathi P. C. & Reddy, P.N (2017). *Principles of Management* (6th Ed.). Sultan Chand & Sons.
2. Prasad, L. M. (n.d). *Principles & Practice of Management* (8th ed.). Sultan Chand & Sons.
3. Robbins, S. A., Decenzo, D. A., & Coulter, M. (2017). *Fundamentals of Management* (13th ed.). Pearson Education.
4. Gupta, C. B. (n.d). *Principles of Management* (3rd ed.). Sultan Chand & Sons.
5. Koontz, H., Weihrich, H., & Aryasri, A. R. (2015). *Principles of Management* (2nd ed.). McGraw Hill.

### **Web Sources**

1. <https://www.toolshero.com/management/14-principles-of-management/>
2. <https://open.umn.edu/opentextbooks/textbooks/693>
3. <https://open.umn.edu/opentextbooks/textbooks/34>
4. <https://openstax.org/subjects/business>
5. <https://blog.hubspot.com/marketing/management-principles>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful completion of this course, students will be able to	
<b>CO1</b>	Describe nature, scope, role, levels, functions and approaches of management	<b>K1</b>
<b>CO2</b>	Apply planning and decision making in management	<b>K2</b>
<b>CO3</b>	Identify organization structure and various organizing techniques	<b>K3</b>
<b>CO4</b>	Understand Direction, Co-ordination & Control mechanisms	<b>K4</b>
<b>CO5</b>	Relate and infer ethical practices of organisation.	<b>K5</b>

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
<b>1</b>	<b>23UBU13CC01</b>		<b>Core Course - 1: Principles of Management</b>							<b>5</b>	<b>5</b>
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
<b>CO1</b>	3	2	2	3	2	2	2	2	2	2	2.2
<b>CO2</b>	3	2	2	2	2	2	3	2	3	3	2.4
<b>CO3</b>	2	3	2	3	2	3	2	3	3	3	2.6
<b>CO4</b>	2	2	2	1	2	2	2	1	2	2	1.8
<b>CO5</b>	3	2	3	3	1	3	1	3	2	1	2.2
Mean overall Score											2.2 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UBU13CC02	Core Course - 2: Accounting for Managers-1	5	5

Course Objectives
To impart knowledge about basic concepts of accounting its applications
To analyze and interpret financial reports of a company
To understand the gross profit and net profit earned by organization
To foster knowledge of Non-Profit Organization
To understand the procedures of Accounting under Single entry system.

#### **UNIT I: Introduction to Financial Accounting (15 Hours)**

Meaning and scope of Accounting, Basic Accounting Concepts and Conventions – Objectives of Accounting – Accounting Transactions – Double Entry Book Keeping – Journal, Ledger, Preparation of Trial Balance

#### **UNIT II: Subsidiary Books (15 Hours)**

Subsidiary books – Preparation of cash Book – Bank reconciliation statement

#### **UNIT III:**

Preparation of Final Accounts – Adjustments – Closing stock, outstanding, prepaid and accrued, depreciation, bad and doubtful debts, provision and discount on debtors and creditors, interest on drawings and capital.

#### **UNIT IV: Accounts of Non-Profit Organization (15 Hours)**

Meaning of Non-profit Organization- Receipts and Payments Account- Income and Expenditure Account- Difference Between Receipts and Payments Account- Balance Sheet- Simple Problems

#### **UNIT V: Single Entry System (15 Hours)**

Single Entry – Meaning, Features, Defects, Differences between Single Entry and Double Entry System – Statement of Affairs Method – Conversion Method

<b>Teaching Methodology</b>	Problem Solving
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**Books for Study**

1. Goel, D.K. & Goel, S. (2018). *Financial Accounting* (2nd ed.). Arya Publications.
2. Jain, S.P., & Narang, K. (1999). *Financial Accounting* (4th ed.). Kalyani Publishers.
3. Shankar, R. R., & Manikandan, S. (n.d). *Financial Accounting* (3rd ed.). SCITECH.
4. Shukla. & Grewal. (2002). *Advanced Accounting* (15th ed.). Sultan Chand & Sons.
5. Tulsian, P. C. (2006). *Financial Accounting*. Pearson Education.

**Books for Reference**

1. Ganesan, K. & Begam, S. U. S. (n.d). *Accounting for Managers* (Volume 1), Charulatha Publications.
2. Reddy, T. S., & Murthy, A. (2019). *Financial Accounting* (6th ed). Margham Publications.
3. Kolitz, D. (2017). *Financial Accounting*. Taylor and Francis group.
4. Arora, M. N. (2019). *Accounting for Management*. Himalaya Publications House.
5. Maheswari, S. N. (2018). *Financial Accounting*. Vikas Publishing House.
6. Charles, T. H., Gary, L. S. & John, A. E. (2007). *Introduction to Financial Accounting*. Pearson Publications.

**Web Sources**

1. [https://ebooks.lpude.in/management/mba/term\\_1/DMGT403\\_ACCOUNTING\\_FOR MANAGERS.pdf](https://ebooks.lpude.in/management/mba/term_1/DMGT403_ACCOUNTING_FOR MANAGERS.pdf)
2. <https://www.drnishikantjha.com/booksCollection/Accounting%20for%20Management%20for%20MBA%20.pdf>
3. <https://www.accountingtools.com/articles/2017/5/15/basic-accounting-principles>
4. [https://en.wikipedia.org/wiki/Single-entry\\_bookkeeping\\_system](https://en.wikipedia.org/wiki/Single-entry_bookkeeping_system)
5. <https://www.profitbooks.net/what-is-depreciation>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful completion of this course, students will be able to	
<b>CO1</b>	Prepare Journal, ledger, trial balance and cash book	<b>K1</b>
<b>CO2</b>	Classify Subsidiary Books	<b>K2</b>
<b>CO3</b>	Prepare final accounts with adjustments	<b>K3</b>
<b>CO4</b>	To Prepare Receipts & Payments Account ,Income & Expenditure Account	<b>K4</b>
<b>CO5</b>	Prepare single and double entry system of accounting.	<b>K5</b>

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
<b>1</b>	<b>23UBU13CC02</b>		<b>Core Course - 2: Accounting for Managers-I</b>							<b>5</b>	<b>5</b>
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
<b>CO1</b>	3	2	3	3	3	3	3	2	2	1	2.5
<b>CO2</b>	3	3	2	2	2	3	2	2	2	1	2.3
<b>CO3</b>	3	3	3	2	2	2	2	2	2	2	2.3
<b>CO4</b>	2	3	3	3	3	2	3	2	3	2	2.6
<b>CO5</b>	2	2	2	2	2	3	2	2	3	2	2.2
Mean overall Score											<b>2.3 (High)</b>

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UBU13AC01	Allied Course - 1: Managerial Economics	4	3

Course Objectives
To familiarize students with concepts of managerial economics and its relevant concepts of economics in current business scenario
To understand the applications & implications of economics and its knowledge of the mechanics of supply and demand markets in decision-making and problem solving
To Understand the optimal point of cost analysis and production factors of the firm
To Provide insights to the various market structures in an economy
To describe the pricing methods and strategies that are consistent with evolving marketing needs

#### **UNIT I: Concept of Managerial Economics**

**15 Hours**

Nature and scope of managerial economics – definition of economics – important concepts of economics – relationship between micro, macro and managerial economics – nature and scope – objectives of firm.

#### **UNITII: Concept and Types of Demand**

**15 Hours**

Demand analysis — Marginal utility analysis – indifference curve analysis Meaning of demand – Law of demand – Types of demand-Determinants of demand – Elasticity of demand – Demand forecasting.

#### **UNITIII: Cost Analysis**

**15 Hours**

–Cost Concepts – Law of variable proportion – Law of return to scale and economics of scale – cost analysis – Different types of cost– Cost output relationship short run and long run – Revenue curves of firms –Break-Even Analysis.

#### **UNIT IV: Market Structure**

**15 Hours**

Market classification – Perfect competition – Monopoly – Monopolistic competition – Duopoly – Oligopoly .

#### **UNIT V: Pricing**

**15 Hours**

Pricing methods and strategies – Objectives – Factors – General consideration of pricing – methods of pricing – Dual pricing – Price discrimination-National Income Concepts.

<b>Teaching Methodology</b>	PPTs, Graphs, Reading NewsPapers Papers and Magazines
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### Books for Study

1. Mehta, P.L. (2016). *Managerial Economics*. Sultan Chand & Sons.
2. Varshney, R.L. & Maheswari, K.L (n.d). *Managerial Economics*. Sultan Chand & Sons.
3. Journal of Economic Literature – American Economic Association.
4. Mithani, D.M. (2016). *Managerial Economics*. Himalaya Publishing House.

### Books for Reference

1. Sankaran, S. (n.d). *Managerial Economics*. Margham Publication.
2. Ahuja, H. L. *Managerial Economics*. S. Chand & Sons.

### Web Sources

1. <http://www.simplynotes.in/e-notes/mbabba/managerial-economics/>

<b>Course Outcomes</b>		
<b>CO No.</b>	<b>CO-Statements</b>	<b>Cognitive Levels (K - Level)</b>
	On Successful completion of this course, students will be able to	
<b>CO1</b>	Analyze & apply the various managerial economic concepts in individual & business decisions.	<b>K1</b>
<b>CO2</b>	Explain demand concepts, underlying theories and identify demand forecasting techniques.	<b>K2</b>
<b>CO3</b>	Employ production, cost and supply analysis for business decision making	<b>K3</b>
<b>CO4</b>	Classify market structures under competitive scenarios	<b>K4</b>
<b>CO5</b>	Identify pricing strategies	<b>K5</b>

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UBU13CC02		Core Course - 2: Accounting for Managers-1							5	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	1	2	2	2	3	2	1	2	2.0
CO2	2	2	2	2	3	3	2	2	1	2	2.1
CO3	2	2	3	2	2	2	2	3	2	3	2.3
CO4	2	3	2	2	3	2	3	2	1	3	2.3



C05	3	3	2	3	3	3	3	2	1	3	2.6
Mean overall Score											2.2 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UBU14FC01	<b>Foundation Course:</b> Computer Applications in Business	2	2

Course Objectives
To build skills in Ms-Word
To build basic skills in Ms-Excel
To build advanced skills in Ms-Excel
To build skills in Ms- Power Point
To familiarize students with google forms for students with relevance in business scenario and its applications

### **UNIT I: Introduction About MS-Excel**

**( 6 Hours)**Introduction,

Menus, Shortcuts, Document types, working with Documents-Opening, Saving, Closing, Editing Document, Using Toolbars, Rulers, Help, Formatting Documents-Setting font, paragraph, Page Style-Setting foot notes, page break, Line break, creating sections and frames, Inserting clip arts, pictures, Setting document styles, Creating Tables-Settings, borders, alignments, Merging, splitting, sorting rows and columns, Drawing-Inserting, drawing, formatting, grouping, ordering, rotating pictures, Tools-Word completion, Spell check, Macros, Mail merge, Printing Documents.

### **UNIT II: Basics in MS-Excel**

**(6 Hours)**

Introduction, Spread sheet application, Menus, Tool bars and icons, Spreadsheet-Opening, saving, closing, printing file, setting margins, Converting file to different formats, spread sheet addressing, Entering And Editing Data- Copy, cut, paste, undo, redo, find, search, replace, filling continuous rows and columns, inserting data cells, columns, rows and sheet, Computation Data-Setting formula, finding total in rows and columns

### **UNIT III: Advance MS-Excel**

**( 6 Hours)**

Functions Types- Mathematical, Group, string, date and time, Formatting Spread Sheet-Alignment, font, border, hiding, locking, cells, Highlighting values, background color, bordering and shading, Working With Sheet-Sorting, filtering, Charts-Selecting, formatting, labeling, scaling, Tools- Error checking, spell check, formula auditing, tracking changes, customization

**UNIT IV: Presentation****( 6 Hours)**

Introduction, opening new presentation, Presentation templates, presentation layout, Creating Presentation- Setting presentation style, adding text, Formatting- Adding style, color, gradient fills, arranging objects, adding header and footer, slide background, slide layout, Slide Show, Adding Graphics-Inserting pictures, movies, tables, Adding Effects-Setting animation and transition effects, audio and video, Printing handouts

**UNIT V: Preparation of Google Forms****(6 Hours)**

Use Google forms to develop & share questionnaire.

<b>Teaching Methodology</b>	PPTs, Videos, Practical Exercises
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**Books for Study**

1. Ahmed, P. R. (2019). *Computer Application in Business*. Margham Publications.
2. Paramaeswaran, R. (n.d). *Computer Application in Business*

**Books for Reference**

1. Shrivatsava, S. S. (2015). Ms-Office (1st ed.). Laxmi Publications.
2. Bucki, L. A., Walkenbach, J., Wempen, F., & Alexander, M. (2013). *Microsoft Office 2013 BIBLE*, Wiley.

**Web Sources**

1. <https://byjus.com/govt-exams/microsoft-word>
2. <https://www.microsoft.com/en-us/microsoft-365/blog>

<b>Course Outcomes</b>		
<b>CO No.</b>	<b>CO-Statements</b>	<b>Cognitive Levels (K - Level)</b>
	On Successful completion of this course, students will be able to	
<b>CO1</b>	Demonstrate hands on experience with Ms-word for business activities	<b>K1</b>
<b>CO2</b>	Demonstrate hands on experience with basic Ms-Excel skills for business activities	<b>K2</b>
<b>CO3</b>	Demonstrate hands on experience with advanced Ms-Excel skills for business activities	<b>K3</b>
<b>CO4</b>	Demonstrate hands on experience with Ms-power point for business activities	<b>K4</b>
<b>CO5</b>	Demonstrate hands on experience with Google forms for creating questionnaire and survey.	<b>K5</b>

<b>Relationship Matrix</b>											
<b>Semester</b>	<b>Course code</b>	<b>Title of the Course</b>								<b>Hours</b>	<b>Credits</b>
<b>1</b>	<b>23UBU14FC01</b>	<b>Foundation Course: Computer Applications in Business</b>								<b>2</b>	<b>2</b>
<b>Course Outcomes</b>	<b>Programme Outcomes (POs)</b>					<b>Programme Specific Outcomes (PSOs)</b>					<b>Mean Score of COs</b>
	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	<b>PSO4</b>	<b>PSO5</b>	
<b>CO1</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2.5</b>
<b>CO2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2.2</b>
<b>CO3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>2.3</b>
<b>CO4</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2.4</b>
<b>CO5</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2.5</b>
<b>Mean overall Score</b>											<b>2.4 (High)</b>

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UBU14SE01A	<b>Skill Enhancement Course - 1(Non Major Elective):</b> Practical Advertising	2	2

Course Objectives
To introduce students to advertising fundamentals
To introduce the concept of Creativity and idea generation
To familiarise techniques of Media planning
To impart knowledge on advertising media and budget
To understand measurement of results

#### **UNIT I: Introduction to Advertising: ( 6 Hours )**

Integrated Marketing Communications (IMC)- Concept, Features, Elements, Role of advertising in IMC- Advertising: Concept, Features, Evolution of Advertising, Active Participants, Benefits of advertising to Business firms and consumers- Classification of advertising: Geographic, Media, Target audience and Functions.

#### **UNIT II: Introduction to Creativity: (6-Hours)**

Creativity in Advertising, Stages in the Creative Process “Making of Creative Brief” Insights Learning how to use them “Ideation “Lateral Thinking, Brainstorming and Various Creative Thinking Modes.

#### **UNIT III: Advertising Media (6-Hours)**

Understanding Media; It’s Creative Co-ordination with other Marketing functions.Types of Media: Print Media, Broadcast Media, Outdoor, Transit, Traditional, Direct Mail, Internet.m Media Planning Methods: Media Strategies, Media Mix. Understanding Media Coverage, ABC, IRS, INS, ILT, OAS TRP (Circulation, Readership); DAGMAR.

#### **UNIT IV: Advertising Agency and Advertising Media (6 Hours)**

Ad Agency – Definition, Role and Functions of Various Departments, Structure of an Advertising Agency. Types of Ad Agencies, Agency revenue sources, Client-Agency Relationship, Selection of an Advertising Agency. Indian Advertising Agencies: Trends &Status

#### **UNIT V: Budget Setting (6Hours)**

Factors Determining Budget, Steps Involved Budget Plan and Execution.

<b>Teaching Methodology</b>	<p>Group Exercises, Presentations, Classroom Lecture, Case Studies, Screening of top Twenty Creative Indian and International Advertisements.</p> <p>Developing Slogans and Logos for Products and Services.</p> <p>Developing Ads.</p>
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### Books for Study

1. Altstiel, T., & Grow, J. (n.d). *Advertising creative strategy, copy & design* (3rd ed). Sage.
2. Arens, W. F. (1994). *Contemporary Advertising*. (n.p.): McGraw-Hill School Education Group. Natarajan, L. (n.d). *Advertising and salesmanship*. Margham Publications.
3. Wells, Moriarty & Burnett (n.d). *Advertising: Principles and practice*. Pearson.
4. Chunawala & Sethia. (n.d). *Foundations of advertising*. (8th ed). Himalaya Publishing house.

### Books for Reference

1. Jones, P. J. *How to use advertising to build strong brands*. Sage
2. Jones, P. J. (n.d). *How Advertising Works*. Sage
3. Tiwari, S. (2003). *Uncommon sense of advertising: Getting the facts right*. Response.
4. Wells, Burnett & Moriarty. (n.d). *Advertising principles & practices* (5th ed.). Prentice Hall

### Web Sources

1. <https://www.amazon.in/Creative-Advertising-Techniques-Campaigns-Producing/dp/0500510741>
2. <https://us.sagepub.com/en-us/nam/advertising-creative/book275178>
3. <https://www.contagious.com/news-and-views/best-advertising-creativity-books>  
[www.brandchannel.com](http://www.brandchannel.com)
4. [www.campaignindia.in](http://www.campaignindia.in)
5. [www.adsoftheworld.com](http://www.adsoftheworld.com)

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will;	
<b>CO1</b>	Develop an Understanding of the Concept of Advertising.	<b>K1</b>
<b>CO2</b>	Students get acquainted with Role of Creativity in Advertising and the Various Techniques of Idea Visualization to Develop Effective Concepts	<b>K2</b>
<b>CO3</b>	Explain the Role and Methods of Media Planning.	<b>K3</b>
<b>CO4</b>	Identify the various types of Ad Agencies.	<b>K4</b>
<b>CO5</b>	Determine the factors determining for budget setting	<b>K5</b>

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
<b>1</b>	<b>23UBU14SE01A</b>		<b>Skill Enhancement Course - 1(Non Major Elective):</b> Practical Advertising							<b>2</b>	<b>2</b>
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
<b>CO1</b>	3	3	2	3	3	3	2	2	2	2	2.5
<b>CO2</b>	2	2	2	3	3	2	3	3	3	2	2.5
<b>CO3</b>	3	3	2	2	3	3	2	2	3	2	2.5
<b>CO4</b>	3	3	2	2	3	2	3	2	2	2	2.4
<b>CO5</b>	3	3	1	3	3	2	3	3	2	2	2.5
Mean overall Score											2.5 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UBU14SE01B	<b>Skill Enhancement Course - 1(Non Major Elective):</b> Digital Marketing	2	2

Course Objectives
To provide basic knowledge about digital marketing
To understand and develop various digital marketing tools used for business.
To know the digital analytics and measurement tools used for digital marketing
To familiarize online and Social media marketing
To Understand various data analytics and measurement tools in digital marketing

### **UNIT I: Introduction to Digital Marketing (6 Hours)**

Introduction to Digital Marketing – Origin & Development of Digital Marketing – Traditional vs Digital Marketing – Opportunities & Challenges- Online Marketing Mix – Digital Advertising Market in India. 6M Framework – ASCOR & POEM Digital Marketing framework.

### **UNITII: Content Marketing (6 Hours)**

Content Marketing – Content creation process – Content pillar - Types – A/B Testing – Display Advertising – Search Engine Marketing –Search Engine Optimization (On page & Off page optimization) - Email Marketing, – Mobile Marketing.

### **UNIT III: Social Media Marketing (6 Hours)**

Social Media Marketing: Building successful social media digital strategy – Piggy bank theory – Personal branding in social media – Crowd sourcing – Lead generation & sales in social media.

### **UNIT IV: Ratings & Review (6 Hours)**

Online Reputation Management: Social commerce: Ratings & Reviews -Word of Mouth- User generated content – Co-Marketing – Affiliate Marketing - Influencer Marketing.

### **UNITV: Digital Analytics and Measurement (6 Hours)**

Digital Analytics & Measurement: Importance of Analytics in digital space – Data capturing in online space – Types – Tracking Mechanism – Google Analytics structure – Conversion tracking – Digital Engagement funnel; Define – Key performance indicator(s) (KPIs) – Ad words & Display Networks. Overview – Applications of Sentiment analysis & Text Mining; Measuring campaign effectiveness – ROI (Return on Investment) & CLV (Customer life term value)

<b>Teaching Methodology</b>	Group Exercises, Presentations, Classroom Lecture, Practical Exercise
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### Books for Study

1. Gupta, S. (2017). *Digital marketing*. McGraw Hill.
2. Vandanahuja. (2015). *Digital marketing current trends* (7th ed.). Oxford University press.
3. Journal of Digital & Social Media Marketing

### Books for References

1. Bhatia, P. S. (2017). *Fundamentals of Digital Marketing*. Pearson Education.
2. Dodson, I. (2016). *The art of digital marketing: The definitive guide to creating strategic, targeted, and measurable online campaigns*. Wiley.
3. Kaufman, I. (2014). *Digital Marketing: Integrating Strategy and Tactics with Values, a guidebook for executives, managers, and students*. Routledge.
4. Vaynerchuk, G. (2018). *Crushing it!: How great entrepreneurs build their business and influence and how you can too*. Harper Business.
5. Kamat, N. C. & Kamat, C. N. (2018). *Digital Social Media Marketing*. Himalaya Publishing House.

### Web Sources

1. <https://www.soravjain.com/ebook/ebook.pdf>
2. <https://www.optron.in/blog/digital-marketing/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will;	
<b>CO1</b>	Discuss digital marketing and its framework	<b>K1</b>
<b>CO2</b>	Identify, use appropriately and explain digital marketing tools	<b>K2</b>
<b>CO3</b>	Explain social media marketing and crowdsourcing	<b>K3</b>
<b>CO4</b>	Discuss online reputation management and its influence	<b>K4</b>
<b>CO5</b>	Identify the various data analytics and measurement tools in digital marketing	<b>K5</b>



<b>Relationship Matrix</b>											
<b>Semester</b>	<b>Course code</b>		<b>Title of the Course</b>							<b>Hours</b>	<b>Credits</b>
<b>1</b>	<b>23UBU14SE01B</b>		<b>Skill Enhancement Course - 1(Non Major Elective):</b> Digital Marketing							<b>2</b>	<b>2</b>
<b>Course Outcomes</b>	<b>Programme Outcomes (POs)</b>					<b>Programme Specific Outcomes (PSOs)</b>					<b>Mean Score of COs</b>
	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	<b>PSO4</b>	<b>PSO5</b>	
<b>CO1</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2.5</b>
<b>CO2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2.5</b>
<b>CO3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>2.5</b>
<b>CO4</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2.4</b>
<b>CO5</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2.5</b>
<b>Mean overall Score</b>											<b>2.5 (High)</b>



## DEPARTMENT OF COMMERCE

### St. JOSEPH'S COLLEGE (Autonomous)

*Accredited at A++ Grade (Cycle IV) by NAAC Special Heritage Status awarded by UGC  
College with Potential for Excellence by UGC DBT-STAR & DST-FIST sponsored College*

TIRUCHIRAPPALLI - 620 002

Phone : 0431 - 4226391, 2700320, Fax : 0431 - 2701501

Website : [www.sjctni.edu](http://www.sjctni.edu)

#### MINUTES OF THE BOARD OF STUDIES MEETING HELD ON 21.07.2023

##### **Agenda:**

1. Approval of Course Contents of B.Com and M.Com Programmes pertaining to the First Semester
2. Approval of Certificate Courses and Value Added Course offered by the Commerce Department
3. Any other matters

##### **The following are the discussions made during the Board of Studies Meeting:**

1. The Board of Studies Meeting began with a silent prayer followed by Dr. F.R. Alexander Pravin Durai, Head, Department of Commerce and Commerce Honours welcoming the members of the Board. The HoD also shared his views about the reforms in the curriculum of Higher Education focusing the actions essential to supplement the existing fluid situation.
2. Then the Course Pattern and Course Contents pertaining to Semester I of B.Com, M.com B.Com Honours were presented which were eventually approved unanimously by the Board after discussions.
3. The Board suggested a few changes in Text Books and its year of editions which will be incorporated in the final draft of the Syllabus
4. The Board also gave approval to continue with the Value Added Courses entitled "Financial Modelling through Excel" and "Basics of GST, TCS and TDS approved in the previous Board of studies.
5. It was also decided in the BoS to approve the Certificate Course entitled "Mass Media and Business Development"
6. The board decided to follow the existing pattern for quantitative courses and the new pattern prescribed by the College for all theory courses
7. Following all the deliberations, the HoD thanked the members for actively taking part in the discussions and then the meeting came to an end.

Head of the Department  
**Dr. F. R. ALEXANDER PRAVIN DURAI**  
M.Com., M.B.A., M.Phil., Ph.D.,  
Head & Associate Professor  
Department of Commerce  
St. Joseph's College (Autonomous)  
Tiruchirappalli - 620 002.

BOARD OF STUDIES MEETING HELD ON 21.07.2023		
DEPARTMENT OF COMMERCE		
St. JOSEPH'S COLLEGE(AUTONOMOUS)		
TIRUCHIRAPPALLI -620002		
S. No.	Name and address	Signature
1.	Dr.V.Pugazhenthil, Associate Professor, Department of Commerce, Rajah Serfoji Government College (Autonomous), Thanjavur (University Representative)	
2.	Dr. D. Raja Jebasingh Associate Professor & Vice Principal (S-II), St. Joseph's College of Commerce (Autonomous), 163, Brigade Road, Bengaluru – 560 025, Karnataka. (Subject Expert)	
3.	Mr. Sharanath Balaji, Managing Director, BG Naidu Sweets, Trichy.	B. S. Balaji
4.	Dr. F.R. Alexander Pravin Durai	
5.	Dr. K. Alex	all
6.	Dr. G. John	G. John
7.	Mr. D. Maria Antony	D. Maria Antony
8.	Dr. V. Bastin Jerome	
9.	Dr. M. Antony Jesuraja	M. Antony
10.	Dr. A. Francis Vijayakumar	A. Francis
11.	Rev.Fr. M. Berchmans, SJ	
12.	Dr. M. Julius Caesar	M. Julius
13.	Dr. Arockia Rajasekar	Arockia
14.	Dr. S. Aruldass	S. Aruldass
15.	Dr. A. Sahayaraj Alexander	A. Sahayaraj

16.	Dr. L. Georgia	L. Georgia
17.	Mr. S. Kirubakaran	S. Kirubakaran
18.	Dr. B. Augustine Arockiaraj	B. Augustine Arockiaraj
19.	Dr. Dennis Edward Fernando	Dennis Edward Fernando
20.	Dr. S. Jerome	S. Jerome
21.	Dr. J. Vinoth Kumar	J. Vinoth Kumar
22.	Ms. B. Nalini	B. Nalini
23.	Ms. C. Soundarya	C. Soundarya
24.	Dr. A. Igantius	A. Igantius
25.	Dr. J. Berkman	J. Berkman
26.	Dr. A. Mariya Selvi	A. Mariya Selvi
27.	Mr. V. Penmal	V. Penmal
28.	MS. A. SARUN VENOTHA	A. Sarun Venotha
29.	A. MARY MAGDALENE	A. Mary Magdalene
30.	Mr. CAMILTON. J	Camilton. J
31.	Mr. G. PRABHAKARAN	G. Prabhakaran

PROGRAMME PATTERN				
B. Com				
Part	Course Code	Title of the Course	Hours	Credits
I	23UTA11GL01A	General Tamil – 1 தமிழ் இலக்கிய வரலாறு - 1	5	3
	23UFR11GL01	French-1		
	23UHI11GL01	Hindi-1		
	23USA11GL01	Sanskrit-1		
II	23UEN12GE01	General English-1	5	3
III	23UCO13CCO1	<b>Core Course -1:</b> Financial Accounting -1	5	5
	23UCO13CCO2	<b>Core Course - 2:</b> Principles of Management	5	5
	23UCO13ACO1A	<b>Allied Course - 1:</b> Business Communication	4	3
	23UCO13ACO1B	<b>Allied Course - 1:</b> Indian Economic Development		
	23UCO13ACO1C	<b>Allied Course - 1:</b> Business Economics		
IV	23UCO14FCO1	<b>Foundation Course:</b> Basics of Commerce	2	2
	23UCO14SEO1A	<b>Skill Enhancement Course - 1(Non Major Elective):</b> Introduction to Accounting	2	2
	23UCO14SEO1B	<b>Skill Enhancement Course - 1(Non Major Elective):</b> Consumer Protection and Rights		
	23UHE14VE01	<b>Value Education:</b> Essentials of Humanity	2	1
	<b>Total</b>		<b>30</b>	<b>24</b>

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UCO13CCO1	Core Course -1: Financial Accounting -1	5	5

Course Objectives
To understand the basic accounting concepts and standards
To know the basis for doing accounts in different methods
To familiarize with the accounting treatment towards receipts, expenses and depreciation
To learn the methods of calculating profit and loss towards various types of accounts
To gain knowledge on the accounting treatment in different types of accounts

### **UNIT I: Fundamentals of Financial Accounting (15 Hours)**

Financial Accounting – Meaning, Definition, Objectives, Basic Accounting Concepts and Conventions – Journal-Ledger Accounts– Subsidiary Books — Trial Balance -Classification of Errors – Rectification of Errors – Preparation of Suspense Account – Need and Preparation - Bank Reconciliation Statement.

### **UNIT II: Final Accounts (15 Hours)**

Final Accounts of Sole Trading Concern- Capital and Revenue Expenditure and Receipts – Preparation of Trading, Profit and Loss Account and Balance Sheet with Adjustments.

### **UNIT III: Depreciation and Bills of Exchange (15 Hours)**

Depreciation - Meaning – Objectives – Accounting Treatments - Types - Straight Line Method – Diminishing Balance method – Conversion method.

Annuity Method – Depreciation Fund Method – Insurance Policy Method – Revaluation Method – Depletion Method – Sum of Digits Method – Machine Hour Rate Method.

Bills of Exchange – Definition – Specimens – Discounting of Bills – Endorsement of Bill – Collection – Noting – Renewal – Retirement of Bill under rebate – Insolvency of Acceptor – Accommodation.

### **UNIT IV: Accounting from Incomplete Records (15 Hours)**

Incomplete Records -Meaning and Features - Limitations - Difference between Incomplete Records and Double Entry System - Methods of Calculation of Profit - Statement of Affairs Method – Preparation of final statements by Conversion method.

Average Due Date and Account Current.

### **UNIT V: Royalty and Insurance of Claims (15 Hours)**

Meaning – Minimum Rent – Short Working – Recoupment of Short Working – Lessor and Lessee – Sublease – Accounting Treatment.

Insurance Claims – Calculation of Claim Amount-Average clause (Loss of Stock only)

<b>Teaching Methodology</b>	Chalk & Talk, Videos, PPTs and Demonstration
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**Books for Study**

1. Jain, S. P., & Narang. K. L. (2022). Financial accounting- I. Kalyani Publishers.
2. Maheshwari, S. N (2023). Financial accounting. Vikas Publications.
3. Grewal, S. & Gupta. (2022). Advanced accounts - Volume 1. S. Chand & Sons.
4. Radhaswamy., & Gupta, R. L. (2021). Advanced accounting. Sultan Chand.
5. Gupta, R. L. & Gupta, V. K. (2022). Financial accounting. Sultan Chand.

**Books for Reference**

1. Arulanandan., & Raman. (2019). Advanced accountancy. Himalaya Publications.
2. Tulsian., (2022). Advanced accounting. Tata McGraw Hill.
3. Charumathi., & Vinayagam. (2020). Financial accounting (Latest Edition). S.Chand and Sons.
4. Goyal., & Tiwari, (2020). Financial Accounting (Latest Edition). Taxmann Publications.
5. Anthony, R. A., Hawkins, D., & Merchant, K. A. (2020). Accounting: Text and Cases (Latest Edition). McGraw-Hill Education.

**Web Sources**

1. <https://www.slideshare.net/mcsharma1/accounting-for-depreciation-1>
2. <https://www.slideshare.net/ramusakha/basics-of-financial-accounting>
3. <https://www.accountingtools.com/articles/what-is-a-single-entry-system.html>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to:	
CO1	remember the concept of rectification of errors and Bank reconciliation statements	K1
CO2	apply the knowledge in preparing detailed accounts of sole trading concerns	K2
CO3	analyse the various methods of providing depreciation and Final Accounts	K3
CO4	evaluate the methods of calculation of profit and loss of business	K4
CO5	determine the royalty accounting treatment and claims from insurance companies in case of loss of stock.	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UCO13CCO1		Core Course -1: Financial Accounting -1							5	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	2	3	2	2	2	2	2	2	2.2
CO2	3	2	2	2	2	2	3	2	3	3	2.4
CO3	2	3	2	3	2	3	2	3	3	3	2.6
CO4	2	2	2	1	2	2	2	1	2	2	1.8
CO5	3	2	3	3	1	3	1	3	2	1	2.2
Mean overall Score											2.2 (High)



Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UCO13CCO2	Core Course - 2: Principles of Management	5	5

Course Objectives
To understand the basic management concepts and functions of Management
To know the various techniques of Management
To familiarize with the concepts of organisation and organisational structure
To gain knowledge about the various components of management functions
To enable the students in understanding the systems in organisation and management

### **UNIT I: Introduction to Management (15 Hours)**

Meaning- Definitions – Nature and Scope - Levels of Management – Importance - Management Vs. Administration – Management: Science or Art –Evolution of Management Thoughts – F. W. Taylor, Henry Fayol, Peter F Drucker, Elton Mayo - Functions of Management - Trends and Challenges of Management. Managers – Qualification – Duties & Responsibilities.

### **UNIT II: Planning (15 Hours)**

Planning – Meaning – Definitions – Nature – Scope and Functions – Importance and Elements of Planning – Types – Planning Process - Tools and Techniques of Planning – Management by Objective (MBO). Decision Making: Meaning – Characteristics – Types - Steps in Decision Making – Forecasting.

### **UNIT III: Organizing (15 Hours)**

Meaning - Definitions - Nature and Scope – Characteristics – Importance – Types - Formal and Informal Organization – Organization Chart – Organization Structure: Meaning and Types - Departmentalization– Authority and Responsibility – Centralization and Decentralization – Span of Management.

### **UNIT IV: Staffing (15 Hours)**

Introduction - Concept of Staffing- Staffing Process – Recruitment – Sources of Recruitment – Modern Recruitment Methods - Selection Procedure – Test- Interview– Training: Need - Types– Promotion –Management Games – Performance Appraisal - Meaning and Methods – 360 Degree Performance Appraisal – Work from Home - Managing Work from Home [WFH].

### **UNIT V: Directing (15 Hours)**

Motivation –Meaning - Theories – Communication – Types - Barriers to Communications – Measures to overcome the Barriers. Leadership – Nature - Types and Theories of Leadership

– Styles of Leadership - Qualities of a Good Leader – Successful Women Leaders- Supervision. Co-ordination and Control: Co-ordination – Meaning - Techniques of Co-ordination. Control - Characteristics - Importance – Stages in the Control Process - Requisites of Effective Control and Controlling Techniques – Management by Exception [MBE].

<b>Teaching Methodology</b>	Chalk & Talk, Videos, PPTs, Demonstration, Group Discussion and Case Analysis
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### **Books for Study**

1. Gupta. C. B. (2012). *Principles of management*, S. Chand & Sons Co. Ltd.
2. Pagare, D. (1980). *Principles of management*. India: Sultan Chand & Sons.
3. Tripathi, P.C. & Reddy P. N. (2012). *Principles of management*. Tata McGraw Hill.
4. Prasad, L.M. (2020). *Principles of management*, S. Chand & Sons Co. Ltd.
5. Sharma, R. K., Gupta, S. K. & Sharma, R. (2020). *Business management*. Kalyani Publishers.

### **Books for Reference**

1. Sundhar, K. (2014). *Principles Of Management*, Vijay Nichole Imprints Limited.
2. Koontz, H., O'Donnell, C., Weihrich, H. (1982). *Essentials of Management*. McGraw-Hill.
3. Griffin, R. W. (2016). *Management*. Cengage Learning.
4. Mintzberg, H. (1991). *The Nature of Managerial Work*. HarperCollins.
5. Eccles, R. G., Nohria, N., Berkley, J. D. (2003). *Beyond the Hype: Rediscovering the Essence of Management*. Beard Books.

### **Web Sources:**

1. <http://www.universityofcalicut.info/syl1/management>
2. <https://www.managementstudyguide.com/manpower-planning.htm>
3. <https://www.businessmanagementideas.com/notes/management-notes/coordination/coordination/21392>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to:	
CO1	demonstrate the importance of principles of management.	K1
CO2	paraphrase the importance of planning and decision making in an organization.	K2
CO3	comprehend the concept of various authorities and responsibilities of an organization.	K3
CO4	enumerate the various methods of Performance appraisal	K4
CO5	demonstrate the notion of directing, co-coordination and control in the management.	K5

Relationship Matrix											
Semester	Course code	Title of the Course									Credits
1	23UCO13CCO2	Core Course - 2: Principles of Management									5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	3	3	3	3	3	2	2	1	2.5
CO2	3	3	2	2	2	3	2	2	2	1	2.3
CO3	3	3	3	2	2	2	2	2	2	2	2.3
CO4	2	3	3	3	3	2	3	2	3	2	2.6
CO5	2	2	2	2	2	3	2	2	3	2	2.2
Mean overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UCO13ACO1A	Allied Course - 1: Business Communication	5	3

Course Objectives
To enable the students to know about the principles, objectives and importance of communication in commerce and trade
To develop the students to understand the need and importance of communication
To make the students aware about various types of business correspondence
To develop the students to write and communicate effectively
To enable the learners to update with various types of communication for effective organisation

#### **UNIT I: Introduction to Business Communication (12 Hours)**

Definition – Meaning – Importance of Effective Communication – Modern Communication Methods – Barriers to Communication – E-Communication - Business Letters: Need - Functions – Essentials of Effective Business Letters – Layout

#### **UNIT II: Trade Enquiries (12 Hours)**

Trade Enquiries – Orders and their Execution – Credit and Status Enquiries – Complaints and Adjustments – Collection Letters – Sales Letters – Circular Letters

#### **UNIT III: Banking Correspondence (12 Hours)**

Banking Correspondence – Types – Structure of Banking Correspondence – Elements of a Good Banking Correspondence – Insurance – Meaning and Types – Insurance Correspondence – Difference between Life and General Insurance – Meaning of Fire Insurance – Kinds – Correspondence Relating to Marine Insurance – Agency Correspondence – Introduction – Kinds – Stages of Agent Correspondence – Terms of Agency Correspondence

#### **UNIT IV: Secretarial Correspondence (12 Hours)**

Company Secretarial Correspondence – Introduction – Duties of Secretary – Classification of Secretarial Correspondence – Specimen letters – Agenda and Minutes of Report writing – Introduction – Types of Reports – Preparation of Report Writing

#### **UNIT V: Application Letters (12 Hours)**

Application Letters – Preparation of Resume – Interview: Meaning – Objectives and Techniques of Various Types of Interviews – Public Speech – Characteristics of a Good Speech

<b>Teaching Methodology</b>	Chalk & Talk, Videos, PPTs, Demonstration and Oral Presentation
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#### Books for Study

1. Rajendra, P., & Korlahalli J. S. (2011). Essentials of business communication. Sultan Chand & Sons.
2. Gupta & Jain, (n.d). Business communication. Sahityabahvan Publication.
3. Sinha, K. K. (2000). Business communication. Taxmann.
4. Pillai, R. S. N., & Bhagavathi, S, (2008). Commercial correspondence. S. Chand Publications.
5. Ramesh, M. S. & Pattenshetty, R. (2013). Effective business English and correspondence. S. Chand & Co, Publishers.

#### Books for Reference

1. Jain, V. K. (2008). Business communication. India: S. Chand Limited.
2. Motwani, R. (n.d). Business communication. Taxmann.
3. Taylor, S. (1991). Communication for business: A practical approach. Pitman.
4. Bovee, Thill, & Schatzman. (n.d). Business communication Today. Pearson Education.
5. Penrose., Rasbery. & Myers. (2004). Advanced business communication.

#### Web Sources

1. <https://accountingseekho.com/>
2. <https://www.testpreptraining.com/business-communications-practice-exam-questions>
3. <https://bachelors.online.nmims.edu/degree-programs>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful completion of this course, students will be able to	
CO1	acquire the basic concept of business communication.	K1
CO2	exposed to writing of an effective business letter for effective organisation	K2
CO3	paraphrase the concept of various correspondences.	K3
CO4	prepare Secretarial Correspondence like agenda, minutes and various business reports.	K4
CO5	acquire the skills relating to the preparation of a communication in all spheres	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UCO13ACO1A		Allied Course - 1: Business Communication							5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	1	2	2	2	3	2	1	2	2.0
CO2	2	2	2	2	3	3	2	2	1	2	2.1
CO3	2	2	3	2	2	2	2	3	2	3	2.3
CO4	2	3	2	2	3	2	3	2	1	3	2.3
CO5	3	3	2	3	3	3	3	2	1	3	2.6
Mean overall Score											2.2 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UCO13ACO1B	<b>Allied Course - 1:</b> Indian Economic Development	4	3

Course Objectives
To understand the concepts of Economic growth and development
To know the features and factors affecting economic development
To gain understanding about the calculation of national income for economic development
To examine the role of public finance in economic development
To understand the causes for flow economic growth and to explore reasons

#### **UNIT I: Economic Development and Growth (12 Hours)**

Concepts of Economic Growth and Development. Measurement of Economic Development: Per Capita Income, Basic Needs, Physical Quality of Life Index, Human Development Index and Gender Empowerment Measure.

#### **UNIT II: Economic Development (12 Hours)**

Factors affecting Economic Development - Characteristics of Developing Countries- Population and Economic Development- Theories of Demographic Transition Human Resource Development and Economic Development

#### **UNIT III: National Income (12 Hours)**

Meaning, Importance, National Product-Concept, types of measurement, Comparison of National Income at Constant and Current Prices. Sectorial contribution to National Income. National Income and Economic Welfare

#### **UNIT IV: Public Finance (12 Hours)**

Meaning, Importance, Role of Public Finance in Economic Development, Public Revenue- Sources, Direct and Indirect taxes, Impact and Incidence of Taxation, Public Expenditure- Classification and Canons of Public Expenditure, Public Debt-Need, Sources and Importance, Budget-Importance, Types of Deficits -Revenue, Budgetary, Primary and Fiscal, Deficit Financing.

#### **UNIT V: Money Supply (12 Hours)**

Theories of Money and Its Supply, Types of Money-Broad, Narrow and High Power, Concepts of M1, M2 and M3. Inflation and Deflation -Types, Causes and Impact, - Price Index- CPI and WPI, Role of Fiscal Policy in Controlling Money supply.

<b>Teaching Methodology</b>	Chalk & Talk, Videos, PPTs, Demonstration and Creation of Models
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### Books for Study

1. Datt, R., Sundharam, K. P. M., Sundharam, K. P. (1990). *Indian economy*. S. Chand.
2. Puri, V. K., & Mishra, S. K. (2015). *Indian economy*. Himalaya Publishing house.
3. Singh, R. (2023). *Indian economy*. McGraw Hill.
4. Singhania, N. (2023). *Indian economy*. McGraw Hill.
5. Verma, S. (2020). *The Indian economy*. uUnique publication.

### Books for Reference

1. Ghatak, S. (1995). *Introduction to development economics*. Routledge.
2. Chakravarty, S. (1987). *Development planning: the Indian experience*. Clarendon Press.
3. Singh, R. (2023). *Indian Economy*. McGraw Hill.
4. Meier, G. M. (1984). *Leading issues in economic development*. Oxford University Press.
5. Todaro, M. P. (1985). *Economic development in the third world*. Orient Longman.

### Web Sources

1. <http://www.jstor.org>
2. <http://www.indiastat.com>
3. <http://www.epw.in>

ourse Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful completion of this course, students will be able to	
CO1	elaborate the role of State and Market in Economic Development	K1
CO2	explain the Sectorial contribution to National Income and Economic Development	K2
CO3	illustrate and Compare National Income at constant and current prices to know its importance	K3
CO4	describe the canons of public expenditure towards economic growth	K4
CO5	understand the theories of money and supply to facilitate growth in the economy	K5

<b>Relationship Matrix</b>											
<b>Semester</b>	<b>Course code</b>	<b>Title of the Course</b>								<b>Hours</b>	<b>Credits</b>
<b>1</b>	<b>23UCO13ACO1B</b>	<b>Allied Course - 1: Indian Economic Development</b>								<b>4</b>	<b>3</b>
<b>Course Outcomes</b>	<b>Programme Outcomes (POs)</b>					<b>Programme Specific Outcomes (PSOs)</b>					<b>Mean Score of COs</b>
	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	<b>PSO4</b>	<b>PSO5</b>	
<b>CO1</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2.2</b>
<b>CO2</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2.0</b>
<b>CO3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>2.4</b>
<b>CO4</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>2.2</b>
<b>CO5</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2.2</b>
<b>Mean overall Score</b>											<b>2.2 (High)</b>



Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UCO13ACO1C	Allied Course - 1: Business Economics	4	3

Course Objectives
To understand the approaches to economic analysis
To know the various determinants of economic activities
To gain knowledge on concept and features of economy and business economics
To learn the laws of variable proportions, demand, supply and its importance
To enable the students to understand the objectives and importance of various policies for economic growth

#### **UNIT I: Introduction to Economics (12 Hours)**

Introduction to Economics – Wealth, Welfare and Scarcity Views on Economics – Positive and Normative Economics - Definition – Scope and Importance of Business Economics - Concepts: Production Possibility frontiers – Opportunity Cost – Accounting Profit and Economic Profit – Incremental and Marginal Concepts – Time and Discounting Principles – Concept of Efficiency- Business Cycle-Inflation, Depression, Recession, Recovery, Reflation and Deflation.

#### **UNIT II: Demand & Supply Functions (12 Hours)**

Meaning of Demand - Demand Analysis: Demand Determinants, Law of Demand and its Exceptions. Elasticity of Demand: Definition, Types, Measurement and Significance. Demand Forecasting - Factors Governing Demand Forecasting - Methods of Demand Forecasting, Law of Supply and Determinants.

#### **UNIT III: Consumer Behaviour (12 Hours)**

Consumer Behaviour – Meaning, Concepts and Features – Law of Diminishing Marginal Utility – Equi-Marginal Utility – Indifference Curve: Meaning, Definition, Assumptions, Significance and Properties – Consumer's Equilibrium. Price, Income and Substitution Effects. Types of Goods: Normal, Inferior and Giffen Goods - Derivation of Individual Demand Curve and Market Demand Curve with the help of Indifference Curve.

#### **UNIT IV: Theory of Production (12 Hours)**

Concept of Production - Production Functions: Linear and Non – Linear Homogeneous Production Functions - Law of Variable Proportion – Laws of Returns to Scale - Difference between Laws of variable proportion and returns to scale – Economies of Scale – Internal and External Economies – Internal and External Diseconomies - Producer's equilibrium

**UNIT V: Product Pricing****(12 Hours)**

Price and Output Determination under Perfect Competition, Short Period and Long Period Price Determination, Objectives of Pricing Policy, its importance, Pricing Methods and Objectives – Price Determination under Monopoly, kinds of Monopoly, Price Discrimination, Determination of Price in Monopoly – Monopolistic Competition – Price Discrimination, Equilibrium of Firm in Monopolistic Competition–Oligopoly – Meaning – features, “Kinked Demand” Curve

<b>Teaching Methodology</b>	Chalk & Talk, Videos, PPTs, Demonstration, Journal Review and Creation of Models
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**Books for Study**

1. Ahuja, H. L. (2017). *Business economics*. S Chand & Company Limited.
2. Chaudhary, C. M. (n.d). *Business economics*. RBSA Publishers.
3. Aryamala. T. (n.d). *Business economics*. Vijay Nicole.
4. Jain, T. R. (2006). *Business economics*, Global Publication Pvt. Ltd
5. Mithani D. M. (2022). *Business economics*. Himalaya Publishing House.

**Books for Reference**

1. Shankaran, S. (1999). *Business economics*. Margham Publications
2. Mehta, P. L. (2007). *Managerial economics analysis, problems and cases*. Sultan Chand.
3. Mitchelson, P., Mann, A. G. (1995). *Economics for business*. Thomas Nelson Australia.
4. Singh, R., & Vinaykumar (2021). *Business economics*, Thakur Publication Pvt.Ltd.
5. Saluram & Jindal, P. (2022). *Business economics*. CA Foundation Study material.

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1. [https://youtube.com/channel/UC69\\_-P77nf5-rKrjcpVEsqQ](https://youtube.com/channel/UC69_-P77nf5-rKrjcpVEsqQ)
2. <https://www.icsi.edu/>
3. <https://www.yourarticlelibrary.com/marketing/pricing/product-pricing-objectives-basis-and-factors/74160>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful completion of this course, students will be able to	
CO1	explain the positive and negative approaches in economic analysis	K1
CO2	understand the techniques of scientific reasoning for economic growth	K2
CO3	know the assumptions and significance of business economics	K3
CO4	outline the internal and external economies of scale	K4
CO5	relate and apply the various methods of business economics and its functions	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UCOI3ACO1C		Allied Course - 1: Business Economics							4	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	3	2	3	3	2	3	3	2	2.7
CO2	3	3	3	2	2	3	3	3	2	2	2.6
CO3	3	3	3	3	2	3	3	2	3	3	2.8
CO4	3	3	2	3	2	3	3	2	2	2	2.5
CO5	3	3	3	2	2	3	3	3	2	3	2.7
Mean overall Score											2.2 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UCO14FCO1	Foundation Course: Basics of Commerce	2	2

Course Objectives
To understand the nature and purpose of business
To familiarize with the forms of business
To know the corporate form of Business Enterprises
To learn the types of banks and insurance
To gain knowledge on the Investment Avenue

### **UNIT I: Business and Industries (6 Hours)**

Business–Meaning - Objectives - Characteristics; Industry – Meaning – Different types of Industries; Commerce – Meaning – Activities of Commerce: Trade (Domestic Trade and International Trade), Transportation, Banking, Insurance, Warehousing, Communication and Advertisement and Promotion.

### **UNIT II: Forms of Business (6 Hours)**

Sole proprietorship, Joint Hindu Families, Partnership firms: Features- Partnership Deed - Kinds of Partnerships.

### **UNIT III: Kinds of Business (6 Hours)**

Corporate form of Business Enterprises: Joint Stock Companies: Types, Features, Memorandum of Association – Articles of Association – Board of Directors, Cooperative Societies: Features, Foreign Companies – Multi National Corporations.

### **UNIT IV: Banking System (6 Hours)**

Types of Banks; Electronic and Non Electronic Payment methods Insurance: Types of Insurance: General Insurance and Its features, Life Insurance and its features.

### **Unit V: Investment Avenues (6 Hours)**

Shares – Participatory Notes – Mutual Funds – Derivatives -Bonds – Treasury Bills – Commercial Papers -Deposits -Stock Market and its functions.

<b>Teaching Methodology</b>	Chalk & Talk, Videos, PPTs, Demonstration, Seminar, Group Work and Assignment
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**Books for Study**

1. Bhushan, Y. K. (2018). *Fundamentals of business organisation and management*. Sultan Chand & Sons.
2. Shukla, M. C. (2016). *Business organization and management*. S. Chand & Co ltd.
3. Pagare D. (2017). *Business management*. Sultan Chand & Sons.

**Books for References**

1. Saha, T. R. (2017). *Business organization*. Tata McGraw-Hill.
2. Prasad, L. M. (2017). *Principles & practice of management*. Sultan Chand & Sons.
3. Peter, D. F. (2017). *Practice of management*. Harper Collins Publishers of India Ltd.

**Web Sources**

1. <http://www.jstor.org>
2. <http://www.indiastat.com>
3. <http://www.epw.in>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful completion of this course, students will be able to	
CO1	remember the concept of business and different types of industries	K1
CO2	understand the various forms of business	K2
CO3	gain ability to prepare AOA and MOA	K3
CO4	evaluate the Banking system and structure of Insurance company	K4
CO5	discuss the availability of investment opportunity in share market	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UC014FCO1		Foundation Course: Basics of Commerce							2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	3	3	3	2	2	2	2	2.5
CO2	2	2	2	3	3	2	2	2	2	2	2.2
CO3	3	3	2	2	3	3	2	2	1	2	2.3
CO4	3	3	2	2	3	2	3	2	2	2	2.4
CO5	3	3	1	3	3	2	3	3	2	2	2.5
Mean overall Score											2.4 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UCO14SEO1A	<b>Skill Enhancement Course - 1(Non Major Elective):</b> Introduction to Accounting	2	2

Course Objectives
To understand the basic accounting concepts and principles
To familiarize the accounting treatment with different subsidiary books
To learn the methods of journalising and posting the transactions
To know the basis for calculating business profits through financial statements
To gain knowledge on the accounting treatment with tally prime

#### **UNIT I: Introduction to Accounting (6 Hours)**

Accounting and Bookkeeping – Concepts – Conventions – Principles – Uses – Accounts: Meaning and types: Golden Rules – Recording Transactions in Journal.

#### **UNIT II: Subsidiary books (6 Hours)**

Cash books-Purchase and Sales Day books- Return books-Petty Cash

#### **UNIT III: Accounting Statements (6 Hours)**

Ledger - Posting – balancing, Trial Balance: Different forms of Trial Balance

#### **UNIT IV: Financial Statements (6 Hours)**

Profit and Loss A/c, Balance Sheet

#### **UNIT V: Basis of Computerised Accounting (TallyPrime) (6 Hours)**

Creation, Alteration and Deletion of companies – Groups – Ledgers – Accounting Vouchers- Creation of Accounting Vouchers.

<b>Teaching Methodology</b>	Chalk & Talk, Videos, PPTs, Demonstration and Creation of Models
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#### **Books for Study**

1. Jain, S. P., & Narang. K. L. (2022). Financial accounting- I. Kalyani Publishers.
2. Maheshwari, S. N (2023). Financial accounting. Vikas Publications.
3. Grewal, S. & Gupta. (2022). Advanced accounts - Volume 1. S. Chand & Sons.
4. Radhaswamy., & Gupta, R. L. (2021). Advanced accounting. Sultan Chand.
5. Gupta, R. L. & Gupta, V. K. (2022). Financial accounting. Sultan Chand.

## Books for Reference

1. Arulanandan., & Raman. (2019). Advanced accountancy. Himalaya Publications.
2. Tulsian., (2022). Advanced accounting. Tata McGraw Hill.
3. Charumathi., & Vinayagam. (2020). Financial accounting (Latest Edition). S.Chand and Sons.
4. Goyal., & Tiwari, (2020). Financial Accounting (Latest Edition). Taxmann Publications.
5. Anthony, R. A., Hawkins, D., & Merchant, K. A. (2020). Accounting: Text and Cases (Latest Edition). McGraw-Hill Education.

## Web Sources

1. <https://www.slideshare.net/mcsharma1/accounting-for-depreciation-1>
2. <https://www.slideshare.net/ramusakha/basics-of-financial-accounting>
3. <https://www.accountingtools.com/articles/what-is-a-single-entry-system.html>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful completion of this course, students will be able to:	
CO1	familiarise with the fundamental concepts and conventions of financial accounting.	K1
CO2	prepare the subsidiary books, journalizing and posting the financial transactions.	K2
CO3	develop analytical skills in the accounting equation, and preparation of trial balance in different forms and suspense accounts.	K3
CO4	prepare financial statements in accordance with Generally Accepted Accounting principles.	K4
CO5	describe the concepts of tally prime and creation of company with groups and preparation of accounting vouchers.	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UCO14SEO1A		Skill Enhancement Course - 1(Non Major Elective): Introduction to Accounting							2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	3	3	3	2	2	2	2	2.5
CO2	2	2	2	3	3	2	3	3	3	2	2.5
CO3	3	3	2	2	3	3	2	2	3	2	2.5
CO4	3	3	2	2	3	2	3	2	2	2	2.4
CO5	3	3	1	3	3	2	3	3	2	2	2.5
Mean overall Score											2.5 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UCO14SEO1B	<b>Skill Enhancement Course - 1(Non Major Elective):</b> Consumer Protection and Rights	2	2

Course Objectives
To identify the importance of consumer protection act
To understand the functions of consumer council in India
To learn the rights available to consumers under consumer protection act
To analyse the genesis of consumer protection laws in India
To evaluate the consumer movements and their activities of protecting consumer rights

#### **UNIT I: Introduction to consumer and Consumer Protection (6 Hours)**

Concept of Consumer, Types of Consumers, Need for Consumer Protection (Legal and Voluntary) and Caveat Emptor.

#### **UNIT II: Consumer Protection in India (6 Hours)**

Basic Provisions of Consumer Protection Act 2019, Salient features (latest amendments) Consumer buying motives and Concept of consumer Sovereignty.

#### **UNIT III: Genesis of Consumer Rights (6 Hours)**

1. Right to Safety 2. Right to be Informed 3. Right to Choose 4. Right to fair hearing 5. Right to Redress, Need for Consumer Protection - Restrictive and Unfair Trade Practices.

#### **UNIT IV: National and State Consumer Protection Council (6 Hours)**

District forum, State Commission and National Commission – their functions, powers and jurisdictions. Ground of Filing Complaints and relief available.

#### **UNIT V: Recent Development in Consumer Protection Movement in India (6 Hours)**

Voluntary Consumer Organizations – Formation and Registration, Consumer Awareness, Role of Media and Government towards Consumer Protection.

<b>Teaching Methodology</b>	Chalk & Talk, Videos, PPTs, Demonstration, Field Visit and Case Analysis
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#### **Books for Study**

1. Arora, R. (2005). *Consumer grievances redressal (Latest edition)*l Manak Publications. Pvt Ltd.
2. Saraf, D. N. (1990). *Law of Consumer Protection in India*. N. P. Tripathi.



**Books for Reference**

1. Agarwal, V. K. (2021). *Consumer protection*. Bharat Law House.
2. Vukowich, W. T. (2002). *Consumer protection in the 21st century: A global perspective*. Netherlands: Transnational Publishers.

**Web Sources**

1. <https://consumeraffairs.nic.in/organisation-and-units/division/consumer-protection-unit/consumer-rights>
2. <https://cleartax.in/s/consumer-rights-and-responsibilities>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful completion of this course, students will be able to:	
CO1	explain the needs of consumer protection act	K1
CO2	understand the rights and responsibilities of consumers	K2
CO3	apply the existing laws and regulations in to practice	K3
CO4	examine the threats and challenges encountered by consumers	K4
CO5	frame solutions on consumer exploitation	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UCO14SEO1B		Skill Enhancement Course - 1(Non Major Elective): Consumer Protection and Rights							2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	3	3	3	2	2	2	2	2.5
CO2	2	2	2	3	3	2	2	2	2	2	2.2
CO3	3	3	2	2	3	3	2	2	1	2	2.3
CO4	3	3	2	2	3	2	3	2	2	2	2.4
CO5	3	3	1	3	3	2	3	3	2	2	2.5
Mean overall Score											2.4 (High)

PROGRAMME PATTERN			
M. Com.			
Course Code	Title of the Course	Hours	Credits
23PCO1CC01	<b>Core Course - 1:</b> Business Finance	6	5
23PCO1CC02	<b>Core Course - 2:</b> Digital Marketing	6	5
23PCO1CC03	<b>Core Course - 3:</b> Banking and Finance	6	4
23PCO1ES01A	<b>Elective - 1:</b> Operations Research	5	3
23PCO1ES01B	<b>Elective - 1:</b> Security Analysis and Portfolio Management		
23PCO1ES01C	<b>Elective - 1:</b> Marketing Research and Analytics		
23PCO1ES02A	<b>Elective - 2:</b> Labour Laws	5	3
23PCO1ES02B	<b>Elective - 2:</b> Strategic Human Resource Management		
23PCO1ES02C	<b>Elective - 2:</b> Corporate Restructuring Law and Practice		
23PCO1AE01	<b>Ability Enhancement Course:</b> Excel for Business	2	1
<b>Total</b>		<b>30</b>	<b>21</b>

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PCO1CC01	<b>Core Course - 1: Business Finance</b>	6	5

Course Objectives
To outline the fundamentals concepts in finance
To estimate and evaluate risk in investment proposals for business finance
To evaluate the source of finance and determine the other sources
To examine financial management techniques for effective business
To appraise capital budgeting techniques for business and financing

#### **UNIT I: Introduction to Business Finance& Time Vale of Money (18 Hours)**

Business Finance: Meaning, Objectives, Scope -Time Value of money: Meaning, causes – Compounding – Discounting – Sinking Fund Deposit Factor – Capital Recovery Factor – Compounding done more than once – Effective rate of interest – Doubling period (Rule of 69 and Rule of 72) – Practical problems.

#### **UNIT II: Risk Management (18 Hours)**

Risk and Uncertainty: Meaning – Sources of risk – Measures of Risk – Measurement of Return – General pattern of Risk and Return – Criteria for evaluating proposals to minimise risk (Single Asset and Portfolio) – Methods of Risk Management–Hedging currency risk

#### **UNIT III: Start-up Financing& Leasing (18 Hours)**

Startup Financing: Meaning, Sources, Modes (Bootstrapping, Angel investors, Venture capital fund) - Leasing: Meaning – Types of Lease Agreements – Advantages and Disadvantages of Leasing – Financial evaluation from the Lessee's perspective – Financial evaluation from the Lessor's perspective.

#### **UNIT IV: Cash, Receivable and Inventory Management (18 Hours)**

Cash Management: Meaning, objectives and importance – Cash cycle – Minimum operating cash – Safety level of cash – Optimum cash balance - Receivable Management: Meaning – Credit policy – Controlling receivables: Debt collection period, Ageing schedule, Factoring – Evaluating investment in accounts receivable - Inventory Management: Meaning and objectives – EOQ with price breaks – ABC Analysis.

#### **UNIT V: Multi National Capital Budgeting (18 Hours)**

Multi National Capital Budgeting: Meaning, Steps involved, Complexities, Factors to be considered and International sources of finance – Techniques to evaluate multi-national capital expenditure proposals: Discounted Pay Back Period, NPV, Profitability Index, Net Profitability Index and Internal Rate of Return – Capital rationing -Techniques of Risk analysis in Capital Budgeting.

**Books for Study**

1. Maheshwari, S.N. (2019). *Financial management principles and practices*. (15th ed.). Sultan Chand & Sons.
2. Khan, M.Y., & Jain, P.K. (2011). *Financial management: Text, problems and cases*. (8th ed.). McGraw Hill Education.
3. Chandra, P. (2019). *Financial management, theory and practice*. (10th ed.). McGraw Hill Education.
4. Bhalla, V.K. (2014). *International financial management*. (1<sup>st</sup> ed.). S. Chand and Company Ltd.

**Books for Reference**

1. Pandey, I.M. (2021). *Financial management*. (12th ed.). Pearson India Education Services Pvt. Ltd.
2. Kulkarni, P.V., & Satya Prasad, B.G. (2022). *Financial management*. (14th ed.). Himalaya Publishing House Pvt Ltd.
3. Rustagi, R.P. (2022). *Financial management, theory, concept, problems*. (6th ed.). Taxmann Publications Pvt. Ltd.
4. Rufus, A.G., Ramani, N., & Others. (2017). *Financial management*. (1st ed.). Himalaya Publishing House Pvt Ltd.

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1. <https://resource.cdn.icai.org/66674bos53808-cp8.pdf>
2. <https://resource.cdn.icai.org/66677bos53808-cp10u2.pdf>
3. <https://resource.cdn.icai.org/66592bos53773-cp4u5.pdf>
4. <https://resource.cdn.icai.org/65599bos52876parta-cp16.pdf>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful Completion of this course, students will be able to	
CO1	Explain important finance concepts	K1
CO2	Estimate risk and determine its impact on returns in finance terms	K2
CO3	Explore various sources of finance	K3
CO4	Summarise cash and inventory management techniques as a means of business finance	K4
CO5	Select and utilise budgeting for business	K5
CO6	Estimate and analysis profitability index	K6

Relationship Matrix											
Semester	Coursecode		TitleoftheCourse							Hours	Credits
1	23PCO1CC01		Core Course - 1: Business Finance							6	5
Course Outcomes	ProgrammeOutcomes(POs)					ProgrammeSpecificOutcomes(PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	3	3	2	3	3	3	3	3	2.9
CO2	2	2	2	3	2	2	3	2	2	2	2.2
CO3	2	2	2	2	3	3	2	3	2	2	2.3
CO4	2	2	3	3	2	2	3	2	2	2	2.3
CO5	2	2	3	3	2	2	3	2	2	2	2.3
CO6	2	2	3	2	2	2	3	3	3	3	2.5
Mean Overall Score											2.4 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PCO1CC02	Core Course - 2: Digital Marketing	6	5

Course Objectives
To assess the evolution of digital marketing
To appraise the dimensions of online marketing
To infer the techniques of digital marketing
To examine and analyse digital marketing
To interpret data from social media and to devise effective 'Marketing Techniques'

### **UNIT I: Introduction to Digital Marketing (18 Hours)**

Digital Marketing – Evolution from traditional to digital marketing – Rise of internet – growth of e-concepts – Growth of e-business to advanced e-commerce – Emergence of digital marketing as a tool – Digital marketing channels – Digital marketing applications, benefits and limitations – Critical success factors for digital marketing.

### **UNIT II: Online Marketing Mix (18 Hours)**

Online marketing mix – E-products – E-promotion – E-price – E-place – consumer segmentation – targeting – positioning – consumers and online shopping issues – website characteristics affecting online purchase decisions – distribution and implication on online marketing mix decisions.

### **UNIT III: Digital Media Channels (18 Hours)**

Digital media channels – search engine marketing – ePR – affiliate marketing – interactive display advertising – opt-in-email marketing and mobile text messaging, invasive marketing – campaign management using – Facebook, Twitter, Corporate Blogs – advantages and disadvantages of digital media channels.

### **UNIT IV: Online Consumer Behavior (18 Hours)**

Online consumer behavior – cultural implications of key website characteristics – dynamics of online consumer visit – models of website visits – web and consumer decision making process – data base marketing – electronic consumer relationship management – goals – process – benefits – role – next generation CRM.

### **UNIT V: Market Influence Analytics (18 Hours)**

Market influence analytics – consumer generated media and opinion leaders – peer review – word of mouth – Influence analytics – mining consumer generated media – Gamification and game based marketing – benefits – consumer motivation for playing online games – apps for social media management – emerging opportunities for digital marketing professionals.

### **Books for Study**

1. Bhatia, P.S. (2019). *Fundamentals of digital marketing*. (2nd ed.). Pearson Education Pvt Ltd.
2. Chaffey, D., & Ellis-Chadwick, F. (2019). *Digital marketing*. Pearson Education Pvt Ltd.
3. Gupta, S. (2022). *Digital marketing*. (3rd ed.).
4. Upadhyay, K.C. (2021). *Digital marketing: complete digital marketing tutorial*. Notion Press.
5. Branding, M. (2021). *Digital marketing*. Empire Publications India Private Ltd.

### **Books for Reference**

1. Ahuja, V. (2015). *Digital marketing*. Oxford University Press.
2. Deiss, R., & Henneberry, R. (2017). *Digital marketing*. John Wiley and Sons Inc.
3. Charlesworth, A. (2014). *Digital marketing - A practical approach*. Routledge.
4. Kingsnorth, S. (2002). *Digital marketing strategy - An integrated approach to online marketing*. Kogan Page Ltd.
5. Maity, M. (2022). *Digital marketing*. (2nd ed.). Oxford University Press.

### **Web Sources**

1. <https://www.digitalmarketer.com/digital-marketing/assets/pdf/ultimate-guide-to-digital-marketing.pdf>
2. <https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/educational-technologies/all/gamification-and-game-based-learning>
3. <https://journals.ala.org/index.php/ltr/article/download/6143/7938>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful Completion of this course, students will be able to	
CO1	explain the dynamics of digital marketing	K1
CO2	examine the online marketing	K2
CO3	compare digital media channels	K3
CO4	interpret online marketing	K4
CO5	analyse social media and markets influence	K5
CO6	create advertisement on social media and other digital platforms	K6

Relationship Matrix											
Semester	Course Code		Title of the Course					Hours	Credits		
1	23PCO1CC02		Core Course - 2: Digital Marketing					6	5		
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO <sub>2</sub>	PSO3	PSO4	PSO5	
CO1	2	2	3	3	3	3	3	3	3	3	2.8
CO2	3	3	3	3	3	2	3	3	3	3	2.9
CO3	3	2	2	3	3	3	3	3	3	3	2.8
CO4	3	3	3	3	2	2	3	3	3	3	2.8
CO5	3	2	2	2	2	2	3	3	3	3	2.5
CO6	3	3	3	2	3	2	3	3	3	3	2.8
Mean Overall Score											2.3 (High)



Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PCO1CC03	<b>Core Course - 3: Banking and Finance</b>	6	4

Course Objectives
To outline the evolution of new era banking
To explore the digital banking techniques
To appraise the role of safe banking in the light of challenges
To summarise the mechanism of customer service
To assess risk and minimise its impact in banking and insurance industry

### **UNIT I: Introduction to Banking (18 Hours)**

Meaning - Brief History of Banking - Rapid Transformation in Banking: Customer Shift – Fin-tech Overview – Fin-tech Outlook - The Financial Disruptors - Digital Financial Revolution - New Era of Banking. Digital Banking – Electronic Payment Systems–Electronic Fund Transfer System – Electronic Credit and Debit Clearing – NEFT –RTGS –VSAT–SFMS–SWIFT.

### **UNIT II: Contemporary Developments in Banking (18 Hours)**

Distributed Ledger Technology –Blockchain: Meaning - Structure of Block Chain - Types of Block Chain - Differences between DLT and Blockchain - Benefits of Blockchain and DLT - Unlocking the potential of Blockchain–Crypto currencies, Central Bank Digital Currency (CBDC) - Role of DLT in financial services - AI in Banking: Future of AI in Banking - Applications of AI in Banking - importance of AI in banking - Banking reimaged with AI. Cloud banking - Meaning - Benefits in switching to Cloud Banking.

### **UNIT III: Indian Insurance Market (18 Hours)**

History of Insurance in India – Definition and Functions of Insurance–Insurance Contract – Indian Insurance Market – Reforms in Insurance Sector – Insurance Organization Insurance organization structure. Insurance Intermediaries: Insurance Broker – Insurance Agent- Surveyors and Loss Assessors -Third Party Administrators (Health Services) – Procedures- Code of Conduct.

### **UNIT IV: Customer Services in Insurance (18 Hours)**

Customer Service in Insurance – Quality of Service- Role of Insurance Agents in Customer Service-Agent’s Communication and Customer Service –Ethical Behaviour in Insurance – Grievance Redressal System in Insurance Sector –Integrated Grievance Management System – Insurance Ombudsman - Insurance Regulatory and Development authority of India Act (IRDA) Regulations and guidelines.

## UNIT V: Risk Management

(18 Hours)

Risk Management and Control in banking and insurance industries – Methods of Risk Management – Risk Management by Individuals and Corporations – Tools for Controlling risk.

<b>Teaching Methodology</b>	Chalk & Talk, Videos, PPTs, Demonstration and Field Visit
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### Books for Study

1. Indian Institute of Banking and Finance. (2021). *Principles & practices of banking*. (5th ed.). Macmillan Education India Pvt. Ltd.
2. Mishra, M.N., & Mishra, S.B. (2016). *Insurance principles and practice*. (22nd ed.). S. Chand and Company Ltd.
3. Vaughan, E.J., & Vaughan, T.M. (2013). *Fundamentals of risk and insurance*. (11th ed.). Wiley & Sons.
4. Lynn, T., Mooney, J.G., Rosati, P., & Cummins, M. (2018). *Disrupting finance: FinTech and strategy in the 21st century (Palgrave studies in digital business & enabling technologies)*. Macmillan Publishers.

### Books for Reference

1. Sundharam, K.K.P.M., & Varshney, P.N. (2020). *Banking theory, law and practice*. (20th ed.). Sultan Chand & Sons.
2. Gordon, G., & Natarajan. (2022). *Banking theory, law and practice*. (9th ed.). Himalaya Publishing House Pvt Ltd.
3. Gupta, P.P.K. (2021). *Insurance and risk management*. (6th ed.). Himalaya Publishing House Pvt Ltd.
4. Chishti, S., & Barberis, J. (2016). *The fintech book: The financial technology handbook for investors, entrepreneurs and visionaries*. John Wiley & Sons.

### Web Sources

1. <https://corporatefinanceinstitute.com/resources/knowledge/finance/fintech-financialtechnology>
2. [https://mrcet.com/downloads/digital\\_notes/CSE/IV%20Year/CSE%20B.TECH%20IV%20YEAR%20II%20SEM%20BCT%20\(R18A0534\)%20NOTES%20Final%20PDF.pdf](https://mrcet.com/downloads/digital_notes/CSE/IV%20Year/CSE%20B.TECH%20IV%20YEAR%20II%20SEM%20BCT%20(R18A0534)%20NOTES%20Final%20PDF.pdf)
3. [https://www.irdai.gov.in/ADMINCMS/cms/firmGeneral\\_Layout.aspx?page=PageNo108&flag=1](https://www.irdai.gov.in/ADMINCMS/cms/firmGeneral_Layout.aspx?page=PageNo108&flag=1)

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful Completion of this course, students will be able to	
CO1	relate traditional banking with new age banking	K1
CO2	apply modern techniques of digital banking	K2
CO3	evaluate the role of banking and insurance sectors	K3
CO4	examine the regulatory mechanism	K4
CO5	select risk mitigation strategies in modern banking	K5
CO6	exercise digital transaction and online payment service	K6

		Relationship Matrix										
Semester	Course Code	Title of the Course									Hours	Credits
1	23PCO1CC03	Core Course - 3: Banking and Finance									6	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	2	2	3	3	3	3	3	3	3	3	2.8	
CO2	3	3	3	3	3	2	3	3	3	3	2.9	
CO3	3	2	2	3	3	3	3	3	3	3	2.8	
CO4	3	3	3	3	2	2	3	3	3	3	2.8	
CO5	3	2	2	2	2	2	3	3	3	3	2.5	
CO6	3	3	3	2	3	2	3	3	3	3	2.8	
Mean overall Score											2.3 (High)	

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PCO1ES01A	Elective - 1: Operations Research	5	3

Course Objectives
To outline the fundamentals of Operations Research
To make use of OR models for problem solving
To examine the role of sequencing and game theory towards decision making
To design and apply network analysis for decisions
To apply modelling techniques for effective business

### **UNIT I: Introduction and Linear Programming Problem (15 Hours)**

Introduction to Operations Research – Uses and Limitations – Linear Programming Problem: Formulation, Solving LPP: Graphical method, Simplex method, the Big-M Method.

### **UNIT II: Transportation and Assignment Problems (15 Hours)**

Transportation problem: Introduction – Assumptions – Formulation of Transportation models – Basic feasible solution (North-West Corner Method, Least Cost Method, Vogel's Approximation Method) – Optimal solution (Stepping-Stone Method, Modified Distribution Method) – Degeneracy in Transportation problem. Assignment Problem: Introduction – Comparison with the Transportation problem – Formulation of assignment problems - The Hungarian method of solution.

### **UNIT III: Sequencing and Game Theory (15 Hours)**

Sequencing problem: Introduction – Assumptions – Processing of n jobs through one machine – Processing n jobs through two machines – Processing of n jobs through three machines. Game Theory: Introduction – Rules for Games theory – Two person zero sum game without saddle point – Mixed strategies (2xn games, mx2 games) – Graphical method (2xn, mx2 games)

### **UNIT IV: Replacement and Network Analysis (15 Hours)**

Replacement: Introduction – Individual replacement problems – Group replacement problems. Network Analysis: PERT and Critical Path Method.

### **UNIT V: Decision Tree Analysis and Queuing Theory (15 Hours)**

Decision Tree analysis – Queuing: Introduction – Applications of queuing models, Waiting time and idle time costs – Single channel Poisson arrivals with Exponential Service, Infinite population model.

<b>Teaching Methodology</b>	Chalk & Talk, Videos, PPTs, Assignments, Seminars, Demonstration and Creation of Models
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#### Books for Study

1. Gupta, P.K., &Hira, D.S. (2022). *Operations research*. (7th ed.). S.Chand.
2. Kapoor, V.K. (2014). *Operations research*. (9th ed.). Sultan Chand.
3. Natarajan., Balasubramani.,&Tamilaras.(2014). *Operations Research*.(2nd ed.). Pearson Education India.
4. Kothari, C.R. (2022). *An introduction to operational research*. (3rd ed.). S.Chand.

#### Books for Reference

1. Tulsian, P.C., &Tulsian, B. (2022). *Fundamentals of operationsresearch*. (3rd ed.). S. Chand.
2. Sharma, J.K. (2016). *Operations research*. (6th ed.). Lakshmi Publications.
3. Nagarajan, N. (2017). *Text book of operationsresearch: A self learning approach*. New Age Publications.
4. Rath, R.R. (2019). *Operations research*.Bhavya Books.
5. Phillips, D.T., Ravindran,A., &Solberg, J.J. (1987). *Operations research: Principles and practice*.John Wiley & Sons.

#### Web Sources

1. <https://www.bbau.ac.in/dept/UIET/EMER601%20Operation%20Research%20Queueing%20theory.pdf>
2. [https://mdu.ac.in/UpFiles/UpPdfFiles/2021/Jun/4\\_06-11-2021\\_160634\\_OPERATIONS%20RESEARCH%20TECHNIQUES\(20MAT22C5\).pdf](https://mdu.ac.in/UpFiles/UpPdfFiles/2021/Jun/4_06-11-2021_160634_OPERATIONS%20RESEARCH%20TECHNIQUES(20MAT22C5).pdf)
3. <https://repository.up.ac.za/bitstream/handle/2263/25427/02chapter3.pdf?sequence=3>
4. <https://hbr.org/1964/07/decision-trees-for-decision-making>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful Completion of this course, students will be able to	
CO1	Demonstrate knowledge of OR fundamentals.	K1
CO2	Adapt models for problem solving.	K2
CO3	Apply problem solving for decision making	K3
CO4	Utilize practical business techniques to enhance effectiveness.	K4
CO5	Choose various models for decision making.	K5
CO6	Demonstrate the theory of Decision Tree Analysis	K6

Relationship Matrix											
Semester	Course Code		Title of the Course							Hours	Credits
1	23PCO1ES01A		Elective - 1: Operations Research							5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	3	3	3	3	3	3	3	3	2.8
CO2	3	3	3	3	3	2	3	3	3	3	2.9
CO3	3	2	2	3	3	3	3	3	3	3	2.8
CO4	3	3	3	3	2	2	3	3	3	3	2.8
CO5	2	3	3	3	3	2	3	3	3	3	2.8
CO6	3	3	3	2	3	2	3	3	3	3	2.8
Mean Overall Score											2.4 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PCO1ES02A	Elective - 2: Labour Laws	5	3

Course Objectives
To Understand need for labour legislations with special reference to Trade Unions Act
To gain knowledge on various measures and provisions relating to employees as per the Factories Act and Equal Remuneration Act
To become familiar with compensation payable to workmen under different situations and understand the provisions of the Employees State Insurance Act
To learn different provisions relating to payment of wages and minimum wages to employees
To understand employee welfare measures with respect to provident fund, gratuity, bonus etc.

#### **UNIT I: Introduction and The Trade Unions Act, 1926 (15 Hours)**

Labour legislations: Origin – nature – scope – need – objectives – and principles – labour policy and its special features – constitution as the basis for labour legislation – The Trade Unions Act, 1926: definition – objectives – deficiencies – registration of trade union – cancellation of registration and appeal – duties and obligations – rights and privileges – dissolution.

#### **UNIT II: The Factories Act, 1948 and Equal Remuneration Act, 1976 (15 Hours)**

The Factories Act, 1948: Objects – definition – licensing and registration of factories – Inspecting staff – health, safety and welfare measures – provisions relating to hazardous processes – working hours – holidays – annual leave - employment of women and young persons. Equal Remuneration Act – Payment of remuneration at equal rates to men and women workers – Advisory committee – Offences and penalties

#### **UNIT III: The Workmen's Compensation Act, 1923 and The Employees' State Insurance Act, 1948 (15 Hours)**

The Workmen's Compensation Act, 1923: Definitions – objectives – disablement – employer's liability for compensation – amount of compensation – disbursement of compensation – notice and claims – penalties – The Employees' State Insurance Act 1948: Objects – Definitions – Administration of ESI Scheme – ESI Fund – ESI Corporation - Medical benefit council – Benefits under the Act – ESI court

#### **UNIT IV: The Payment of Wages Act, 1936 and The Minimum Wages Act, 1948 (15 Hours)**

The Payment of Wages Act, 1936: Object and scope \_ definition – procedure regarding payment of wages – deduction from wages – mode of payment of wages.

The Minimum Wages Act, 1948: Objects - Scope – definition – Items to be included in the minimum wages – fixation and revision of minimum wages – norms to be followed in the payments of minimum wages.

**UNIT V: The Provident Fund and miscellaneous provision Act, 1952, The Payment of Gratuity Act, 1972 and The Payment of Bonus Act, 1965 (15 Hours)**

Provident fund and miscellaneous provision Act, 1952: Definitions – scope – nature – objects – various schemes – The Payment of Gratuity Act, 1972: Definitions – scope – conditions and circumstances of payment- wages for computing gratuity – maximum gratuity – nomination – penalty – The Payment of Bonus Act – Applicability of the Act – Eligibility and rate of Bonus – Allocable surplus and available surplus - Set and set off – Offences and penalties.

<b>Teaching Methodology</b>	Chalk & Talk, Videos, PPTs, Demonstration, Case Studies and Field Visit
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**Books for Study**

1. Mishra, S.N. (2021). *Labour & industrial laws*. (29th ed.). Central Law.
2. Srivastava, S.C. (2022). *Industrial relations and labour laws*. (8th ed.). Vikas Publishing.
3. Tripathi, P.C, Gupta, C.B., & Kapoor, N.D. (2020). *Industrial relations and labour laws*. (6th ed.). Sultan Chand & Sons.

**Books for Reference**

1. Sinha, P.R.N., Bala, S.I., & Priyadarshini, S.S. (2017). *Industrial relations, trade unions and labour legislation*. (3rd ed.). Pearson.
2. Ghosh, P., Nandan, S. (2017). *Industrial relations and labour laws*. (1st ed.). McGraw Hill.
3. Sharma, J.P. (2018). *Simplified approach to labour laws*. (5th ed.). Bharat Law House Pvt. Ltd.

**Web Sources**

1. [https://www.icsi.edu/media/webmodules/Labour\\_Laws\\_&\\_Practice.pdf](https://www.icsi.edu/media/webmodules/Labour_Laws_&_Practice.pdf)
2. [https://www.icsi.edu/media/webmodules/LabourLaws&Practice\\_June\\_2020.pdf](https://www.icsi.edu/media/webmodules/LabourLaws&Practice_June_2020.pdf)



Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful Completion of this course, students will be able to	
CO1	assess the activities of trade unions	K1
CO2	discuss on various provisions of the factory's act and equal remuneration act	K2
CO3	understand various laws and legislation pertaining to labour administration	K3
CO4	assess provisions relating to the workmen's compensations and state insurance	K4
CO5	measure the benefits of provident fund, gratuity and bonus schemes.	K5
CO6	apply provisions relating to payment of wages and minimum wages.	K6

Relationship Matrix											
Semester	Course Code	Title of the Course								Hours	Credits
1	23PCO1ES02A	Elective - 2: Labour Laws								5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	3	2	2	2	2	2	2	3	2.2
CO2	3	3	3	3	3	2	3	3	3	3	2.9
CO3	3	2	2	3	3	3	3	3	3	3	2.8
CO4	3	3	3	3	2	2	3	3	3	3	2.8
CO5	2	3	3	3	3	2	3	3	3	3	2.8
CO6	3	3	3	2	3	2	3	3	3	3	2.8
Mean Overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours	Credits
1	23PCO1AE01	Ability Enhancement Course: Excel for Business	2	1

Course Objectives
To learn and apply formatting options in Excel spreadsheet
To construct formulas using addresses and operators
To process data using mathematical and statistical data
To get data using reference functions
To extract charts and pivot tables for the given data

#### **Unit – I: MS Excel Introduction (6 Hours)**

MS Excel- Spreadsheet formatting – Cell formatting – Cell Styles – User Defined Cell Styles – Conditional Formatting – Format Painter- Wrap Text – Merger options.

#### **Unit – II: Operators in Excel (6 Hours)**

Operators in Excel: Arithmetic, logical and relational operators- constructing formulas with absolute reference and relative reference cell addresses – data validation.

#### **Unit – III: Frequently used functions in Excel (6 Hours)**

Frequently used functions in Excel: Mathematical functions: Sum, Sumif, Sumifs, round, sqrt, power

Statistical functions: Average, Averageif, Averageifs, count, counta, countblank, countifs, countif, Median, Corr, Max, Min, Large and Small.

#### **Unit – IV: Creating Charts (6 Hours)**

Creating Charts - Different types of chart - Formatting Chart Objects -Changing the ChartType - Showing and Hiding the Legend - Showing and Hiding the Data Table. Sorting, Filter, Text to Column.

#### **Unit –V: Reference Functions (6 Hours)**

Reference Functions: Lookup, Vlookup, Hlookup, Index, Match, Offset, Indirect, Row, Rows, Column, Columns. Creating Pivot Tables - Manipulating a Pivot Table

<b>Teaching Methodology</b>	Videos, PPTs, Demonstration, Practical Application and Creation of Models
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#### **Book for Study**

1. Alexander, M. (2019). *Microsoft excel 2019 bible*. (1st ed.). Wiley.

#### **Books for Reference**

1. Lalwani, L. (2019). *Excel 2019 all-in-one: Master the new features of excel 2019/office365*. BPB Publications.
2. Mishra, N. (2019). *Excel with microsoft excel: Comprehensive & easy guide to learn advanced MS excel*. Penman Books.

3. Mayes, T.R. (2017). *Financial analysis with microsoft excel*. (7th ed.). Cengage India Private Limited.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful Completion of this course, students will be able to	
CO1	analyse data using statistical functions in excel spreadsheet	K4
CO2	develop accounting and financial models in excel	K5
CO3	evaluate data using charts and pivot tables	K6

Relationship Matrix											
Semester	Course Code		Title of the Course							Hours	Credits
1	23PCO1AE01		Ability Enhancement Course: Excel for Business							2	1
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	3	3	2	2	3	3	3	3	2.8
CO2	3	3	2	3	3	2	3	3	3	3	2.8
CO3	3	3	3	2	3	2	3	3	3	3	2.8
Mean Overall Score											2.8 (High)



## DEPARTMENT OF COMMERCE HONOURS

### St. JOSEPH'S COLLEGE (Autonomous)

Accredited at A++ Grade (Cycle IV) by NAAC Special Heritage Status awarded by UGC  
College with Potential for Excellence by UGC DBT-STAR & DST-FIST sponsored College

TIRUCHIRAPPALLI - 620 002

Phone : 0431 - 4226391, 2700320, Fax : 0431 - 2701501

Website : www.sjctni.edu

#### MINUTES OF THE BOARD OF STUDIES MEETING HELD ON 21.07.2023

##### Agenda:

1. Approval of Course Contents of B.Com Honours pertaining to the First Semester of 2023-24
2. Approval of Certificate Courses offered by the Commerce Honours Department
3. Any other matter


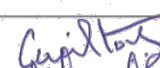
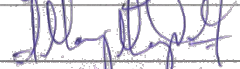


##### **The following are the discussions made during the Board of Studies Meeting:**


1. The Board of Studies Meeting began with a silent prayer followed by Dr. F.R. Alexander Pravin Durai, Head, Department of Commerce Honours welcomed the members of the Board. The HoD also shared his views about the reforms in the curriculum of Higher Education focusing on the actions essential to tide over the existing fluid situation.
2. Then the Course Pattern and Course Contents pertaining to Semester I of B.Com Honours were presented which were eventually approved unanimously by the Board after discussions.
3. The Department has decided in principle to follow the college and TANSCHÉ pattern for Part I, II and IV.
4. The department would follow the existing pattern for Part-III with modification necessary to broadly align with college and TANSCHÉ pattern
5. The Board also gave approval to continue with the Certificate course entitled "Financial Market Professional" approved in the previous Board of studies.
6. The board decided to follow the existing pattern for quantitative courses and the new pattern prescribed by the College for all theory courses

After all the deliberations, the HoD thanked the members for actively taking part in the discussions and then the meeting came to an end.

Head of the Department

Dr. F.R. ALEXANDER PRAVIN DURAI,  
M. Com., MBA., M. Phil., Ph.D.,  
Head  
Department of B.COM Honours  
St. Joseph's College (Autonomous)  
Tiruchirappalli-620 002

BOARD OF STUDIES MEETING HELD ON 21.07.2023		
DEPARTMENT OF B.COM. HONOURS.		
St. JOSEPH'S COLLEGE(AUTONOMOUS)		
TIRUCHIRAPPALLI -620002		
S. No.	Name and address	Signature
1.	Dr.V.Pugazhenth, Associate Professor, Department of Commerce, Rajah Serfoji Government College (Autonomous), Thanjavur (University Representative)	- absent -
2.	Dr. D. Raja Jebasingh Associate Professor & Vice Principal (S-II), St. Joseph's College of Commerce (Autonomous), 163, Brigade Road, Bengaluru - 560 025, Karnataka. (Subject Expert)	- absent -
3.	Mr. Sharanath Balaji, Managing Director, BG Naidu Sweets, Trichy.	
4.	Mr. J. Camilton	
5.	Ms. A. Mary Magdalene	
6.	Mr. G. Prabhakaran	
7.	Dr. F.R. Alexander Pravin Durai - HOD	

  
**Dr. F.R.ALEXANDER PRAVIN DURAI,**  
 M.Com., MBA., M.Phil., Ph.D.,  
 Head,  
 Department of B.COM Honours  
 St. Joseph's College (Autonomous)  
 Tiruchirappalli-620 002

# B.COM HONOURS

Course Details					
Sem	Part	Course Code	Course Title	Hrs	Cr
I	1	23UTA11GL01	General Tamil-I	5	3
		23UFR11GL01	French-I		
		23UHI11GL01	Hindi-I		
		23USA11GL01	Sanskrit-I		
	2	23UEN12GE01	General English-I	5	3
	3	23UCR13CC01	Core Paper I Financial Accounting**	5	4
		23UCR13CC02	Core Paper II Organisation Management**	4	4
		23UCR13IS01	Internship (2 Weeks)	-	2
		23UCR13AC01	Allied 1-Business Mathematics	5	3
	4	23UCR14FC01	Foundation Course: Communicative English	2	2
		23UCR14SE01	Skill Enhancement Course SEC-1: Corporate and Business Law-I**	2	2
		23UHE14VE01	Value Education: Essentials of Humanity	2	1
Total				30	24

\*\*ACCA Subjects

21/7/23  
Dr. FR. ALEXANDER PRAVIN DURAI,  
M.Com., MBA., M.Phil., Ph.D.,  
Head  
Department of B.COM Honours  
St. Joseph's College (Autonomous)  
Tiruchirappalli-620 002

PROGRAMME PATTERN				
B. Com HONORS				
Part	Course Code	Title of the Course	Hours	Credits
<b>Part I</b>	23UTA11GL01A	General Tamil- 1(தமிழ் இலக்கிய வரலாறு-1)	5	3
	23UFR11GL01	French-1		
	23UHI11GL01	Hindi-1		
	23USA11GL01	Sanskrit-1		
<b>Part II</b>	23UEN12GE01	General English-1	5	3
<b>Part III</b>	23UCR13CC01	<b>Core Course- 1:</b> Financial Accounting	5	4
	23UCR13CC02	<b>Core Course- 2:</b> Organisation Management	4	4
	23UCR13IS01	<b>Internship (2 Weeks)</b>	0	2
	23UCR13AC01	<b>Allied Course -1:</b> Business Mathematics	5	3
<b>Part IV</b>	23UCR14FC01	<b>Foundation Course:</b> Communicative English	2	2
	23UCR14SE01	<b>Skill Enhancement Course - 1(Non Major Elective):</b> Corporate and Business Law – I	2	2
	23UHE14VE01	<b>Value Education:</b> Essentials of Humanity	2	1
<b>Total</b>			<b>30</b>	<b>21</b>

Semester	Course Code	Course Title	Hours/ Week	Credits
1	23UCR13CC01	Core Course- 1: Financial Accounting	5	4

Course Objectives
To understand the basic purpose of financial accounting in recording and summarizing financial transactions
To describe the qualitative characteristics of financial statements and their significance in financial reporting
To execute the double-entry accounting system and comprehend the concept of duality for accurate recording of transactions
To apply advanced recording techniques and principles in accounting for various transactions and events
To analyse and interpret complex financial statements and apply advanced financial analysis techniques

#### **UNIT I: Purpose of financial accounting (15 Hours)**

Define financial accounting– purposes of financial statements for the users– main elements of financial reports – conceptual framework – definitions of asset, liability, equity, income& expenses

#### **UNIT II: Qualitative characteristics of financial statements (15 Hours)**

Concepts of relevance, faithful presentation, materiality, substance over form, going concern, business entity, accruals, consistency, comparability, verifiability, understandability and timeliness

#### **UNIT III: Accounting records & double entry accounting system (15 Hours)**

Main data sources for accounting – different business documents such as sales order, purchase order, goods received note, quotation, goods dispatched note, invoice, credit &debit notes, receipt, remittance advice, cash vouchers–understand the double entry accounting & duality concept – types of transactions such as sales, purchases, payments &receipts

#### **UNIT IV: Recording transactions (15 Hours)**

Recording into journals – ledger accounts – balancing of ledger accounts – accounting for discounts, sales tax–recording cash transactions–accounting & valuation of inventories– accruals & prepayments –tangible & non-tangible assets– depreciation & amortization accounting – receivables & payables – provisions & contingencies – errors & rectification – bank reconciliation statements



**UNIT V: Trial balance, financial statements****(15 Hours)**

Statements of profit or loss and other comprehensive income, cash flow statements, balance sheet – events after reporting period – interpretation of financial statements – use of basic ratios related to profitability, liquidity, activity and resource utilization.

<b>Teaching Methodology</b>	Chalk & Talk, Videos, PPTs, Demonstration and Creation of Models, flipped learning, and LMS based online classes.
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**Book for Study**

1. Financial Accounting, F3 ACCA Study Material, Kaplan Publishing

**Books for Reference**

2. Jain S.P, Narang KL(2020),Financial Accounting, Kalyani Publishers, NewDelhi
3. Grewal,Shukla(2019),FinancialAccounting,S.ChandPublications,NewDelhi
4. Paul S K(2016),Financial Accounting, New Central Book Agency

**NOTE: Latest Edition of Textbooks May be Used**

**Web Resources**

1. <https://opentuition.com/acca/fa/acca-financial-accounting-fa-notes/>
2. <https://files.fm/f/upu9estpj>
3. <https://pakaccountants.com/acca/f1/notes/>

<b>Course Outcomes</b>		
<b>CO No.</b>	<b>CO-Statements</b>	<b>Cognitive Levels (K - Level)</b>
	On successful completion of this course, students will be able to	
<b>CO1</b>	Describe the purpose and conceptual framework of Financial Accounting	<b>K1</b>
<b>CO2</b>	Explain the qualitative characteristics of financial statements	<b>K2</b>
<b>CO3</b>	Relate business documents with transactions and journalize them through double entry system	<b>K3</b>
<b>CO4</b>	Examine the procedures related to accounting and Valuation of Assets	<b>K4</b>
<b>CO5</b>	Prepare and Interpret the financial statements through ratio analysis	<b>K5</b>

Semester	Course code	Title of the Course									Hours	Credits
<b>1</b>	<b>23UCR13CC01</b>	<b>Core Course- 1: Financial Accounting</b>									<b>5</b>	<b>4</b>
<b>Course Outcomes</b>	<b>Programme Outcomes (POs)</b>					<b>Programme Specific Outcomes (PSOs)</b>						<b>Mean Score of COs</b>
	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	<b>PSO4</b>	<b>PSO5</b>		
<b>CO1</b>	3	3	2	2	1	3	3	3	3	1		2.4
<b>CO2</b>	3	3	2	2	1	3	3	3	2	1		2.3
<b>CO3</b>	3	3	3	3	2	3	3	3	2	1		2.6
<b>CO4</b>	3	3	3	2	1	3	3	3	2	1		2.4
<b>CO5</b>	3	3	3	2	1	3	3	2	2	1		2.3

Mean overall Score				2.4 (High)
Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UCR13CC02	Core Course- 2: Organisation Management	4	4

Course Objectives
To understand the purpose and types of business and how they interact with the key stakeholders and the external environment
To understand business organisation structure, functions and role of corporate governance
To apply the tools of performance measurement in profit and not-for-profit organisations
To analyse and use multiple business models to address the strategic performance issues in complex business structures
To learn the application of various professional skills in the process of creating solutions towards problems faced in the field performance management

#### **UNIT I: Types of organization & stakeholder analysis (12Hours)**

Definition and common features of business organisation, the purpose & types of organisation and their main features such as profit-oriented, not-for-profit, public sector, Co-operatives and Non-government(NGOs) Stakeholders of an organization –internal &external - objectives of stakeholders – how an organization should satisfy these objectives – the power & interest of stakeholders in the organization (use of Mendelow matrix)

#### **UNIT II: Effect of Political and economic environment on organization (12 Hours)**

Political & legal factors – how the policy framework of political system & legal framework influence the business organization in terms of employment, consumer protection, data security - Macro-economic factors – understanding the effect of macro-economic policies, inflation, interest rates, unemployment, fiscal & monetary policies, global economic environment.

#### **UNIT III: Effect of Social & Technological environment on organization (12Hours)**

Social & demographic factors – impact of changes in social structure, values and demographic changes - Technological factors – information technology – automation, digitization. Competitive factors – understanding of SWOT analysis, Porter's Value Chain and Porter's Five Forces models

#### **UNIT IV: Organization structure (12 Hours)**

The formal & informal structures – types of structures such as entrepreneurial, functional, divisional, matrix and boundary-less organizations – suitability and relative merits & demerits of the types of organization

#### **UNIT V: Organisation Governance (12Hours)**

Principles of business governance – separation of ownership from management – concept of span of control – Centralization vs Decentralization of business functions – shared services approach – offshoring & outsourcing of business functions –

Hierarchical levels of business organization - Governance & social responsibility of an organization – role of ethics in business.

<b>Teaching Methodology</b>	Lecturing, PPT, Case study discussions, and flipped learning,
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### Book for Study

1. ACCA Study Material, F1, Kaplan Publishing
2. Pravin Durai (2nd Edition, 2019), Principles of Management, Pearson India Education Services Pvt. Ltd, Noida

### Books for Reference

1. L.M. Prasad (2019), Principles & Practice of Management-Sultan Chand & Sons – New Delhi.
2. P.C. Tripathi & P.N Reddy (2017), Principles of Managements-Tata Mc.GrawHill –New Delhi.
3. Bhushan YK, (Nineteenth Edition 2013), Fundamentals of Business Organisation and Management, Sultan Chand and Sons, New Delhi.
4. B. Gupta (Latest), Management Theory & Practice - Sultan Chand & Sons –New Delhi.

**NOTE: Latest Edition of Textbooks May be Used**

### Web Sources

1. <https://www.mckinsey.com/>
2. <https://hbr.org/>
3. <https://www.accaglobal.com/gb/en/professional-insights.html>

<b>Course Outcomes</b>		
<b>CO No.</b>	<b>CO-Statements</b>	<b>Cognitive Levels (K - Level)</b>
	On successful completion of this course, students will be able to	
<b>CO1</b>	Describe the principles and features of various types of business Organizations	<b>K1</b>
<b>CO2</b>	Indicate different political, legal and Macro-Economic factors affecting business organization	<b>K2</b>
<b>CO3</b>	Illustrate the significances of Social and Technological factors in the Organization structure	<b>K3</b>
<b>CO4</b>	Analyze and Explain the suitability of various organization structures	<b>K4</b>

<b>CO5</b>	Defend the decisions regarding organization governance like span of control, degree of centralization, shared services etc	<b>K5</b>
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Semester	Course code	Title of the Course									Hours	Credits
<b>1</b>	<b>23UCR13CC02</b>	<b>Core Course- 2: Organisation Management</b>									<b>4</b>	<b>4</b>
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	2	2	2	2	2	3	2	2	2	2.2	
CO2	2	2	2	2	3	3	2	2	2	2	2.2	
CO3	2	2	3	2	2	2	2	3	2	3	2.3	
CO4	2	3	2	2	3	2	3	2	2	3	2.4	
CO5	3	2	2	2	2	2	3	2	2	3	2.3	
Mean overall Score											2.2 (High)	

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UCR13AC01	Allied Course -1: Business Mathematics	5	3

Course Objectives
To define and understand indices, logarithms and arithmetic progression
To apply the knowledge of Differentiation of functions of the form $(ax+b)^n$ , $e^{ax+b}$ , $\log(ax+b)$
To apply the knowledge of integration of functions of the form $(ax+b)^n$ , $e^{ax+b}$ , $\log(ax+b)$
To solve various types of matrices, equations using matrices and determinants and apply matrices in various models
To familiarize with the concepts of linear programming

#### **UNIT I: Introduction to indices and arithmetic progression (15 Hours)**

Indices - positive indices - fractional indices - operations with power functions - logarithms - laws and operations - change of base - Arithmetic progression – sum of the series in A.P.(simple problems only).

#### **UNIT II: Differentiation of functions (15 Hours)**

Differentiation of functions of the form  $(ax+b)^n$ ,  $e^{ax+b}$ ,  $\log(ax+b)$  - function of one variable –power function-constant multiple of a function-sum of functions -product of two functions- quotient of two functions - function of functions - maxima and minima of functions of order 2 and 3 (algebraic functions only & trigonometric functions excluded) - Applications of differentiation - elasticity - marginal revenue - average & marginal cost – profit maximization(simple problems & business applications only)

#### **UNIT III: Integration of functions (15 Hours)**

Integration of functions of the form  $(ax+b)^n$ ,  $e^{ax+b}$ ,  $\log(ax+b)$  - indefinite integral – rules –integration by substitution – integration by parts - integration by partial functions (algebraic functions only & trigonometric functions excluded)–Applications of integration–total cost-total revenue - maximum profits – consumer's & producer's surplus (simple problems & business applications only)

#### **UNIT IV: Matrices (15 Hours)**

Matrices – types of matrices – operations on matrices – determinants of order 2 and 3 –Cramer's rule - inverse of a matrix of order 2 and 3 - solving simultaneous equations using matrices and determinants (simple problems only)–Applications to matrices –Leontief Input-Output model(simple problems & business applications only)

#### **UNIT V: Linear programming (15 Hours)**

Linear programming - mathematical formulation of LP Model - graphical method – simplex method (simple problems & business applications only)

<b>Teaching Methodology</b>	Chalk and talk, Demonstration, problem solving, flipped learning,
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### Book for Study

1. D.C. Sanchetti and V.K. Kapoor, “Business Mathematics”, Eleventh thoroughly Revised Edition Sultan Chand and Sons,
2. Unit I Chapter 6 (Sec6.1-6.4, Pages 142-163)
3. Chapter7 (Sec7.1, 7.3, Pages191-212)
4. Chapter12 (Sec12.1, 12.2, Pages 384-395)
5. Unit II Chapter17 (Sec 17.1-17.8, 17. 19, Pages 647-659,703-713) ACE9-ACE30
6. Unit III Chapter 18(Sec18.1, 18.2, 18. 4, 18.8-18.9, Pages 723-726,730-736, 746-757)
7. ACE 90 -ACE 110
8. Unit IV Chapter 20(Sec20.1-20.15, 20.22-20.23, Pages 791-828,840-849)
9. ACE 133 -ACE 150
10. Unit V LP1-LP40

### Books for Reference

1. P.R. Vittal, “Business Mathematics”, Revised Edition, Margham Publications, NewDelhi, 2001.
2. V. K. Kapoor, “Introductory to Business Mathematics”, S. Chand and Sons, New Delhi, 2009.
3. Navaneetham, “Business Mathematics and Statistics”, Jai Publishers,Trichy2008.

NOTE: Latest Edition of Textbooks May be Used

### Web Sources

<http://epgp.inflibnet.ac.in/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	Have knowledge in indices, logarithms, arithmetic progression, differentiation, integration, matrices and LPP	K1
CO2	Understand the different techniques available in differentiation, integration, matrices and LPP to solve problems	K2
CO3	Apply learnt techniques on real life business problems	K3
CO4	Illustrate various learned techniques with examples	K4
CO5	Evaluate business problems like profit maximization, cost minimization, consumer’s and producer’s surplus using the learned techniques	K5

Semester	Course code	Title of the Course									Hours	Credits
1	23UCR13AC01	Allied Course -1: Business Mathematics									5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	2	1	2	2	1	2	3	3	3	2	2.1	
CO2	2	1	1	2	2	3	2	3	2	3	2.1	
CO3	2	3	1	2	1	3	3	3	2	3	2.3	
CO4	2	3	1	2	1	3	3	3	2	3	2.3	
CO5	1	2	1	2	2	3	2	3	3	3	2.2	
Mean overall Score											2.2 (High)	

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UCR14FC01	Foundation Course: Communicative English	2	2

Course Objectives
To describe their observations and experiences effectively, using appropriate language and expressions
To demonstrate a comprehensive understanding of the underlying meanings in various texts, such as articles, stories, and dialogues
To utilize conversational English proficiently to communicate with friends and peers, employing appropriate vocabulary and grammar
To infer contextual meanings from written and spoken material, developing their ability to grasp implicit information
To improve their Listening, Reading, Speaking, and Writing skills, becoming more adept at comprehending and expressing ideas in English

### **UNIT I: (6 Hours)**

Exchanging Greetings - About Me -Small Talk-My Daily Routine-Short Story into a Play  
Friend's Daily Routine-Ask Your Classmate-Composition: My Classmate-Asking  
forClarification-Introducing a Topic

### **UNIT II (6 Hours)**

Rhyming Words-Declamation 1-What Will Happen-Every Drop Counts-Comprehend in  
Characters-Complimenting and Thanking-Visual Comprehension-Making & Responding  
to Requests-Declamation 2-Pronoun Classification

### **UNIT III (6 Hours)**

Pronouns: I, Me, He, Him- Pronouns: She, Her, We, Us -Pronouns: They, Them-  
Reflexive Pronouns- Erroneous Pronouns- Composition: The Perspective- Making and  
Accepting an Apology- Use of Preposition of Place-Using Preposition of Place-Tips on  
Preposition of Movement

### **UNIT IV (6 Hours)**

Using Preposition of Movement-Preposition: Visual Talk-Preposition of Time-Let's Go  
Shopping- Giving and Asking for Opinion- The Air We Breathe-Using Things  
Creatively-  
Transition-Sequencing-Composition: Sequence

### **UNIT V (6 Hours)**

Questions and Answers-Past Tense Practice-Rewriting Irregular Verbs- Problem Solving:  
Role Play-Who Does What? -Comparing and Contrasting -Controlled Composition -  
Story Translation Action Words Dictation -Composition: Past Tense



<b>Teaching Methodology</b>	Lecturing, PPT, Group discussions and Role Play.
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### Book for Study

1. Joy, J.L., Learning to Communicate

### Books for Reference

1. Aspinall, Tricia. *Test Your Listening*. London: Pearson, 2002.
2. Fitikides, T.J. *Common Mistakes in English* (6<sup>th</sup> ed.). London: Longman, 2002
3. Wainwright, Gordon. *How to Read Faster and Recall More: Learn the Art of SpeedReading with Maximum Recall* (3<sup>rd</sup> ed.). Oxford: How to Books, 2007

**NOTE: Latest Edition of Textbooks May be Used**

### Web Resources

1. <https://learnenglish.britishcouncil.org/>
2. <https://oneminuteenglish.org/en/best-websites-learn-english/>
3. <https://www.dailywritings.com/best-websites-to-learn-english/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
<b>CO1</b>	Describe what they observe and experience	<b>K1</b>
<b>CO2</b>	Understand the underlying meaning in a text	<b>K2</b>
<b>CO3</b>	Use conversational English to communicate with friends	<b>K3</b>
<b>CO4</b>	Infer meaning from the given context	<b>K4</b>
<b>CO5</b>	Enhance their Listening, Reading, Speaking, and Writing Skills	<b>K5</b>

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
<b>1</b>	<b>23UCR14FC01</b>		<b>Foundation Course: Communicative English</b>							<b>2</b>	<b>2</b>
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	2	2	3	2	3	2	3	2	2.4
CO2	2	2	3	2	3	3	2	3	2	2	2.3
CO3	2	3	2	3	2	2	3	2	3	2	2.4
CO4	2	2	3	2	3	3	2	3	2	3	2.5
CO5	2	2	2	3	2	2	2	3	2	2	2.2
Mean overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UCR14SE01	<b>Skill Enhancement Course - 1(Non Major Elective): Corporate and Business Law – I</b>	2	2

Course Objectives
To define and understand the various elements of Contract Act
To identify the legal provisions of special contracts of the Indian Contract Act
To bring out the differences between bailment and pledge
To Explain and discuss the overview of the Companies Act, 2013
To familiarize with the provisions relating to Documents of Corporates and Stock transactions

#### **UNIT I: General Elements of Contract (12 Hours)**

The Indian Contract Act –Types of Contract - Nature of contract - Offer and Acceptance -Consideration –Capacity to Contract-Free Consent-Legality of Object-Void Agreements.

#### **UNIT II: Special Contracts (12 Hours)**

Contingent Contract- Performance and discharge of contract- Remedies for breach of contract – Quasi contract (sec 1 to sec 75). IT contracts- chip whap contract-shine wrap contract Special Contracts: Contract of Indemnity and Guarantee (sec 124 to see 147) – Distinction between Indemnity and Guarantee- Kinds of guarantee-Rights of surety- Discharge of surety.

#### **UNIT III: Bailment and Pledge (12 Hours)**

Bailment and Pledge (sec 148 to 181) - Classification - Duties and rights of bailor and bailee -Finder of goods - Termination of bailment - Pledge - Differences between bailment and pledge-Rights and duties of pawnor and pawnee –Pledge of non-owners.

#### **UNIT IV: Introduction to Companies Act 2013 (12Hours)**

Introduction to Companies Act 2013 – Administration of Company Law [including National Company Law Tribunal (NCLT), National Company Law Appellate Tribunal (NCLAT),Special Courts]; Characteristics of a company; lifting of corporate veil; types of companies including one-person company, small company and dormant company; association not for profit; illegal association; formation of company, on-line filing of

documents, promoters, their legal position, pre-incorporation contract; on-line registration of a company.

### **Unit V: Documents of Corporates and Stock transactions (12 Hours)**

Documents of Corporates – Memorandum of association, Articles of association, Doctrine of constructive notice and indoor management prospectus-shelf and red herring prospectus, Misstatement in prospectus, GDR; Book building; Issue, allotment and forfeiture of share, Transmission of shares, Buy back and provisions regarding buy back; Issue of bonus shares.

<b>Teaching Methodology</b>	Lecturing, PPT, Case study discussions, and flipped learning,
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### **Book for Study**

1. N.D. Kapoor, (2019), Elements of Mercantile Law, Sultan Chand and Sons, New Delhi.
2. N.D. Kapoor, (2019), 'Elements of Company Law', Sultan Chand & Sons, New Delhi.

### **Books for Reference**

1. M.C. Shukla, (Latest), Manual of Mercantile Law, S. Chand & Co., New Delhi.
2. J. Jayasankar (Latest), Business Law, Margham publications, Chennai
3. Prasanta K. Gosh and Balachandran, V, (Latest), Company Law and Practice - I & II, Sultan Chand & Sons, New Delhi.

**NOTE: Latest Edition of Textbooks May be Used**

### **Web Resources**

1. <https://www.claonline.in/>
2. <https://www.mca.gov.in/content/mca/global/en/home.html>
3. <http://epgp.inflibnet.ac.in/>

<b>Course Outcomes</b>		
<b>CO No.</b>	<b>CO-Statements</b>	<b>Cognitive Levels (K - Level)</b>
	On successful completion of this course, students will be able to	
<b>CO1</b>	Describe the essential elements of a general Contract	<b>K1</b>
<b>CO2</b>	Explain the modes of performance, discharge of contract and unique features of special contracts	<b>K2</b>
<b>CO3</b>	Identify the features, duties and responsibilities of parties involved in Bailment and Pledge	<b>K3</b>
<b>CO4</b>	Examine the legal provisions related to formation of various types of Companies	<b>K4</b>
<b>CO5</b>	Comply with the provisions of corporate documents, transmission and Buy back of shares	<b>K5</b>

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23UCR14SE01	<b>Skill Enhancement Course - 1(Non Major Elective):</b> Corporate and Business Law – I								2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	2	2	2	3	3	2	2	2	2.3
CO2	3	2	2	2	2	3	2	2	2	2	2.2
CO3	3	3	3	2	2	3	3	3	2	2	2.6
CO4	3	3	3	2	2	3	3	3	2	2	2.6
CO5	3	3	3	2	2	3	3	2	2	2	2.5
Mean overall Score											2.4 (High)



**DEPARTMENT OF COMMERCE COM. APPL.**  
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TIRUCHIRAPPALLI - 620 002.

Phone : 0431 - 4226444, 2700320, Fax : 0431 - 2701501

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21.07.2023

**Minutes of the Board of studies meeting**

The meeting started at 11.30 am on 21<sup>st</sup> July, 2023 with prayer.

The agenda of the meeting was

- Revision of Semester – 1 year - Undergraduate and Postgraduate syllabi and evaluation pattern

The following members were present in the meeting:

- Dr.A.Velangani Joseph, Professor & Head, Dept. of Youth Welfare Studies, Madurai Kamarajar University, Madurai. (Subject Expert)
- Dr.N.Maheswari, Head, Dept. of Commerce CA
- All faculty Members, Department of Commerce Computer Application

**Except:**

Dr.A.Kanmani Joan of Arch,  
Assistant Professor, K.N.Government Arts College for Women(Autonomous),  
Thanjavur - 631 007,

Mr.Jenifer Arulraj  
Chartered Accountant,  
96/4, Bharathidasan Salai,  
Cantonment, Trichy 620 001

**Reforms made:**

The forum accepted the syllabus suggested as per TANCHE with few changes.

The syllabus set for few courses also been approved

FINANCIAL ACCOUNTING (23UCC13CC01)

- In Course outcomes the word “treatment” had been removed and “methods” been incorporated

**Dr. N. MAHESWARI,**  
M.Com., M.A., MBA., M.Phil., NET., Ph.D.  
Head & Research Advisor

PG Department of Commerce Computer Application  
St. Joseph's College (Autonomous)  
Trichirappalli - 620 002



## DEPARTMENT OF COMMERCE COM. APPL.

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- Unit V: instead of Accounting treatment accounting methods been incorporated

PRINCIPLES OF MANAGEMENT (23UCC13CC02)

unit 4: WFH had been removed as the abbreviation has not been generalized

overall changes

- In books for study publishers and editions were incorporated
- The syllabi prepared for the following subjects had been approved

#### IB COM CA:

FOUNDATION COURSE(Major):( 23UCC14FC01) Business Communication

SEC -1: (NME): (23UCC14SE01) Entrepreneurship Skills

#### IM COM CA:

Core II : Digital Marketing Practical- (23PCC1CP02) newly incorporated

SEC -1: Advanced Excel (Practical) - Ability Enhancement Course

#### Common Courses offered by the department

VALUE ADDED COURSE: Financial Modelling in Excel

CERTIFICATE COURSE : Employability skills

1. Dr.N.Maheswari - Head

2. Dr.D.John Prabakaran

3. Dr.J.Rajees

4. Dr.F.X.Virgin Fraga

5. Dr.J.Arputha Sahayaraj

6. Dr.B.Fathimamary

7. Dr.R.Arul

8. Dr.S.Arumugam

9. Ms.D.Irine Auxilia Mary

*[Handwritten signatures of faculty members corresponding to the list above]*

**Dr. N. MAHESWARI,**  
M.Com., M.A., MBA., M.Phil., NET., Ph.D.  
Head & Research Advisor

PG Department of Commerce Computer Application  
St. Joseph's College (Autonomous)  
Trichirappalli - 620 002

PROGRAMME PATTERN				
B. Com. CA				
Part	Course Code	Title of the Paper	Hours	Credits
I	23UTA11GL01A	General Tamil- 1 (தமிழ் இலக்கிய வரலாறு-1)	5	3
	23UFR11GL01	French-1		
	23UHI11GL01	Hindi-1		
	23USA11GL01	Sanskrit-1		
II	23UEN12GE01	General English-1	5	3
III	23UCC13CC01	<b>Core Course - 1:</b> Financial Accounting-1	5	5
	23UCC13CC02	<b>Core Course - 2:</b> Principles of Management	5	5
	23UCC13AC01	<b>Allied Course - 1:</b> C programming	2	2
	23UCC13AP01	<b>Allied Practical - 1:</b> C programming	2	1
IV	23UCC14FC01	<b>Foundation Course:</b> Business Communication	2	2
	23UCC14SE01	<b>Skill Enhancement Course - 1 (Non Major Elective):</b> Entrepreneurship Skills	2	2
	23UHE14VE01	<b>Value Education:</b> Essentials of Humanity	2	1
<b>Total</b>			<b>30</b>	<b>24</b>

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UCC13CC01	Core Course - 1: Financial Accounting-1	5	5

Course Objectives
To understand the basic accounting concepts and standards
To know the basis for calculating business profits
To familiarize with the accounting methods of depreciation and Bills of Exchange
To learn the methods of calculating profit for single entry system
To gain knowledge on the accounting methods of insurance claims

### **UNIT 1: Fundamentals of Financial Accounting (15 Hours)**

Financial Accounting – Meaning, Definition, Objectives, Basic Accounting Concepts and Conventions - Journal, Ledger Accounts– Subsidiary Books — Trial Balance - Classification of Errors – Rectification of Errors – Preparation of Suspense Account – Bank Reconciliation Statement - Need and Preparation

### **UNIT 2: Final Accounts (15 Hours)**

Final Accounts of Sole Trading Concern- Capital and Revenue Expenditure and Receipts – Preparation of Trading, Profit and Loss Account and Balance Sheet with Adjustments.

### **UNIT 3: Depreciation and Bills of Exchange (15 Hours)**

Depreciation - Meaning – Objectives – Accounting methods - Types - Straight Line Method – Diminishing Balance method – Conversion method. Units of Production Method – Cost Model vs Revaluation

Bills of Exchange – Definition – Specimens – Discounting of Bills – Endorsement of Bill – Collection – Noting – Renewal – Retirement of Bill under rebate

### **UNIT 4: Accounting from Incomplete Records – Single Entry System (15 Hours)**

Incomplete Records -Meaning and Features - Limitations - Difference between Incomplete Records and Double Entry System - Methods of Calculation of Profit - Statement of Affairs Method – Preparation of final statements by Conversion method

### **UNIT 5: Royalty and Insurance Claims (15 Hours)**

Royalty- Meaning – Minimum Rent – Short Working – Recoupment of Short Working – Leasing - Lessor and Lessee – Sublease - Accounting Methods. Insurance Claims – Calculation of Claims - Average clause (Loss of Stock only)

Teaching Methodology	demonstration, black board teaching,
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### **Books for Study**

1. Jain, S.P., & Narang, K.L. (2016). *Financial accounting- I*. (25th ed.). Kalyani Publishers.
2. Maheshwari, S.N. (2021). *Financial accounting*. (6th ed.). Vikas Publications.
3. Grewal, S., & Gupta. (2019) *Advanced accounts, volume I*. (12th ed.). S.Chand and Sons.
4. Radhaswamy., & Gupta, R.L. (2018). *Advanced accounting*. Sultan Chand.
5. Gupta, R.L., & Gupta, V.K. (2021). *Financial accounting*. (13th ed.). Sultan Chand.

### **Books for Reference**

1. Arulanandan., & Raman. (n.d). *Advanced accountancy*. Himalaya Publications.
2. Tulsian.(n.d). *Advanced accounting*, Tata McGraw Hills.
3. Charumathi., & Vinayagam. (n.d) *Financial accounting*. S.Chand and Sons.
4. Goyal., & Tiwari. (n.d). *Financial accounting*. Taxmann Publications.
5. Anthony, R.N., Hawkins, D., & Merchant, K.A. (n.d). *Accounting: Text and cases*. McGraw-Hill Education.

### **Web Resources**

1. <https://www.slideshare.net/mcsharma1/accounting-for-depreciation-1>
2. <https://www.slideshare.net/ramusakha/basics-of-financial-accounting>
3. <https://www.accountingtools.com/articles/what-is-a-single-entry-system.html>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful completion of this course the students will be able to	
CO1	Define ,identify and categorize the Financial Statements and remember the concept of rectification of errors and Bank reconciliation statement	K1
CO2	Describe, interpret and correlate the knowledge in preparing Final accounts of trading concerns	K2
CO3	Recognize, classify and illustrate the various methods of providing depreciation	K3
CO4	State, discuss and appraise the methods of calculation of profit	K4
CO5	Determine and appraise the royalty accounting treatment and claims from insurance companies in case of loss of stock	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UCC13CC01		Core Course - 1: Financial Accounting-1							5	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	2	3	2	3	3	2	2	3	2.5
CO2	2	3	2	1	2	3	3	2	2	3	2.3
CO3	2	2	3	2	3	2	3	2	3	2	2.4
CO4	1	2	2	3	1	2	3	2	2	3	2.1
CO5	2	2	2	2	3	1	3	2	2	3	2.2
Mean overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UCC13CC02	Core Course - 2: Principles of Management	5	5

Course Objectives
To understand the basic management concepts and functions
To know the various techniques of planning and decision making
To familiarize with the concepts of organisation structure
To gain knowledge about the various components of staffing
To enable the students in understanding the control techniques of management

### **UNIT 1 : Introduction to Management (15 Hours)**

Meaning- Definitions – Nature and Scope - Levels of Management – Importance - Management Vs. Administration – Management: Science or Art –Evolution of Management Thoughts – F. W. Taylor, Henry Fayol, Peter F. Drucker, Elton Mayo - Functions of Management - Trends and Challenges of Management. Managers – Qualification – Duties and Responsibilities.

### **UNIT 2: Planning (15 Hours)**

Planning – Meaning – Definitions – Nature – Scope and Functions – Importance and Elements of Planning – Types – Planning Process - Tools and Techniques of Planning – Management by Objective (MBO). Decision Making: Meaning – Characteristics – Types - Steps in Decision Making – Forecasting.

### **UNIT 3: Organizing (15 Hours)**

Meaning - Definitions - Nature and Scope – Characteristics – Importance – Types - Formal and Informal Organization – Organization Chart – Organization Structure: Meaning and Types - Departmentalization– Authority and Responsibility – Centralization and Decentralization – Span of Management.

### **UNIT 4: Staffing (15 Hours)**

Introduction - Concept of Staffing- Staffing Process – Recruitment – Sources of Recruitment – Modern Recruitment Methods - Selection Procedure – Test- Interview– Training: Need - Types– Promotion –Management Games – Performance Appraisal - Meaning and Methods – 360-degree Performance Appraisal – Work from Home - Managing Work from Home.

### **UNIT 5: Directing (15 Hours)**

Motivation –Meaning - Theories – Communication – Types - Barriers to Communications – Measures to Overcome the Barriers. Leadership – Nature - Types and Theories of Leadership – Styles of Leadership - Qualities of a Good Leader – Successful Women Leaders – Challenges faced by women in workforce - Supervision. Co-ordination and Control: Co-ordination – Meaning - Techniques of Co-ordination. Control - Characteristics - Importance –

Stages in the Control Process - Requisites of Effective Control and Controlling Techniques – Management by Exception [MBE].

### Books for Study

1. Gupta.C.B. (n.d). *Principles of management*. L.M. Prasad, S.Chand& Sons Co. Ltd.
2. Pagare, D. (n.d). *Principles of management*, Sultan Chand & Sons Publications.
3. Tripathi, P.C., & Reddy, P.N. (n.d). *Principles of management*. Tata McGraw, Hill.
4. Prasad, L.M. (n.d). *Principles of management*. S.Chand&Sons Co. Ltd.
5. Sharma, K.R., Gupta, S.K., & Sharma, R. (n.d). *Business management*. Kalyani Publications.

### Books for Reference

1. Sundhar, K. (n.d). *Principles of management*. Vijay Nichole Imprints Limited.
2. Koontz, H., & Weirich, H. (n.d). *Essentials of management*. McGraw Hill, Sultan Chand and Sons.
3. Griffiin. (n.d). *Management principles and applications*. Cengage learning.
4. Mintzberg, H. (n.d). *The nature of managerial work*. Harper & Row.
5. Eccles, R. G., & Nohria, N. (n.d). *Beyond the hype: Rediscovering the essence of management*. Boston The Harvard Business School Press.

### Web Resources

1. <http://www.universityofcalicut.info/syl/management>
2. <https://www.managementstudyguide.com/manpower-planning.htm>
3. <https://www.businessmanagementideas.com/notes/management-notes/coordination/coordination/21392>

<b>Teaching Methodology</b>	Ppt, Videos and Case Studies
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<b>Course Outcomes</b>		
<b>CO No.</b>	<b>CO-Statements</b>	<b>Cognitive Levels (K - Level)</b>
	On Successful completion of this course the students will be able to	
<b>CO1</b>	Demonstrate the importance of principles of management.	<b>K1</b>
<b>CO2</b>	the importance of planning and decision making in an organization.	<b>K2</b>
<b>CO3</b>	Comprehend the concept of various authorizes and responsibilities of an organization.	<b>K3</b>
<b>CO4</b>	Enumerate the various methods of Performance appraisal	<b>K4</b>
<b>CO5</b>	Demonstrate the notion of directing, co-coordination and control in the management	<b>K5</b>

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23UCC13CC02	Core Course - 2: Principles of Management								5	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	2	3	2	3	3	2	2	3	2.5
CO2	2	3	2	1	2	3	3	2	2	3	2.3
CO3	2	2	3	2	3	2	3	2	3	2	2.4
CO4	1	2	2	3	1	2	3	2	2	3	2.1
CO5	2	2	2	2	3	1	3	2	2	3	2.2
Mean overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UCC13AC01	Allied Course - 1: C programming	2	2

Course Objectives
To describe the core syntax and semantics of C programming language
To discover the need for working with the strings and functions
To acquire knowledge on Functions and Recursive functions
To understand the concept of Pointers and Arrays
To illustrate the process of structuring the data using Structures

#### **UNIT 1: Introduction to C (6 Hours)**

Introduction to C Language: C Language Introduction - Features of C Language - Benefits of Cover other languages - Compilation of C Program - First Program in C - Pre-processor in C Pre - processor directives.

#### **UNIT 2: C Data types and Operators (6 Hours)**

Variables, Data Types and Operators: Variables and Keywords in C-Scope rules in C-Data Types in C-Operators and Its Types -Typecasting in C

#### **UNIT 3: Control Structures (6 Hours)**

Control Flow Statements: Decision Making Statements - Switch Statement in C - C Loops and Control Structure - Practice problems - Continue Statement, Break Statement - Array & String Handling in C: Arrays in C - Strings in C

#### **UNIT 4: Arrays and Functions (6 Hours)**

Multidimensional Arrays in C - String functions in C - Practice problems - Functions in C: Function Prototype - Parameter Passing Techniques in C - Storage Classes in C - Recursion Concept - Functions in C - Practice problems

#### **UNIT 5: Pointers and Structures (6 Hours)**

Pointers, Structures and Unions: Pointers in C - Structures- Union - Enumeration (or enum) in C - Pointer Vs Array in C – C application programs (Sorting, Matrix manipulations, student's mark list preparation)

<b>Teaching Methodology</b>	PPT, Chalk and Talk method
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#### **Books for Study**

1. Balaguruswamy, E. (2019). *Programming in ANSI C*. (8th ed.). McGraw Hill Education.
2. Dey, P., & Ghosh, M. (2018). *Programming in C*. (2nd ed.). Oxford University Press.

3. Kernighan, B.W., & Ritchie, D.M. (2015). *The C programming language*. (2nd ed.). Pearson Education India.

### Books for Reference

1. Kanetkar, Y.P. (2019). *Let us C*. (16th ed.). BPB Publications.
2. Jones, J.A., & Harrow, K. (n.d). *Problem solving with C*. Pearson Education.
3. Nagraj, G. C. (n.d). *Programming for problem solving*. Himalaya Publishing House.

### Websites and eLearning Sources

1. <http://elearning.vtu.ac.in/econtent/courses/video/BS/14CPL16.html>
2. <https://nptel.ac.in/courses/106/105/106105171>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful completion of this course the students will be able to	
CO1	Understand the concept of Program and Control Structures to solve any given problem	K1
CO2	Apply the concept of single and multi-dimensional arrays to solve problems related to searching, sorting and matrix operations	K2
CO3	Apply the concept of Strings for writing programs related to character array	K3
CO4	Write programs using concept of user defined and recursive functions	K4
CO5	Create and write Structure programs for the given problem	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UCC13AC01		Allied Course - 1: C programming							2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	1	2	2	3	2	2	2	3	3	2.2
CO2	2	3	1	2	2	2	3	3	2	2	2.2
CO3	2	2	2	3	3	3	3	3	2	2	2.5
CO4	2	3	3	2	3	3	3	3	3	2	2.7
CO5	1	2	3	2	3	2	3	3	2	2	2.3
Mean overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UCC13AP01	Allied Practical - 1: C programming	2	1

Course Objectives
To understand the core syntax and semantics of C programming language
To understand problem statements and identify appropriate solutions
To demonstrate the use of IDE and C Compiler
To develop programs using C Language Arrays and Pointers
To write C programs using functions and Structures

### Exercises

1. Write a C program to find roots of a Quadratic equation.
2. Write a C program to find the total no. of digits and the sum of individual digits of a positive integer.
3. Write a C program to generate the Fibonacci sequence of first N numbers.
4. Write a C program to sum the series  $S = 1 - x + (x^2/2!) - (x^3/3!) + \dots - (x^n/n!)$
5. Write a C program to arrange the elements of an integer array using Bubble Sort algorithm.
6. Write a C program to input two matrices and perform matrix multiplication on them
7. Write a C program to check whether the given string is palindrome or not without using Library functions.
8. Write a C program to count the number of lines, words and characters in a given text.
9. Write a C program to generate Prime numbers in a given range using user defined function.
10. Write a C program to find factorial of a given number using recursive function.
11. Write a C program to maintain a record of n student details using an array of structures with four fields - Roll number, Name, Marks and Grade. Calculate the Grade according to the following conditions.
 

Marks Grade  
 $\geq 80$  A  
 $\geq 60$  B  
 $\geq 50$  C  
 $\geq 40$  D  
 $< 40$  E. Print the details of the student, given the student Roll number as input.

Teaching Methodology	PPT, Lab demonstration
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### Books for Study

1. Balaguruswamy, E. (2019). *Programming in ANSI C*. (8th ed.). McGraw Hill Education.
2. Dey, P., & Ghosh, M. (2018). *Programming in C*. (2nd ed.). Oxford University Press.
3. Kernighan B.W., & Ritchie, D.M. (2015). *The C programming language*. (2nd ed.). Pearson Education India.

### Books for Reference

1. Kanetkar, Y.P. (2019). *Let us C*. (16th ed.). BPB Publications.
2. Jones, J.A., & Harrow, K. (n.d). *Problem solving with C*. Pearson Education.
3. Nagraj, G. (n.d). *C programming for problem solving*. Himalaya Publishing House.

### Web Sources

1. <http://elearning.vtu.ac.in/econtent/courses/video/BS/14CPL16.html>
2. <https://nptel.ac.in/courses/106/105/106105171>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful completion of this course the students will be able to	
CO1	Apply the concept of Control Structures to solve any given problem	K1
CO2	Apply the concept of single and multi-dimensional arrays to solve problems related to searching, sorting and matrix operations	K2
CO3	Apply the concept of Strings for writing programs related to character array	K3
CO4	Write programs using concept of user defined and recursive functions	K4
CO5	Apply concept of structures to write programs	K5

<b>Relationship Matrix</b>											
<b>Semester</b>	<b>Course code</b>	<b>Title of the Course</b>								<b>Hours</b>	<b>Credits</b>
<b>1</b>	<b>23UCC13AP01</b>	<b>Allied Practical - 1: C programming</b>								<b>2</b>	<b>1</b>
<b>Course Outcomes</b>	<b>Programme Outcomes (POs)</b>					<b>Programme Specific Outcomes (PSOs)</b>					<b>Mean Score of Cos</b>
	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	<b>PSO4</b>	<b>PSO5</b>	
<b>CO1</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2.2</b>
<b>CO2</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2.2</b>
<b>CO3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2.5</b>
<b>CO4</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2.7</b>
<b>CO5</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2.3</b>
<b>Mean overall Score</b>											<b>2.3 (High)</b>

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UCC14FC01	Foundation Course: Business Communication	2	2

Course Objectives
To educate students role & importance of communication skills
To build their listening, reading, writing & speaking communication skills
To introduce the modern communication for managers
To understand the skills required for facing interview
To facilitate the students to understand the concept of Communication

### **UNIT I Introduction to Communication (6 Hours)**

Definition – Methods – Types – Principles of effective Communication – Barriers to Communication – Communication etiquette.

### **UNIT II Business Letter (6 Hours)**

Business Letter – Layout- Kinds of Business Letters: application, offer, acceptance/ acknowledgement and promotion letters. Business Development Letters – Enquiry, replies, Order, Sales, circulars, Grievances.

### **UNIT III Group discussion (6 Hours)**

Interviews- Direct, telephonic & Virtual interviews- Group discussion – Presentation skills – body language

### **UNIT IV Report Writing (6 Hours)**

Communication through Reports – Agenda- Minutes of Meeting - Resume Writing

### **UNIT V Modern Forms of Communication (6 Hours)**

Modern Forms of Communication: podcasts, Email, virtual meetings – Websites and their use in Business – social media- Professional Networking sites

<b>TEACHING METHDOLOGY</b>	PPT, GROUP DISCUSSION, PANEL DISCUSSION
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### **Books for Study**

1. Mohan, K., & Banerji, M. (2008). *Developing communication skills*, Macmillan India Ltd.
2. Nawal, M. (n.d). *Business communication*. Cengage.
3. Bovee., Thill., & Schatzman.(n.d). *Business communication today*. Peason Education Private Ltd.
4. Brown, M. (2008). *Making presentation happen*. Allen & Unwin.

5. Sundar K.A. (n.d). *Business communication*. Vijay Nicole imprints Pvt. Ltd.

### Books for References

1. Paul, R., & Kovalahalli, J.S. (2017). *Essentials of business communication*. Sultan Chand & Sons.
2. Gupta, C.B. (n.d). *Basic business communication*, Sultan Chand & Sons.
3. Sharma, R.C., & Mohan, K. (2006). *Business correspondance and report writing*. Mc Graw Hill, India Pvt Ltd.
4. Galaagher, K. (2010). *Skills development for business and management students*. Oxford University Press.
5. Bhatia, R.C. (2015). *Business communication*. Ane Books Pvt Ltd.

### Web Sources

1. [https://www.managementstudyguide.com/business\\_communication.html](https://www.managementstudyguide.com/business_communication.html)
2. <https://studiousguy.com/business-communication/>
3. <https://www.oercommons.org/curated-collections/469>
4. <https://www.scu.edu/mobi/business-courses/starting-a-business/session-8-communication-tools/>
5. <https://open.umn.edu/opentextbooks/textbooks/8>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
CO1	Understand communication process and its barriers.	K1
CO2	Develop business letters in different scenarios	K2
CO3	Develop oral communication skills & conducting interviews	K3
CO4	Use managerial writing for business communication	K4
CO5	Identify usage of modern communication tools & its significance for managers	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UCC14FC01		Foundation Course: Business Communication							2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	2	1	3	3	2	1	2	2.2
CO2	2	2	3	1	3	2	3	2	2	2	2.2
CO3	2	2	3	2	3	2	3	2	3	2	2.4
CO4	1	2	3	2	1	2	3	2	2	2	2.0
CO5	3	3	2	2	1	2	3	3	1	2	2.2
Mean overall Score											2.23 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UCC14SE01	Skill Enhancement Course - 1 (Non Major Elective): Entrepreneurship Skills	2	2

Course Objectives
To know the meaning and characteristics of entrepreneurship
To identify the various business opportunities
To understand the various Interpersonal skills for Entrepreneurs
To gain knowledge and various opportunities for Entrepreneurship development
To develop an understanding of the role of various ED skills

**UNIT I: Introduction to Entrepreneur (6 Hours)**

Entrepreneurship: Introduction – meaning – definition – Entrepreneur – Intrapreneur - Technopreneur – Characteristics - Types – Role.

**UNIT II: Entrepreneurial Motivations (6 Hours)**

Effective Communication – Goal Setting Strategies – Creativity and Productivity - True Entrepreneur

**UNIT III: Interpersonal Skills (6 Hours)**

People skills, social skills, or social intelligence. Opportunities for professional development - Factors Favours Entrepreneurship - Personal characteristics

**UNIT IV: Entrepreneur Skills 1 (6 Hours)**

Business management skills, Communication and active listening skills, Risk-taking skills, Networking skills, Creative thinking skills, Critical thinking skills, Problem-solving skills.

**UNIT V : Entrepreneur Skills 2 (6 Hours)**

Customer service skills, Financial skills, Leadership skills, Time management and organisational skills, Technical skills.

<b>Teaching Methodology</b>	<b>PPT, Videos, Group Activities</b>
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**Books for Study**

1. Suresh, J. (2017). Entrepreneurial development. Margham Publications.
2. Gupta, C.B., & Khanka, S.S. (2014). Entrepreneurship and small business management. Sultan Chand & Sons.
3. Poornima, C. (2014.). Entrepreneurship development-Small. Pearson Education.
4. Shankar, R. (2016). Entrepreneurship theory and practice. Vijay Nicole and Imprints Pvt. Ltd.
5. Desai, V. (2017). Dynamics of entrepreneurial development & management. (24th ed.). Himalaya Publishing House.

**Books for Reference**

1. Khanka, S.S. (2020). Entrepreneurial development. S Chand Publications.
2. Sharma, S. (2020). Entrepreneurship development, Kindle Edition.
3. Singal, R.K. (n.d). Entrepreneurial development and management. S.K.Kataria publishers.
4. Garg, M.C. (n.d). Entrepreneurial development.
5. Gordon, E., & Natrajan, K. Entrepreneurial development, Himalaya publishing.

**Web Resources**

1. <https://in.indeed.com/career-advice/career-development/entrepreneur-skills>
2. <https://emeritus.org/blog/entrepreneurship-to-entrepreneurship-skills/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
CO1	Identify the various skills of an entrepreneur	K1
CO2	Turn ideas into business opportunities	K2
CO3	Do feasibility study before starting a business	K3
CO4	Identify the sources of funds for funding a project	K4
CO5	Develop an understanding about the Government schemes	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UCC14SE01		Skill Enhancement Course - 1 (Non Major Elective): Entrepreneurship Skills							2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	3	2	1	3	2	3	2	3	2.5
CO2	2	3	3	2	2	2	3	2	1	3	2.3
CO3	3	2	3	2	2	3	2	2	2	2	2.3
CO4	3	3	2	2	2	3	3	3	2	3	2.6
CO5	2	3	3	2	1	3	3	2	2	3	2.4
CO6	2	3	3	2	1	3	3	2	2	3	2.4
Mean overall Score											2.4 (High)

<b>PROGRAMME PATTERN</b>			
<b>M. Com. CA</b>			
<b>Course Code</b>	<b>Title of the Course</b>	<b>Hours</b>	<b>Title</b>
23PCC1CC01	<b>Core Course - 1:</b> Business Finance	6	5
23PCC1CC02	<b>Core Course - 2:</b> Digital Marketing	6	5
23PCC1CC03	<b>Core Course - 3:</b> Banking and Insurance	3	2
23PCC1CP01	<b>Core Practical - 1:</b> Digital Marketing	3	2
23PCC1ES01	<b>Elective - 1:</b> Industry 4.0	5	3
23PCC1ES02	<b>Elective - 2:</b> Enterprise Resource Planning	5	3
23PCC1AE01	<b>Ability Enhancement Course:</b> Advanced Excel	2	1
	<b>Total</b>	<b>30</b>	<b>21</b>



Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PCC1CC01	Core Course - 1: Business Finance	6	5

Course Objectives
To outline the fundamental concepts in finance
To estimate and evaluate risk in investment proposals
To evaluate leasing as a source of finance and determine the sources of start-up financing
To examine cash and inventory management techniques
To appraise capital budgeting techniques for MNCs

#### **UNIT I: Introduction to Business Finance and Time value of money (18 hours)**

Business Finance: Meaning, Objectives, Scope -Time Value of money: Meaning, Causes – Compounding – Discounting – Sinking Fund Deposit Factor – Capital Recovery Factor – Multiple Compounding– Effective rate of interest – Doubling period (Rule of 69 and Rule of 72) – Practical problems.

#### **UNIT II : Risk Management (18 hours)**

Risk and Uncertainty: Meaning – Sources of Risk – Measures of Risk – Measurement of Return – General pattern of Risk and Return – Criteria for evaluating proposals to minimise Risk (Single Asset and Portfolio) – Methods of Risk Management – Hedging currency risk.

#### **UNIT III: Start-up Financing and Leasing (18 hours)**

Start-up Financing: Meaning, Sources, Modes (Bootstrapping, Angel investors, Venture capital fund) - Leasing: Meaning – Types of Lease Agreements – Advantages and Disadvantages of Leasing – Financial evaluation from the perspective of Lessor and Lessee.

#### **UNIT IV: Cash, Receivable and Inventory Management (18 hours)**

Cash Management: Meaning, Objectives and Importance – Cash Cycle – Minimum Operating Cash – Safety level of cash – Optimum cash balance - Receivable Management: Meaning – Credit policy – Controlling receivables: Debt collection period, Ageing schedule, Factoring – Evaluating investment in accounts receivable - Inventory Management: Meaning and Objectives – EOQ with price breaks – ABC Analysis.

#### **UNIT V: Multi National Capital Budgeting (18 hours)**

Multi National Capital Budgeting: Meaning, Steps involved, Complexities, Factors to be considered – International sources of finance – Techniques to evaluate multi-national capital expenditure proposals: Discounted Pay Back Period, NPV, Profitability Index, Net

Profitability Index and Internal Rate of Return – Capital rationing -Techniques of Risk analysis in Capital Budgeting.

<b>Teaching Methodology</b>	Black Board , PPT and Case Study
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**Books for Study**

1. Maheshwari, S. N. (2019). *Financial management: Principles and practices* (15th ed.). Sultan Chand & Sons.
2. Khan, M. Y., & Jain, P. K. (2011). *Financial management: Text, problems and cases* (8th ed.). McGraw Hill Education.
3. Chandra, P. (2019). *Financial management: Theory and practice* (10th ed.). McGraw Hill Education.
4. Apte, P. G. (2020). *International financial management* (8th ed.). Tata McGraw Hill.

**Books for Reference**

1. Pandey, I. M. (2021). *Financial management* (12th ed.). Pearson India Education Services Pvt. Ltd.
2. Kulkarni, P. V. & Satyaprasad, B. G. (2015). *Financial management* (14th ed.). Himalaya Publishing House Pvt Ltd.
3. Rustagi, R. P. (2022). *Financial management: Theory, concept, problems* (6th ed.). Taxmann Publications Pvt. Ltd.
4. Rufus, A. G. et al., (2017). *Financial management* (1st ed.). Himalaya Publishing House Pvt Ltd.

**Web Sources**

1. <https://resource.cdn.icai.org/66674bos53808-cp8.pdf>
2. <https://resource.cdn.icai.org/66677bos53808-cp10u2.pdf>
3. <https://resource.cdn.icai.org/66592bos53773-cp4u5.pdf>
4. <https://resource.cdn.icai.org/65599bos52876parta-cp16.pdf>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful completion of this course the students will be able to	
CO1	enlighten the basic concepts of Business Finance	K1
CO2	extract and determine Time value of money and Capital budgeting tools	K2
CO3	discover lease finance and other sources of finance for start-ups	K3
CO4	illustrate cash receivable and inventory management techniques	K4
CO5	evaluate techniques of long term investment decision incorporating risk factor	K5
CO6	develop the tools for business finance decision	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PCC1CC01		Core Course - 1: Business Finance							6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of Cos
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	2	1	3	3	2	1	2	2.2
CO2	2	2	3	1	3	2	3	2	2	2	2.2
CO3	2	2	3	2	3	2	3	2	3	2	2.4
CO4	1	2	3	2	1	2	3	2	2	2	2.0
CO5	3	3	2	2	1	2	3	3	1	2	2.2
CO6	2	3	3	2	3	2	3	2	2	2	2.4
Mean overall Score											2.23 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PCC1CC02	Core Course - 2: Digital Marketing	6	5

Course Objectives
To assess the evolution of digital marketing
To appraise the dimensions of online marketing mix
To infer the techniques of digital marketing
To analyse online consumer behaviour
To interpret data from social media and to evaluate game based marketing

### **UNIT I: Introduction to Digital Marketing (9 Hours)**

Digital Marketing – Transition from traditional to digital marketing – Rise of internet – Growth of e-concepts – Growth of e-business to advanced e-commerce – Emergence of digital marketing as a tool – Digital marketing channels – Digital marketing applications, benefits and limitations – Factors for success of digital marketing – Emerging opportunities for digital marketing professionals.

### **UNIT II: Online marketing mix (9 Hours)**

Online marketing mix – E-product – E-promotion – E-price – E-place – Consumer segmentation – Targeting – Positioning – Consumers and online shopping issues – Website characteristics affecting online purchase decisions – Distribution and implication on online marketing mix decisions.

### **UNIT III: Digital media channels (9 Hours)**

Digital media channels – Search engine marketing – ePR – Affiliate marketing – Interactive display advertising – Opt-in-email marketing and mobile text messaging, Invasive marketing – Campaign management using – Facebook, Twitter, Corporate Blogs – Advantages and disadvantages of digital media channels – Metaverse marketing.

### **UNIT IV: Online consumer behavior (9 Hours)**

Online consumer behavior – Cultural implications of key website characteristics – Dynamics of online consumer visit – Models of website visits – Web and consumer decision making process – Data base marketing – Electronic consumer relationship management – Goals – Process – Benefits – Role – Next generation CRM.

### **UNIT V: Analytics and Gamification (9 Hours)**

Digital Analytics – Concept – Measurement framework – Demystifying web data - Owned social metrics – Measurement metrics for Facebook, Twitter, YouTube, Slide Share, Pinterest, Instagram, Snapchat and LinkedIn – Earned social media metrics - Digital brand analysis – Meaning – Benefits – Components – Brand share dimensions – Brand audience dimensions – Market influence analytics – Consumer generated media and opinion leaders – Peer review – Word of mouth – Influence analytics – Mining

consumer generated media – Gamification and game based marketing – Benefits – Consumer motivation for playing online games.

<b>Teaching Methodology</b>	<b>PPT, Videos and Demonstration models</b>
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### **Books for Study**

1. Bhatia, P. S. (2019). *Fundamentals of digital marketing* (2nd ed.). Pearson Education Pvt Ltd.
2. Chaffey, D & Ellis-Chadwick, F. (2019). *Digital marketing*. Pearson Education Pvt Ltd.
3. Hemann, C. & Burbary, K. (2019). *Digital marketing analytics*. Pearson Education Pvt Ltd.
4. Gupta, S. (2022). *Digital marketing* (3rd ed.). McGraw Hill Publications.
5. Upadhyay, K. C. (2021). *Digital marketing: Complete digital marketing tutorial*. Notion Press.
6. Branding, M. (2021). *Digital marketing*. Empire Publications India Private Ltd.

### **Books for Reference**

1. Ahuja, V. (2016). *Digital marketing*. Oxford University Press.
2. Deiss, R. & Henneberry, R. (2017). *Digital marketing*. John Wiley & Sons Inc. Hoboken.
3. Charlesworth, A. (2014). *Digital marketing - A practical approach*. Routledge.
4. Kingsnorth, S. (2022). *Digital marketing strategy: An integrated approach to online marketing*. Kogan Page Ltd.
5. Moutusy, M. (2022). *Digital marketing* (2nd ed.). Oxford University Press.

### **Web Sources**

1. <https://www.digitalmarketer.com/digital-marketing/assets/pdf/ultimate-guide-to-digital-marketing.pdf>
2. <https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/educational-technologies/all/gamification-and-game-based-learning>
3. <https://journals.ala.org/index.php/ltr/article/download/6143/7938>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful completion of this course the students will be able to	
CO1	explain the dynamics of digital marketing	K1
CO2	examine online marketing mix	K2
CO3	compare digital media channels	K3
CO4	interpret online consumer behavior	K4
CO5	analyse social media data	K5
CO6	design the Digital Branding and Marketing	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PCC1CC02		Core Course - 2: Digital Marketing							6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of Cos
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	3	2	1	3	2	3	2	3	2.5
CO2	2	3	3	2	2	2	3	2	1	3	2.3
CO3	3	2	3	2	2	3	2	2	2	2	2.3
CO4	3	3	2	2	2	3	3	3	2	3	2.6
CO5	2	3	3	2	1	3	3	2	2	3	2.4
CO6	2	3	3	2	1	3	3	2	2	3	2.4
Mean overall Score											2.4 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PCC1CP01	Core Practical - 1: Digital Marketing	3	2

Course Objectives
To assess the evolution of digital marketing
To appraise the dimensions of online marketing mix
To infer the techniques of digital marketing
To analyse online consumer behaviour
To interpret data from social media and to evaluate game based marketing

### Course Units

1. Digital Marketing Channels
2. Applications in Digital Marketing
3. SEO Marketing
4. Email Advertising
5. Online Marketing:

E-Product, E-Promotion-Price, E-Place

6. Websites, online Shopping
7. Digital Media Channels:

Facebook, Twitter, Corporate blogs

8. Mobile / Web Marketing

YouTube, Slide share, Pinterest, Instagram, Snapchat, LinkedIn

Teaching Methodology	Practical Lab
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### Books for Study

7. Bhatia, P. S. (2019). *Fundamentals of digital marketing* (2nd ed.). Pearson Education Pvt Ltd.
8. Chaffey, D & Ellis-Chadwick, F. (2019). *Digital marketing*. Pearson Education Pvt Ltd.

9. Hemann, C. & Burbary, K. (2019). *Digital marketing analytics*. Pearson Education Pvt Ltd.
10. Gupta, S. (2022). *Digital marketing* (3rd ed.). McGraw Hill Publications.
11. Upadhyay, K. C. (2021). *Digital marketing: Complete digital marketing tutorial*. Notion Press.
12. Branding, M. (2021). *Digital marketing*. Empire Publications India Private Ltd.

#### Books for Reference

6. Ahuja, V. (2016). *Digital marketing*. Oxford University Press.
7. Deiss, R. & Henneberry, R. (2017). *Digital marketing*. John Wiley & Sons Inc. Hoboken.
8. Charlesworth, A. (2014). *Digital marketing - A practical approach*. Routledge.
9. Kingsnorth, S. (2022). *Digital marketing strategy: An integrated approach to online marketing*. Kogan Page Ltd.
10. Moutusy, M. (2022). *Digital marketing* (2nd ed.). Oxford University Press.

#### Web Sources

4. <https://www.digitalmarketer.com/digital-marketing/assets/pdf/ultimate-guide-to-digital-marketing.pdf>
5. <https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/educational-technologies/all/gamification-and-game-based-learning>
6. <https://journals.ala.org/index.php/ltr/article/download/6143/7938>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful completion of this course the students will be able to	
CO1	explain the dynamics of digital marketing	K1
CO2	examine online marketing mix	K2
CO3	compare digital media channels	K3
CO4	interpret online consumer behavior	K4
CO5	analyse social media data	K5
CO6	design the Digital Branding and Marketing	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PCC1CP01		Core Practical - 1: Digital Marketing							3	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of Cos
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	3	2	1	3	2	3	2	3	2.5
CO2	2	3	3	2	2	2	3	2	1	3	2.3
CO3	3	2	3	2	2	3	2	2	2	2	2.3
CO4	3	3	2	2	2	3	3	3	2	3	2.6
CO5	2	3	3	2	1	3	3	2	2	3	2.4
CO6	2	3	3	2	1	3	3	2	2	3	2.4
Mean overall Score											2.4 (High)



Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PCC1CC03	Core Course - 3: Banking and Insurance	3	2

Course Objectives
To understand the evolution of new banking era
To explore the digital banking techniques
To analyse the role of insurance sectors
To evaluate the mechanism of customer service in insurance and the relevant regulations
To examine the risk and its impact on banking and insurance industry

### UNIT I: Introduction to Banking

(18 hours)

Banking: Brief History of Banking - Rapid Transformation in Banking: Customer Shift – Fin tech Overview – Fin tech Outlook - The Financial Disruptors - Digital Financial Revolution - New Era of Banking Digital Banking – Electronic Payment Systems– Electronic Fund Transfer System – Electronic Credit and Debit Clearing – NEFT – RTGS –VSAT–SFMS–SWIFT.

### UNIT II : Contemporary Developments in Banking

(18 hours)

Distributed Ledger Technology – Block chain: Meaning - Structure of Block Chain - Types of Block Chain - Differences between DLT and Block chain - Benefits of Block chain and DLT - Unlocking the potential of Block chain –Crypto currencies, Central Bank Digital Currency (CBDC) - Role of DLT in financial services - AI in Banking: Future of AI in Banking - Applications of AI in Banking - Importance of AI in banking - Banking reimaged with AI. Cloud banking - Meaning - Benefits in switching to Cloud Banking.

### UNIT III: Indian Insurance Market

(18 hours)

History of Insurance in India – Definition and Functions of Insurance–Insurance Contract – Indian Insurance Market – Reforms in Insurance Sector – Insurance Organization – Insurance organization structure. Insurance Intermediaries: Insurance Broker – InsuranceAgent-SurveyorsandLossAssessors-ThirdPartyAdministrators(HealthServices) – Procedures-Code of Conduct.

### UNIT IV: Customer Services in Insurance

(18 hours)

Customer Service in Insurance – Quality of Service-Role of Insurance Agents in Customer Service-Agent's Communication and Customer Service –Ethical Behavior in Insurance – Grievance Redressal System in Insurance Sector –Integrated Grievance Management System- Insurance Ombudsman - Insurance Regulatory and Development Authority of India Act (IRDA) – Regulations and Guidelines.

### UNIT V: Risk Management

(18 hours)

Risk Management and Control in banking and insurance industries – Methods of Risk Management – Risk Management by Individuals and Corporations – Tools for Controlling Risk.

<b>Teaching Methodology</b>	Videos, PPT and Creation of Models
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### Books for Study

1. Indian Institute of Banking and Finance (2021) *Principles & practices of banking* (5th ed.). Macmillan Education India Pvt. Ltd.
2. Mishra, M. N., & Mishra, S. B. (2016). *Insurance principles and practice* (22nd ed.). S. Chand & Company Ltd.
3. Vaughan, E., & Vaughan, T. M. (2013). *Fundamentals of risk and insurance* (11th ed.). Wiley & Sons.
4. Lynn, T. et al., (2018). *Disrupting fFinance: FinTech and strategy in the 21st century* (Palgrave Studies in Digital Business & Enabling Technologies), Macmillan Publishers.

### Books for Reference

1. Sundharam, K. P. M., & Varshney, P. N. (2020). *Banking theory, law and practice* (20th ed.). Sultan Chand & Sons.
2. Gordon. & Natarajan. (2022). *Banking theory, law and practice* (9th ed.). Himalaya Publishing House Pvt Ltd.
3. Gupta, P. K. (2021). *Insurance and risk management* (6th ed.). Himalaya Publishing House Pvt Ltd.
4. Chishti, C., & Barberis, J.(2016). *The fintech book: The financial technology handbook for investors, entrepreneurs and visionaries*. John Wiley & Sons.

### Web Sources

1. <https://corporatefinanceinstitute.com/resources/knowledge/finance/fintech-financial-technology>
2. [https://mrcet.com/downloads/digital\\_notes/CSE/IV%20Year/CSE%20B.TECH%20IV%20YEAR%20II%20SEM%20BCT%20\(R18A0534\)%20NOTES%20Final%20PDF.pdf](https://mrcet.com/downloads/digital_notes/CSE/IV%20Year/CSE%20B.TECH%20IV%20YEAR%20II%20SEM%20BCT%20(R18A0534)%20NOTES%20Final%20PDF.pdf)
3. [https://www.irdai.gov.in/ADMINCMS/cms/frmGeneral\\_Layout.aspx?page=PageNo108&flag=1](https://www.irdai.gov.in/ADMINCMS/cms/frmGeneral_Layout.aspx?page=PageNo108&flag=1)

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	Understand the transformations in the new banking era.	
CO1	acquire knowledge on the modern techniques of digital banking	K1
CO2	apply the reforms and grievance redressal in insurance sectors	K2
CO3	examine the regulatory mechanism	K3
CO4	assess risk mitigation strategies	K4
CO5	formulate the tools for controlling risks	K5
CO6		K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PCC1CC03		Core Course - 3: Banking and Insurance							3	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of Cos
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	2	1	3	3	2	1	2	2.2
CO2	2	2	3	1	3	2	3	2	2	2	2.2
CO3	2	2	3	2	3	2	3	2	3	2	2.4
CO4	1	2	3	2	1	2	3	2	2	2	2.0
CO5	3	3	2	2	1	2	3	3	1	2	2.2
CO6	2	3	3	2	3	2	3	2	2	2	2.4
Mean overall Score											2.23 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PCC1ES01	Elective - 1: Industry 4.0	5	3

Course Objectives
To impart basic idea in Industry 4.0
To Introduce the basic principles, techniques, Applications and tools of Artificial Intelligence
To understand the essential of Big Data in Industry 4.0
To understand the various Application areas of IOT
To understand Framework for aligning Education with Industry 4.0

#### **UNIT I: Introduction**

**(15 Hours)**

Industry: Meaning, Types - Industrial Revolution: Industrial Revolution 1.0 to 4.0: Meaning, Goals and Design Principles - Technologies of Industry 4.0 - Big Data – Artificial Intelligence (AI) – Industrial Internet of Things - Cyber Security – Cloud – Augmented Reality.

#### **UNIT II: Artificial Intelligence**

**(15 Hours)**

Artificial Intelligence (AI): Need, History and Foundations -The AI - environment - Societal Influences of AI – Application Domains and Tools - Associated Technologies of AI - Future prospects of AI – Challenges of AI.

#### **UNIT III: Big Data**

**(15 Hours)**

Evolution - Data Evolution - Data : Terminologies - Essential of Big Data in Industry 4.0 - Big Data Merits and Limitations - Big Data Components : Big Data Characteristics - Big Data Processing Frameworks - Big Data Tools - Big Data Applications - Big Data Domain Stack : Big Data in Data Science – Big Data in IoT - Big Data in Machine Learning - Big Data in Databases - Big Data Use cases: Big Data in Social Causes - Big Data for Industry - Big Data Roles - Learning Platforms; Internet of Things (IoT) : Introduction to IoT – Architecture of IoT Technologies for IoT - Developing IoT Applications - Applications of IoT - Security in IoT.

#### **UNIT IV: Applications of IoT**

**(15 Hours)**

IoT in Manufacturing – Healthcare – Education – Aerospace and Defence – Agriculture – Transportation and Logistics – Impact of Industry 4.0 on Society: Impact on Business, Government, People - Tools for Artificial Intelligence - Big Data and Data Analytics - Virtual Reality - Augmented Reality –IoT - Robotics.

**UNIT V: Industry 4.0****(15 Hours)**

Education 4.0 – Curriculum 4.0 – Faculty 4.0 – Skills required for Future - Tools for Education – Artificial Intelligence Jobs in 2030 – Jobs 2030 - Framework for aligning Education with Industry 4.0.

<b>Teaching Methodology</b>	PPT and E-Videos
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**Books for Study**

1. Acharya, S. J., & Chellappan, S. (2019). *Big Data and analytics* (2nd ed.). Wiley Publication.
2. Russel, S., & Norvig, P. (2010). *Artificial intelligence: A modern approach* (3rd ed.). Prentice Hall.
3. Raj, P., & Raman, A. C. (2017). *The internet of things: Enabling technologies, platforms, and use cases*. Auerbach Publications.

**Books for Reference**

1. Hurwitz, J., et al., (n.d). *Big Data for dummies*. John Wiley & Sons, Inc.
2. Nilsson. (2000). *Artificial intelligence: A new synthesis*. Nils J Harcourt Asia PTE Ltd.

**Web Sources**

1. [https://sist.sathyabama.ac.in/sist\\_coursematerial/uploads/SEEA1403.pdf](https://sist.sathyabama.ac.in/sist_coursematerial/uploads/SEEA1403.pdf)
2. [https://library.oapen.org/bitstream/handle/20.500.12657/43836/external\\_content.pdf?sequence=1](https://library.oapen.org/bitstream/handle/20.500.12657/43836/external_content.pdf?sequence=1)
3. [https://www.vssut.ac.in/lecture\\_notes/lecture1428643004.pdf](https://www.vssut.ac.in/lecture_notes/lecture1428643004.pdf)

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful completion of this course the students will be able to	
CO1	identify the changes from industry 1.0 to 4.0	K1
CO2	understand the challenges and future prospects of applying artificial intelligence	K2
CO3	apply big data for industrial growth and development	K3
CO4	analyze the implementation of IoT in various sectors like Manufacturing, Healthcare, Education, Aerospace and Defence	K4
CO5	evaluate why education has to be aligned with industry 4.0	K5
CO6	combine the various technologies of Industry 4.0	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PCC1ES01		Elective - 1: Industry 4.0							5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of Cos
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	1	2	3	3	2	1	2	2.2
CO2	2	3	3	2	1	3	3	3	2	2	2.4
CO3	2	3	3	2	2	2	3	3	2	2	2.4
CO4	3	3	3	1	2	3	3	3	2	3	2.6
CO5	2	3	3	1	2	2	3	3	2	1	2.3
CO6	2	3	3	2	2	2	3	3	2	2	2.4
Mean overall Score											2.38 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PCC1ES02	Elective - 2: Enterprise Resource Planning	5	3

Course Objectives
To learn the history and growth of ERP
To understand the risks involved while using ERP
To gain knowledge on the various ERP technologies
To learn the dynamics of ERP marketplace
To choose appropriate ERP solutions or packages

#### **UNIT I: Enterprise an Overview (15 Hours)**

Business Functions and Business Processes - Integrated Management Information - Business Modeling - Integrated Data Model. Business Processes: Major Business Processes. Introduction to ERP: Common ERP Myths - A Brief History of ERP - Reasons for the Growth of ERP Market - Advantages of ERP.

#### **UNIT II: Risk of ERP (15 Hours)**

People Issues - Process Risks - Technological Risks - Implementation Issues-Operation and Maintenance Issues - Unique Risks of ERP Projects - Managing Risks on ERP Projects. Benefits of ERP: Information Integration - Reduction of Lead Time - On-Time Shipment - Reduction in Cycle Time - Improved Resource Utilization - Better Customer Satisfaction- Improved Supplier Performance - Increased Flexibility - Reduced Quality Costs - Better Analysis and Planning Capabilities - Improved Information Accuracy and Decision Making Capability - Use of Latest Technology.

#### **UNIT III: ERP and related Technologies (15 Hours)**

Business Process Reengineering (BPR) - Business Intelligence (BI) - Business Analytics (BA) - Data Warehousing- Data Mining - On - Line Analytical Processing (OLAP) - Product Life Cycle Management (PLM) - Supply Chain Management (SCM) - Customer Relationship Management (CRM) - Geographic Information Systems (GIS) - Intranets and Extranets. Advanced Technology and ERP Security: Technological Advancements - Computer Crimes - ERP and Security - Computer Security - Crime and Security.

#### **UNIT IV: ERP Market Place and Market place dynamics (15 Hours)**

Market Overview - ERP Market Tiers. Market Place Dynamics - Industry - Wise ERP Market Share - ERP: The Indian Scenario. Business Modules of an ERP Package: Functional Modules of ERP Software: Integration of ERP, Supply Chain, and Customer Relationship Applications.

**UNIT V: ERP Implementation****(15 Hours)**

Benefits of Implementing ERP - Implementation Challenges. ERP Implementation Life Cycle: Objectives of ERP Implementation - Different Phases of ERP Implementation- Reasons for ERP Implementation Failure. ERP Package Selection: ERP Package Evaluation and Selection - The Selection Process - ERP Packages: Make or Buy

<b>Teaching Methodology</b>	Video, PPT, LCD demonstration
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**Books for Study**

1. Leon, A. (2019). *Enterprise resource planning* (4th ed.). Tata McGraw-Hill.
2. Vaman, J. N. (2008). *ERP in practice*. Tata McGraw Hill.
3. Jaiswal, M., & Vanapalli, G. (2009). *ERP*. McMillan India.

**Books for Reference**

1. Magal, S. P., & Word, J. (2012). *Essentials of business process and information System*. Wiley India.
2. Summer. (2008). *ERP*. Pearson Education.
3. Grag, V. K., & Venkitakrishnan, K. N.(2006). *ERP- Concepts and practice*. Prentice Hall of India.

**Web Sources**

1. [https://mrcet.com/downloads/digital\\_notes/CSE/III%20Year/ERP%20Digital%20notes.pdf](https://mrcet.com/downloads/digital_notes/CSE/III%20Year/ERP%20Digital%20notes.pdf)
2. [https://mrcet.com/downloads/digital\\_notes/ME/III%20year/ERP%20Complete%20Digital%20notes.pdf](https://mrcet.com/downloads/digital_notes/ME/III%20year/ERP%20Complete%20Digital%20notes.pdf)
3. [https://www.vssut.ac.in/lecture\\_notes/lecture1428643004.pdf](https://www.vssut.ac.in/lecture_notes/lecture1428643004.pdf)



Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful completion of this course the students will be able to	
CO1	recall the history and growth of ERP	K1
CO2	appraise the risks involved while using ERP	K2
CO3	select from among various ERP technologies	K3
CO4	analyze the dynamics of ERP marketplace	K4
CO5	distinguish and choose appropriate ERP solutions or packages	K5
CO6	evaluate ERP package selection and Implementation	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PCC1ES02		Elective - 2: Enterprise Resource Planning							5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of Cos
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	1	1	2	3	2	2	2	3	3	2.1
CO2	2	3	1	2	2	2	3	3	2	2	2.2
CO3	1	2	3	2	3	2	3	3	2	2	2.3
CO4	2	2	2	3	3	3	3	3	2	2	2.5
CO5	2	2	3	2	2	2	3	3	3	2	2.4
CO6	2	3	3	3	2	3	3	3	3	2	2.7
Mean overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PCC1AE01	<b>Ability Enhancement Course:</b> Advanced Excel	2	1

Course Objectives
To know the Statistical concepts using functions
To learn how to compute large amount of data quickly using data analysis tools
To gain knowledge on data visualization in problem solving
To understand the concept of Macros
To acquire knowledge and skills on VBA

#### Exercises

1. Text and Statistical Functions
2. Nested Control Structures
3. Data consolidation
4. Sorting and Advanced Filters
5. VLOOKUP function
6. Data Tables - What –IF analysis
7. PIVOT Table creation and Report generation
8. Creation and manipulation of Gantt Chart
9. Macros
10. VBA

<b>Teaching Methodology</b>	Lab demonstration
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#### Books for Study

1. Mehta, M. S. (2021). *Microsoft Excel professional 2021 guide*. BPB Publications.

#### Books for Reference

4. Alexander, M., & Walkenbach, J. (2022). *Microsoft Excel dashboards and reports* (2nd ed.). Wiley India Pvt. Ltd.
5. McFedries, P. ., & Harvey, G. (2021). *Excel all-in-one for dummies* (2nd ed.). Wiley India Pvt. Ltd.
6. Nigam, M. (2019). *Data analysis with Excel* (2nd ed.). BPB Publications.

#### Web Sources

1. <https://www.goskills.com/Excel>
2. <https://www.udemy.com/course/microsoft-excel-2013-from-beginner-to-advanced-and-beyond>
3. <https://www.coursera.org/learn/excel-basics-data-analysis-ibm?>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful completion of this course the students will be able to	
CO1	identify different Statistical methods for solving problems	K1
CO2	understand the Data analysis methods for extracting data	K2
CO3	apply advanced filters in table, and present it in visual form	K3
CO4	analyse the problem through Data Consolidation and Grouping	K4
CO5	evaluate the problem by applying Data tools	K5
CO6	create and run VBA codes	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PCC1AE01		Ability Enhancement Course: Advanced Excel							2	1
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of Cos
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	1	1	2	3	2	2	2	3	3	2.1
CO2	2	3	1	2	2	2	3	3	2	2	2.2
CO3	1	2	3	2	3	2	3	3	2	2	2.3
CO4	2	2	2	3	3	3	3	3	2	2	2.5
CO5	2	2	3	2	2	2	3	3	3	2	2.4
CO6	2	3	3	3	2	3	3	3	3	2	2.7
Mean overall Score											2.3 (High)

Department of Counselling Psychology

St. Joseph's College (Autonomous)

Minutes of Board of Studies Meeting

21 July 2023

Members Present

1. Dr. J. O. Jeryda Gnanajane Elijo (External Member)

Associate Professor

Dept. of Social Work

Bharathidasan University

Tiruchirappalli – 620 024

2. Rev. Dr. Emmanuel Arockiam, S.J.

3. Dr. John Balaiah

4. Dr. V. Suganthi

Rev. Dr. Emmanuel Arockiam invited the participants to spend a few moments in silent prayer, after which he welcomed the participants to the Board of Studies Meeting. He also introduced the Expert committee member and the new lecturer Dr. Suganthi to each other.

After explaining the specific purpose of the meeting, Rev. Dr. Emmanuel Arockiam explained that the TANCHE syllabus will be followed for the new batch of the First-year students. He mentioned that though many of the courses recommended by TANCHE are similar to the syllabus in use at our department, a few changes regarding the credits and course codes, and the content of the courses have to be revised and modified. Since some revision could be done to be more relevant and effective in our curriculum, he asked the members for their valuable opinions.

Suggestions were: Since Advanced General Psychology and Research Methodology are to be offered for two semesters, there will not be enough time for some important courses to be offered as core or elective courses. Therefore, depending on the need of the students, a few courses such as Organizational Psychology and Forensic Psychology could be offered in the form of seminars and workshops.

Since the Course on Supervision, which is important to the students during and after their clinical practicum, is not found in TANCHE, it could be included along with Case Study during the IV semester.

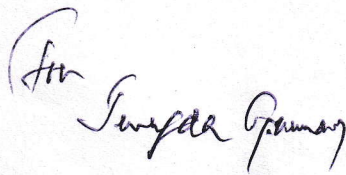
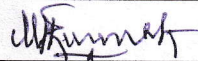
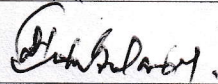
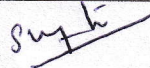
Dr. Jeryda suggested that some counselling centers could be opened in collaboration with SHEPHERD as part of the extension service of the Department and the College.

Dr. Emmanuel suggested that our program gives importance to both personal development and professional development of our students, personal counselling to our students had been part of the program so far, the personal enrichment could include also personal counselling for the first-year students.

It was mentioned that the department could do some extension work. Dr. Emmanuel mentioned that a new initiative of Save Students is undertaken with the help of the Headmasters of various schools in and around Trichy. This program is mainly to train and motivate the school administration and teachers to help the students regarding their mental health and addictive behavior.



**BOARD OF STUDIES MEETING HELD ON 21.07.2023****DEPARTMENT OF COUNSELLING PSYCHOLOGY****St. JOSEPH'S COLLEGE(AUTONOMOUS)****TIRUCHIRAPPALLI -620002**

<b>S. No.</b>	<b>Name and address</b>	<b>Signature</b>
1.	Dr. J.O. Jeryda Gnanajane Elijo, Associate Professor, Department of Social Work, Bharathidasan University, Tiruchirappalli – 620 024 (University Representative)	
2.	Dr. Synthiya Mary Mathew, Coordinator for M.Sc. Psychology and PGDCP, Lady Doak College, Madurai Kamaraj University, Madurai (Subject Expert)	
3.	Rev. Dr. Emmanuel Arockiam, SJ,	
4.	Dr. A. John Balaiah	
5.	Dr. V. Suganthi	

<b>PROGRAMME PATTERN</b>			
<b>M.SC. COUNSELLING PSYCHOLOGY</b>			
<b>Course Code</b>	<b>Title of the Course</b>	<b>Hours</b>	<b>Credits</b>
23PCP1CC01	<b>Core Course – 1:</b> Advanced General Psychology	6	5
23PCP1CC02	<b>Core Course – 2:</b> Developmental Psychology	6	5
23PCP1CC03	<b>Core Course – 3:</b> Theories of Counselling & Practice-1	6	4
23PCP1ES01	<b>Elective - 1:</b> Research Methodology	5	3
23PCP1ES02	<b>Elective - 2:</b> Positive Psychology	5	3
23PCP1AE01	<b>Ability Enhancement Course:</b> Personality Enrichment	2	1
	<b>Total</b>	<b>30</b>	<b>21</b>

Semester	Course Code	Title of the Course	Hours	Credits
1	23PCP1CC01	<b>Core Course – 1:</b> Advanced General Psychology	6	5

Course Objectives
This paper enables students to learn psychological processes in detail and to appreciate different approaches to psychological processes

### **UNIT I: Definition of psychology (15 Hours)**

Sub-fields of psychology – Experimental, Biological, Personality, Social, Clinical and Counseling, Development and quantitative psychology - Methods in psychology – Survey, Case Study, Naturalistic, Observation, Experiment.

### **UNIT II: The Nervous System (15 Hours)**

Communication in the Nervous system and interaction between neuron- Neurotransmitters and its functions - The Spinal cord and its functions - the Brain and its functions

### **UNIT III: The Five Senses (15 Hours)**

– its characteristics - Definition of perception - Features of perception - Approaches to perception - Constructional view of perception- Ecological view of perception  
-Psychophysics. Attention – Determinants of attention - Selective, focused and divided attention.

### **UNIT IV: Definition of Learning (15 Hours)**

- Classical Learning - Instrumental and operant conditioning Learning -Observational Learning - Cognitive Process in Learning.

### **UNIT V: Types of Memory (15 Hours)**

Stages of Memory – Sensory Memory – Short-term Memory and Long-term Memory  
– Causes of forgetting – Constructing Memory – Improving Memory.

<b>Teaching Methodology</b>	Chalk & Talk, Videos, PPTs, Demonstration, Case Studies and Field Visit
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## Books for Reference

1. Bougles, A., Bernstein, E. J. Roy, T. K. S., & Christopher D. W. (1991). *Psychology* (2<sup>nd</sup> ed.). Muffin Company.
2. Clifford, T., Morgan, Richard A. K., John, R. W., & John, S. (1996). *Introduction to Psychology*, (7<sup>th</sup> ed.). McGraw-Hill International Edition.
3. Baron, R.A. (1995). *Psychology*. College Publishers.
4. Lefton, L.A. (1985). *Psychology*. Allyn & Bacon.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	be familiar with the names of the pioneers and their contributions to the development of psychology	K1
CO2	understand the roots of psychology	K2
CO3	apply the concepts and theories of psychology	K3
CO4	analyze how people learn, remember and improve their motivation	K4
CO5	evaluate various theories of perception, and learning and the connection between emotions and motivation	K5
CO6	evaluate various theories of perception, and learning and the connection between emotions and motivation	K6

Relationship Matrix												
Semester	Course code		Title of the Course								Hours	Credits
1	23PCPIC01		Core Course – 1: Advanced General Psychology								6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	3	2	3	2	3	2	2	2	2	2.4	
CO2	2	2	2	3	2	2	3	2	2	2	2.3	
CO3	2	2	3	2	3	3	2	3	2	2	2.3	
CO4	2	2	3	3	2	2	3	2	2	2	2.3	
CO5	2	2	3	2	2	2	3	3	3	3	2.5	
CO6	2	2	2	2	3	3	2	3	2	2	2.3	
Mean overall Score											2.3 (High)	

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PCP1CC02	Core Course – 2: Developmental Psychology	6	5

Course Objectives
To introduce the students the different aspects of psychological development over the life span

## **UNIT I (15 Hours)**

Basic Concepts – Aspects of Development, Life Span periods – Methods – Non Experimental, Experimental - Stages of Development – Principles of Development – Prenatal period – Birth – Neonatal stage – First year of Life – Early childhood, Middle childhood – Adolescence, Adulthood and old age.

## **UNIT II (15 Hours)**

Physical Development – Motor Skills – Growth rate – Physical health during Adulthood, Physical fitness & energy – Motor functions in old age. Intellectual Development – Approaches: Psychometric, Piagetian and Information processing approach – Cognitive Development – Piaget's model – Language Acquisition and Development of language, Memory, Intelligence and Moral Development.

## **UNIT III (15 Hours)**

Personality and Social Development – Emotions – emergence of Self – Role of parents and siblings – peer group influence – Psychoanalytic, social learning and cognitive perspectives in the personality development – Emotional problems of childhood – identity crisis in adolescence, relationship with parents and peers, sexual identity- Teenage problems.

## **UNIT IV (15 Hours)**

Personality and Social issues in young adulthood - Parenthood – Career planning – Intimate relationship and personal life styles – work life – personal relationship in family and work life

## **UNIT V (15 Hours)**

Old age – Physical changes - Psychomotor functioning – Health & fitness – Health problems– Memory changes – Work and Retirement – Adjustment to Old age - Personal Relations in Late life – Death Bereavement – Purpose and meaning of life

Teaching Methodology	Chalk & Talk, Videos, PPTs, Demonstration, Case Studies and Field Visit
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### Books for Reference

1. Elizabeth, B., & Hurlock. *Developmental Psychology – A Life Span Approach*, (5<sup>th</sup> ed.). Tata McGraw-Hill Publishing Co. Ltd.
2. Papalia, Diane, E. (1992). *Human Development* (5<sup>th</sup> ed.). Tata McGraw-Hill Publishing Co. Ltd.
3. Zubek, J. P. and Solberg, P.A., (1954). *Human Development*. New York, McGraw Hill Book Co. Ltd.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	After the successful completion of this course, students will be able to	
CO1	define and explain human development from conception through very old age from physical, intellectual, social, emotional and psychological perspective	K1
CO2	understand the implications of major theories for understanding human development and the links to psychosocial theory	K2
CO3	identify the contributions of genetic factors to individual traits and genetic sources of abnormalities	K3
CO4	discover and analyze important milestones through the developmental stages of life	K4
CO5	prepare the students to plan, anticipate and cope with various stages of development through life	K5
CO6	explore and apply the integrative perspective for the analysis of human development	K6

Relationship Matrix											
Semester	Course code	Title of the Course									Credits
1	23PCP1CC02	Core Course - 2: Developmental Psychology									5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	3	3	3	2	2	2	2	2.5
CO2	2	2	2	3	3	2	2	2	2	2	2.3
CO3	3	3	2	2	3	3	2	2	2	2	2.4
CO4	3	3	2	2	3	2	3	2	2	2	2.5
CO5	3	3	1	3	3	2	3	3	2	2	2.5
CO6	2	2	2	3	3	2	2	2	2	2	2.3
Mean overall Score											2.4 (High)

Semester	Course Code	Title of the Course	Hours	Credits
1	23PCP1CC03	Core Course – 3: Theories of Counselling and Practice – 1	6	4

Course Objectives
To introduce the students the various theories in counselling and psychotherapy

## **UNIT 1 (15 Hours)**

Definition of Counselling and Psychotherapy, History of Counselling and Psychotherapy, Goals of Counselling, Counselling as a distinct Profession, Current trends in the 21<sup>st</sup> Century, Personal and Professional aspects of Counselling, Personality and Background of Counsellor, Personal qualities of the effective Counsellor, Attribution and Systematic framework of Counselling, Supervision, Ethico-legal aspects of Counselling.

## **UNIT II (15 Hours)**

Overview of Counselling Model- Stage I, Stage II and Stage III, Building the Helping relationship, Basic communication skills for Helping, Basic Communication Skills – I, Basic Empathy and Probing. Testing, Assessment and Diagnosis in Counselling; The role of Theories of Psychotherapy, The need for Cultural diversity and Psychotherapy Integration, Case Study.

## **UNIT III (15 Hours)**

Psychoanalytic and Psychodynamic Theories: Psychoanalytic Therapy, Key concepts of Sigmund Freud, Therapeutic process; Ego Psychology; Object Relations Theory; Self Psychology; Comparing and Contrasting Psychoanalytic and Psychodynamic Theories. Attachment Theory; Relational analysis; Brief Psychodynamic Therapy: Key concepts of Carl Jung, Jung's Theory of Personality, Personality types, Jungian Psychotherapy Research and Evaluation: Case Analysis

## **UNIT IV (15 Hours)**

Adlerian Psychotherapy: Brief overview, Key Concepts, the Therapeutic Process, Research and Evaluation: Case Analysis. Existential Therapy: Overview, Key Concepts in, Therapeutic Process, Research and Evaluation. Person-Centered Therapy: Overview, Key Concepts, Therapeutic Process, Research and Evaluation. Gestalt Therapy: Overview, Influence of Existential on Gestalt Therapy, Key Concepts in, Therapeutic Process, Research and Evaluation: Case Analysis.

**UNIT V****(15 Hours)**

Transactional Analysis: Brief Overview, Key Concepts, Therapeutic process, Research and Evaluation: Case Analysis. Reality or Choice Therapy: Brief Overview, Key Concepts, Therapeutic process, Research and Evaluation: Case Analysis.

<b>Teaching Methodology</b>	Chalk & Talk, Videos, PPTs, Demonstration, Case Studies and Field Visit
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**Books for Reference**

1. Brems, C. (2501). Basic skills in psychotherapy and counseling. Singapore.
2. Brooks/Cole. Corey, G. (1996). Theory and practice of counseling and psychotherapy (5th ed.). PacificGrove, CA: Thomson Brooks/ Cole.
3. Smith, E.J. (2516) Theories of Counselling and Psychotherapy: An Integrative Approach, 2<sup>nd</sup> Edition, Singapore, Sage Publications.

<b>Course Outcomes</b>		
<b>CO No.</b>	<b>CO-Statements</b>	<b>Cognitive Levels (K - Level)</b>
	On successful completion of this course, students will be able to	
<b>C01</b>	Enumerate the effective helping skills required for a professional Counsellor	<b>K1</b>
<b>C02</b>	Identify a deeper understanding of one's own interpersonal styles in a systematic way	<b>K2</b>
<b>C03</b>	Demonstrate the skills in the context of Counselling the Clients	<b>K3</b>
<b>C04</b>	Prioritize and become familiar with problematic behaviours and style in group	<b>K4</b>
<b>C05</b>	Summarize, how to start and how to end or terminate a group	<b>K5</b>
<b>C06</b>	Anticipate the requirement of mandated reporting when abuse is suspected and understand their obligations when suicidality has been identified	<b>K6</b>

<b>Relationship Matrix</b>											
Semester	Course code	Title of the Course								Hours	Credits
1	23PCP1CC03	Core Course – 3: Theories of Counselling and Practice – 1								6	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO 2	PSO3	PSO4	PSO5	
CO1	3	3	3	2	3	3	2	2	2	2	2.5
CO2	2	3	3	1	3	2	2	2	2	2	2.3
CO3	3	3	3	1	3	3	2	2	2	2	2.5
CO4	3	3	3	2	3	2	3	2	2	2	2.5
CO5	3	3	3	1	3	2	3	3	2	2	2.5
CO6	3	3	3	1	3	2	3	3	2	2	2.5
Mean overall Score											2.5 (High)

Semester	Course Code	Title of the Course	Hours	Credits
1	23PCP1ES01	Elective - 1: Research Methodology – I	5	3

Course Objectives
To enable the students to understand the basic concepts in behavioural research and also the application of various research design.

### UNIT I (15 Hours)

Science and common sense: Four methods of knowing – Aims and function of science, scientific approach in psychological research.

### UNIT II (15 Hours)

Research Methods: Laboratory experiments, Field experiments, observation, interview, questionnaire, semantic differential.

### UNIT III (15 Hours)

Definition and criteria of problem and hypotheses. Multivariate nature of behavioural research problems and hypotheses. Concepts and constructs, constitutive and operational definitions of constructs and variables, types of variables.

### UNIT IV (15 Hours)

Ex-post –facto research, survey research: research design: Meaning, Purpose and principles, Simple Randomized designs. Factorial designs.

### UNIT V (15 Hours)

Construction of achievement, abilities, attitudes and aptitudes tests, transformation of raw scores into standard scores; factor analysis - a procedure for identifying psychological constructs. Reliability and validity Types of reliability: Test retest reliability, Split-half reliability, Alternate form reliability, Internal consistency reliability and Scorer reliability. Types of validity: Face validity, Content validity, Construct validity and Criterion-related validity.

Teaching Methodology	Chalk & Talk, Videos, PPTs, Demonstration, Case Studies and Field Visit
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### Books for Reference

1. Kerlinger, F.N. (2000) *Foundations of behavioural research*. New Delhi: Surjeet publications.
2. Broota, K.D. (1992) *Experimental designs in Behavioural Research*. New Delhi: Wiley Eastern.
3. Cozby (2003). *Methods in Behavioural Research* (8<sup>th</sup> ed.), McGraw Hill.
4. Winer, B. J. (1971). *Statistical Principles in Experimental design*. New York, McGraw Hill

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	Remember the major concepts relevant to conducting independent research	K1
CO2	Gain understanding on the nature, strength and weakness of various research designs and measurement and data collection methods.	K2
CO3	Apply necessary critical thinking skills in order to evaluate different research approaches utilized in various sectors	K3
CO4	Analyze various Counselling Psychology issues to choose a range of quantitative and/or quantitative research techniques	K4
CO5	Evaluate how data are collected and interpreted in researches related to psychology	K5
CO6	Synthesize the knowledge about various research designs and practical issues including ethical and legal issues	K6

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23PCP1ES01	Elective - 1: Research Methodology – I								5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO 2	PSO3	PSO4	PSO5	
CO1	1	1	1	2	2	2	2	1	3	3	1.8
CO2	3	2	2	3	2	3	2	2	2	2	2.3
CO3	3	2	2	3	3	3	2	2	3	3	2.6
CO4	3	3	2	3	2	3	3	3	3	3	2.5
CO5	3	3	2	2	2	3	3	2	2	2	2.4
CO6	3	3	3	3	3	2	2	2	2	2	2.5
Mean overall Score											2.3 (High)



Semester	Course Code	Title of the Course	Hours	Credits
1	23PCP1ES02	Elective - 2: Positive Psychology	5	3

Course Objectives
To enable the students to understand the aims and scope of positive Psychology
To apply the basic concepts from the course to an analysis of their own lives and personal strength

### **UNIT I (15 Hours)**

Define Positive Psychology? Traditional psychology; positive psychology; goals, assumptions and definitions of positive psychology.

### **UNIT II (15 Hours)**

The Meaning and Measure of Happiness: Psychology of well-being, happiness, two traditions- subjective well-being: the hedonic basis of happiness; self-realization, the eudaimonic basis of happiness; comparing hedonic and eudemonic views of happiness. Happiness and the facts of Life: Happiness across the life span; gender and happiness; marriage and happiness; other facts of life.

### **UNIT III (15 Hours)**

Positive Emotions and Well- Being: Positive emotions, positive emotions and health resources; positive emotions and well- being; cultivating positive emotions. Positive Traits, personality, emotions and biology, positive beliefs.

### **UNIT IV (15 Hours)**

Personal Goals as Windows to Well-Being: The search for universal human motives; the personalization of goals in self-concept; goals contribute most to well-being. materialism and its discontents. Self-regulation and self-control: The value of self-control; Personal goals and self-regulation; goals that create self-regulation problems; everyday explanations for self-control failure; goal disengagement.

### **UNIT V (15 Hours)**

Life Above Zero: Positive psychology revisited; interconnections of the “Good” and the “Bad”; contours of a positive life; meaning and means; mindfulness and well-being.

<b>Teaching Methodology</b>	Chalk & Talk, Videos, PPTs, Demonstration, Case Studies and Field Visit
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### Books for Reference

1. Steve, B.R. & Marie, C.K. (2009). *Positive Psychology*. Dorling Kindersley.
2. Boniwell, I. (2006). *Positive Psychology in a Nutshell*. PWBC (Personal Well-Being Centre).
3. Snyder, R. S. (2007). *Positive Psychology: The Scientific & Practical exploration of human strengths*. Sage Publications

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	enumerate the students to understand the aims and scope of positive psychology	K1
CO2	discover the basic concepts from the course to analysis of their own lives and personal strength	K2
CO3	illustrate health and healing across cultures	K3
CO4	analyze positive and negative emotions and cultivate positive emotions for one's own well-being	K4
CO5	recommend Life above Zero for positivity	K5
CO6	formulate Personal goals, self-control and self-regulation	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PCP1ES02		Elective 2: Positive Psychology							5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	2	3	2	3	2	3	2	3	2.5
CO2	3	3	2	2	2	3	2	2	2	2	2.3
CO3	3	2	3	2	3	2	3	2	2	2	2.4
CO4	2	3	2	2	2	2	2	2	2	3	2.2
CO5	3	2	2	2	2	2	2	2	2	2	2.1
CO6	3	2	2	2	2	2	2	2	2	2	2.1
Mean overall Score											2.2 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PCP1AE01	<b>Ability Enhancement Course: Personality Enrichment</b>	2	1

Course Objectives
The soft skills programme is aimed at personality development with regard to the different behavioural dimensions that have significance in the direction of personal and professional growth

### UNIT 1 (6 Hours)

**Self-analysis-** SWOT Analysis, Factors influencing Attitude, Challenges and lessons from Attitude.

### UNIT 2 (6 Hours)

**Interpersonal Relationships** – Defining the difference between aggressive, submissive and assertive behaviours.

### UNIT 3 (6 Hours)

**Problem-solving** - Conflict and Stress Management - Decision-making skills.

### UNIT 4 (6 Hours)

**Leadership** and qualities of a successful leader, Leadership: Leadership – Explanation; Role & Functions of a Good Leader; Criticality of Team Leadership; Traits of Leadership; Leadership styles.

### UNIT 5 (6 Hours)

**Character building** -Team-work – Time management - Work ethics

<b>Teaching Methodology</b>	Chalk & Talk, Videos, PPTs, Demonstration, Case Studies and Field Visit
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### Book for Reference

1. *Soft Skills*. (2015). Career Development Centre, Green Pearl Publications
2. Hurlock, E.B (2006). *Personality Development*. (28th Reprint). Tata McGraw Hill.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
<b>C01</b>	Identify the importance of psychological well-being in the digital world	<b>K1</b>
<b>C02</b>	Discover competency among the students to live meaningfully according to the signs of the times	<b>K2</b>
<b>C03</b>	Illustrate the various factors affecting psychological well-being	<b>K3</b>
<b>C04</b>	Explain various types of happiness models	<b>K4</b>
<b>C05</b>	Summarize happiness activities in the digital world	<b>K5</b>
<b>C06</b>	Integrate mindfulness activities for healthy mind and body	<b>K6</b>

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23PCP1AE01	Ability Enhancement Course: Personality Enrichment								2	1
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO 2	PSO3	PSO4	PSO5	
<b>C01</b>	2	2	2	2	2	2	2	2	2	2	2.0
<b>C02</b>	3	3	3	2	3	3	3	3	2	3	2.8
<b>C03</b>	2	2	2	3	3	2	2	2	3	3	2.4
<b>C04</b>	2	3	3	2	3	2	3	3	2	3	2.6
<b>C05</b>	2	3	3	2	3	2	3	3	2	3	2.6
<b>C06</b>	2	3	3	2	3	2	3	3	2	3	2.6
Mean overall Score											2.5 (High)



## DEPARTMENT OF ECONOMICS

### ST. JOSEPH'S COLLEGE (AUTONOMOUS)

Special Heritage Status Awarded by UGC, Accredited at A++ Grade (IV Cycle) by NAAC  
College with Potential for Excellence by UGC, DBT-STAR & DST-FIST Sponsored College

**Tiruchirappalli - 620 002, Tamil Nadu, India**

**Phone: 0431 - 4226393, 2700320, Fax: 0431 - 2701501**

### BOARD OF STUDIES MEETING HELD ON 21.07.2023

The Board of Studies Meeting was held on **21<sup>st</sup> July 2023, Friday at 11.30 am** with the following agenda:

1. Revision of Semester-I Undergraduate and Postgraduate syllabi and evaluation pattern.

The following are the members of the Board of Studies in Economics:

1. Dr. N. Prasanna, Associate Professor, Department of Economics, Bharathidasan University, Tiruchirappalli - 620024. (University Representative)
2. Dr. S. Theenathayalan, Associate Professor & Head, Department of Economics, The Madura College (Autonomous), Madurai - 625011. (Subject Expert)
3. Mr. Niranchan, Proprietor, Gramiyam Super Market, Foods & Silks, Venkatachalapuram, Thuraiyur, Trichy - 621011.
4. Dr. M. Suvakkin, Head, Department of Economics, St. Joseph's College (Autonomous), Trichy.
5. Faculty members, Department of Economics, St. Joseph's College (Autonomous), Trichy

The Meeting started with a silent prayer and Dr. M. Suvakkin, Head of the Department, addressed the members regarding the main focus of this meeting.

The discussions started on selecting 5 POs out of 8 given in the TANSCHU UG Syllabus, based on the inputs suggested by Dr. N. Prasanna and Dr. S. Theenathayalan, POs were modified accordingly:

UG


PO1: Knowledge of Economics::

PO2: Logical Reasoning and Quantitative Ability:

PO3: Employability and Leadership Skills::

PO4: Communication, Gender Environment and Sustainability:

PO5: Social Interaction, Digital Literacy and Lifelong Learning::

  
**Dr. M. SUVAKKIN**  
Associate Professor & Head  
PG & Research Department of Economics  
St. Joseph's College (Autonomous)  
Tiruchirappalli-620 002

PG

PO1: Problem Solving Skill

PO2: Decision Making Skill


PO3: Individual and Team Leadership Skill

PO4: Ethical Value and Moral awareness/reasoning are key to the betterment of the Society

PO5: Communication, Employability and Entrepreneurial Skills

**The discussions proceeded with Semester I of UG and PG and the following recommendations were suggested:**

Semester I - UG		
Course code	Course title	Recommendations
23UEC13CC01	Micro Economics I	Add 'Microeconomics' by Sankaran as textbook and to retain only maximum of 3 textbooks and include others in references.
23UEC13CC02	Statistics for Economics-I	Remove 'Lorenz curve' from Unit II and add in Unit IV; add 'Geometric Mean and Harmonic Mean' in Unit II; add 'Concurrent deviation' in Unit V. Include RSN Pillai and Bhagavathi in textbook.
23UEC13AC01A	EC 1: GE/DSE I - Fundamentals of Management	No changes
23UEC14SE01	SEC 1: NME - Demography	No changes
23UEC14FC01	Foundation course: Business Communication	No changes

  
**Dr. M. SUVAKKIN**  
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PG & Research Department of Economics  
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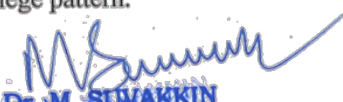
Semester I - PG		
Course code	Course title	Recommendations
23PEC1CC01	CC 1 : Advanced Micro Economics	No changes
23PEC1CC02	CC 2: Indian Economic Development and Policy	Include 'Fiscal federalism and PFMS' in Unit III
23PEC1CC03	CC 3 : Statistics for Economists	No changes
23PEC1ES01A	EC 1: (GE/DSE) - Modern Economic Thought	Detailed discussion on the chronology of the unit's distribution and it was left to the course in-charge for modification.
23PEC1ES02 B	EC 2: (GE/DSE) - Welfare Economics	No changes
23PEC1AE01	AEC -1: Skill Enhancement Course: Business Management with Tally(Learning of Tally for Employability)	It was suggested to introduce courses based on economics but tally could be retained from employability perspective

General suggestions: the following aspects were suggested by the external members:

- To allow mutual exchange of staff members for handling interdisciplinary courses.
- To enable real CBCS pattern, students to be given options in DSE courses.

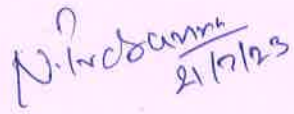


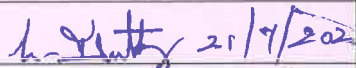




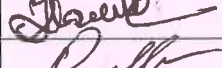
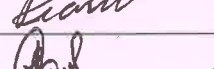
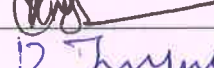
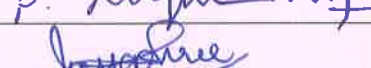

The minutes of ERC was discussed and one of our external members was suggested to keep CIA components only for 25 marks and that CIA arrear should not be allowed as its against the UGC norms. The Department decided to accept the College pattern.

The meeting came to an end by 1.30 pm.

  
**Dr. M. SUDARKIN**  
 Associate Professor & Head  
 PG & Research Department of Economics  
 St. Joseph's College (Autonomous)  
 Thiruvirappalli-620 002

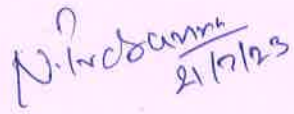


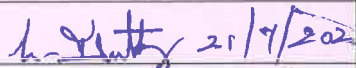




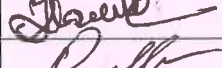
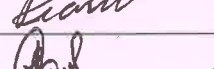
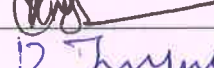
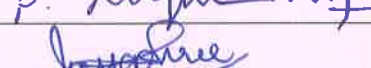



**BOARD OF STUDIES MEETING HELD ON 21.07.2023****DEPARTMENT OF ECONOMICS  
St. JOSEPH'S COLLEGE(AUTONOMOUS)  
TIRUCHIRAPPALLI -620002**

S. No.	Name and address	Signature
1.	Dr. N. Prasanna Associate Professor Department of Economics Bharathidasan University, Tiruchirappalli – 620 024. (University Representative)	 21/7/23
2.	Dr. S. Thennathayalan Associate Professor & Head Dept. of Economics The Madura College (Autonomous), Madurai – 625 011. (Subject Expert)	 21/7/23
3.	Mr. Niranchan Proprietor, Gramiyam Super Market, Foods & Silks, Venkatachalapuram, Thuraiyur, Trichy – 621 011.	 21/7/23
4.	Dr. G. Iruthayaraj	 21/7/2023
5.	Dr. M. Suvakkin	 21/07/2023
6.	Dr. A. Justin Thiraviam	
7.	Dr. K.A. Michael	
8.	Dr. S.P. Robert	
9.	Dr. J. Vasantha Arockiaselvi	
10.	Ms. P. Prarthna	
11.	Dr. R. Ganesasubramanian	
12.	Dr. P. Jayakumar	
13.	Ms. J. Jayashree Naiken	



**BOARD OF STUDIES MEETING HELD ON 21.07.2023****DEPARTMENT OF ECONOMICS  
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9.	Dr. J. Vasantha Arockiaselvi	
10.	Ms. P. Prarthna	
11.	Dr. R. Ganesasubramanian	
12.	Dr. P. Jayakumar	
13.	Ms. J. Jayashree Naiken	

PROGRAMME PATTERN				
B.A. ECONOMICS				
Part	Course Code	Title of the Course	Hours	Credit
I	23UTA11GL01A	General Tamil- 1 தமிழ் இலக்கிய வரலாறு - 1	5	3
	23UFR11GL01	French-1		
	23UHI11GL01	Hindi-1		
	23USA11GL01	Sanskrit-1		
II	23UEN12GE01	General English-1	5	3
III	23UEC13CC01	<b>Core Course - 1:</b> Microeconomics - 1	5	5
	23UEC13CC02	<b>Core Course - 2:</b> Statistics for Economics - 1	5	5
	23UEC13AC01A	<b>Allied Course - 1:</b> Fundamentals of Management	4	3
	23UEC13AC01B	<b>Allied Course - 1:</b> Introduction to Sociology		
IV	23UEC14FC01	<b>Foundation Course:</b> Business Communication	2	2
	23UEC14SE01	<b>Skill Enhancement Course - 1(Non Major Elective):</b> Demography	2	2
	23UHE14VE01	<b>Value Education:</b> Essentials of Humanity	2	1
<b>Total</b>			30	24

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UEC13CC01	Core Course -1: Microeconomics -1	5	5

Course Objectives
To Equip the economic behaviours of individual units of the society
To describes the consumer behaviour and utility analysis
To impart knowledge on demand and supply concepts
To identify the relevance of Production and returns to scale of Production
To identify the relevance of Production and returns to scale of Production

### **UNIT I : Basic Concepts (15 Hours)**

Definitions of Economics– Nature and Scope of Microeconomics –Positive and Normative Approaches- Inductive and Deductive Approaches - Consumers and Firms –Decision Making–Rationality: Self-Interest – Trade-offs –Fundamental Economic Problems -Market Mechanism and Resource Allocation.

### **UNIT II : Utility Analysis (18 Hours)**

Utility–Ordinal and Cardinal Utility–Total and Marginal Utility – Law of Diminishing Marginal Utility - Law of Equi-Marginal Utility- Indifference Curves– Properties–Marginal Rate of Substitution- Budget Line – Price and Substitution Effects-Optimal Consumer Choice – Revealed Preference Theory – Samuelson and Hicks’ Approach

### **UNIT III : Demand and Supply Analysis (15 Hours)**

Demand – Types of Goods -Law of Demand – Determinants – Exceptions – Giffen Paradox – Veblen Effect- Elasticity of Demand: Types - Engel’s Law - Supply – Law of Supply –Determinants –Elasticity of Supply and its Types- Market Equilibrium - Consumer Surplus and Producer Surplus

### **UNIT IV : Production Analysis (15 Hours)**

Production Function– Law of Variable Proportions- Laws of Returns to Scale-Iso-quant’s-Types of Production Function – Cobb -Douglas and Constant Elasticity of Substitution(CES) Production Function –Economies and Diseconomies of Scale

### **UNIT V : Cost and Revenue Concepts (12 Hours)**

Costs – Fixed and Variable Costs - Average, Marginal, and Total Costs – Short Run and Long Run Costs – Implicit, Explicit, Sunk and Imputed Cost – Revenue – Total, Average and Marginal Revenue –Relationship between AR, MR and Elasticity of Demand- Profit Maximization Rule.

<b>Teaching Methodology</b>	<ul style="list-style-type: none"> <li>• PPTs</li> <li>• ICT</li> <li>• Brainstorming method</li> <li>• Written assignment on Current Issues</li> <li>• Preparation of PPTs by the students</li> <li>• Students are encouraged to handle seminar</li> <li>• Students are motivated to do online quizzing through Jostel</li> </ul>
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### Books for Study

1. Pindyck, R., & Rubinfeld, D.L. (2001). *Micro economics*. Macmillan.
2. Varian, H.R. (2004). *Intermediate micro economics*. East-West Press.
3. Krugman, P., & Wells, R. (2020). *Micro economics*. Worth Publishers.
4. Ahuja, H.L. (2016). *Principles of microeconomics*. S.Chand.
5. Taylor, T., Greenlaw, S.A., & Shapiro, D. (2017). *Principles of economics*. 12<sup>th</sup> Media Services.

### Book for Reference

1. Koutsoyiannis. (2003). *Modern microeconomics palgrave macmillan*. (2nd ed.).
2. Mankiw, G. (2012). *Principles of microeconomics*. Cengage.
3. Dwivedi, D.N. (2002). *Microeconomics: Theory and applications*. ( 2nd ed.). Pearson.
4. Ferguson, C.E. (1970). *Micro economic theory*. Homewood.
5. Case, K.E., & Fair, R.C. (2007). *Principles of economics*. Pearson Prentice Hall Inc.

### Web Source

1. <http://www.econlib.org/library/enc/microeconomics.html>
2. <https://www.tutor2u.net/economics>
3. <https://www.economicsnetwork.ac.uk/>
4. <https://www.cliffsnotes.com/study-guides/economics/introduction/microeconomics>
5. <http://neconomides.stern.nyu.edu/networks/micnotes/micnotes.pdf>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will	
CO1	Understand the meaning of basic concepts and the need for the study of Microeconomics.	K1
CO2	Evaluate the Types of Utility and Consumer Behaviour.	K2
CO3	Acquire knowledge on various market equilibrium, Demand and Supply Functions	K3
CO4	Understand the meaning of Production Functions	K4
CO5	Understand the theory of firms, Cost and Revenue	K5

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23UEC13CC01	Core Course - 1: Microeconomics - 1								5	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	3	2	3	3	2	2	2	2.5
CO2	3	3	2	2	2	3	3	2	3	3	2.6
CO3	3	1	2	3	2	2	3	2	2	2	2.2
CO4	3	2	2	2	1	3	3	2	2	2	2.2
CO5	3	3	3	3	2	3	3	2	2	3	2.7
Mean overall Score											2.44 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UEC13CC02	Core Course - 2: Statistics for Economics - 1	5	5

Course Objectives
To know the nature and scope of statistics and its applications
To teach students Collection, Classification, Analyzing and Presentation of data
To apply the measures of central tendency
To draw measurement of dispersion and its applications
To analyze correlation and regression and its applications

#### **UNIT I: Introduction and Collection of Data (15 Hours)**

Introduction – Nature and Scope of Statistics – Functions, Uses and Limitations of Statistics – Data Collection – Primary and Secondary Data – Tools for collecting Primary Data – Requisites of Good Questionnaire – Sources of Secondary Data.

#### **UNIT II: Classification and Presentation of Data (15 Hours)**

Classification and Tabulation of Data– Types - Frequency Distribution — Cumulative Frequency Distribution- Class Interval – Diagrams – Types- Graphical Representation– Histogram – Frequency Polygon - Ogive Curve - Lorenz Curve.

#### **UNIT III: Measures of Central Tendency (15 Hours)**

Measures of Central Tendency- Requisites of a Good Average – Arithmetic Mean, Median, and Mode – Relative Merits and Demerits.

#### **UNIT IV: Measures of Dispersion (15 Hours)**

Absolute and Relative Measures of Dispersion – Range – Quartile Deviation – Mean Deviation – Standard Deviation – Variance - Coefficient of Variation --Skewness and Kurtosis.

#### **UNIT V: Correlation and Regression (15 Hours)**

Correlation – Types of Correlation – Methods -Karl Pearson's Co-efficient of Correlation — Spearman's Rank Correlation – Regression Equations – Distinction between Correlation and Regression Analysis.

<b>Teaching Methodology</b>	PPTs -Brainstorming method-Written assignment on Current Issues-Preparation of PPTs by the students-Students are encouraged to handle seminar-Students are motivated to do online quizzing through Jostel
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#### **Books for Study**

1. Gupta. S.P (2005) Statistical Methods, Sultan Chand and Sons, New Delhi.

2. Sancheti. D.C and Kapoor V.K(2005) Statistical Theory Method and Application, Sultan Chand and Sons, New Delhi.
3. Dr.T.K.V.Iyengar, Dr.B.Krishna Gandhi S.Ranganantham, Dr.M.V.S.S.N Prasad, Probability and Statistics, S.Chand and Co, 2020.
4. Prof S.G.Vekatachalapathy and Dr.H.Premraj (2018) Statistical Methods Margham Publications.
5. Dominick Salvatore and Derrick Reagle, theory and problems of statistics and econometrics, McGraw Hill, (2002)

### Books for Reference

1. Saxena H.C , (2016) Elementary Statistics, S Chand and Company New Delhi.
2. Elhance D.N, (2004), Fundamentals of Statistics Kitab Mahal, New Delhi
3. Manoharan M (2010), "Statistical Methods", Palani Paramount Publications, Palani.
4. R.S.N.Pillai and V. Bagavathi(2010), Statistics, Sultan Chand and Sons, New Delhi
5. Dr.S.Sachdeva ( 2014) Statistics -Lakshmi Narain Agarwal.

### Web Sources

1. <https://www.cuemath.com/data/statistics/>
2. <https://stattrek.com/statistics/resources>
3. <https://testbook.com/learn/maths-mean-median-mode/>
4. <https://www.statistics.com/>
5. <https://thisisstatistics.org/students/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will	
CO1	Understand the overview of statistics and basic knowledge of statistical tools.	K1
CO2	Differentiate Types of Data and its Classification	K2
CO3	Explain the concept of Averages and its application	K3
CO4	Know the concept of Dispersion and its application	K4
CO5	Calculate Correlation and estimate values using Regression	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UEC13CC02		Core Course - 2: Statistics for Economics - 1							5	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of Cos
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	3	2	3	3	2	2	2	2.5
CO2	3	3	2	2	2	3	3	2	3	3	2.6
CO3	3	1	2	3	2	2	3	2	2	2	2.2
CO4	3	2	2	2	1	3	3	2	2	2	2.2
CO5	3	3	3	3	2	3	3	2	2	3	2.7
Mean overall Score											2.44 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UEC13AC01A	Allied Course - 1: Fundamentals of Management	4	3

Course Objectives
To provide students with the basic concepts of Management
To probe the planning concepts and its objectives
To analyze the Organizational Levels in an Organization
To describes the motivation and satisfaction and its elements
To know the importance of Quality Checks

### **UNIT I: Introduction (12 Hours)**

Management – Definition-scope – Schools of Thought in Management-Levels of Management-Role and Functions of a Manager

### **UNIT II: Planning (12 Hours)**

Planning: Concept, Objectives, Nature, Limitation, Process of planning, Importance, Forms, Techniques and Process of decision making.

### **UNIT III: Organisational Levels (12 Hours)**

Types of Business Organizations – Structure- Span of Control – Departmentalisation-Selection, Training and Development, Performance Management, Career Planning ,and Management

### **UNIT IV: Directing (12 Hours)**

Creativity and Innovation – Motivation and Satisfaction – Organization Culture – Elements and Types of Culture – Managing Cultural Diversity.

### **UNIT V: Controlling (12 Hours)**

Process of Controlling – Types of Control – Budgetary and non-budgetary, Control Techniques – Managing Productivity – Cost Control – Purchase Control –Maintenance Control – Quality Control – Planning Operations.

### **Books for Study**

1. Robbins, S.A., Decenzo, D.A., & Coulter, M. (2011). *Fundamentals of management*. (7th ed.). Pearson Education.
2. Tripathy, P.C., & Reddy, P.N. (1999). *Principles of management*. Tata McGraw Hill.
3. Pillai, R.S.N., & Kala, S. (2013). *Principles and practice of management*. S.Chand & Coand Company.
4. Griffin, R. (2016). *Fundamentals of management*. Cengage Learning.
5. Kumar, P., & Sachdeva, A. (2012). *Fundamentals of management*. S. Chand Publishing.



### Books for Reference

1. Gupta, C.B., & Mathur. S. (2022). *Management principles and applications*. Scholar Tech Press.
2. Vasisth, N., & Vasishth, V. (2019). *Principles of management text & cases*. Taxman Publication.
3. Bhatiya, R.C. (2013). *Fundamentals of management*. S.K Kataria & Sons.
4. Prasad, L.M. (2021). *Principles and practice of management*.
5. Mishra, N., & Gupta, O.P. (2022). *Fundamentals of management*. SBPD Publishing House.

### Web Source

1. <http://www.mim.ac.mw/books/Fundamentals%20of%20Management.pdf>
2. <https://theintactone.com/2019/09/18/fom-u1-topic-1-fundamentals-of-management-introduction-and-concepts/>
3. <https://rccmindore.com/wp-content/uploads/2015/06/Fundamentals-of-Management.pdf>
4. <https://in.sagepub.com/en-in/sas/journal-of-management/journal201724>
5. <https://www.managementstudyhq.com/evolution-management-thought-theories.html>

<b>Teaching Methodology</b>	<ul style="list-style-type: none"><li>• PPTs</li><li>• ICT</li><li>• Brainstorming method</li><li>• Written assignment on Current Issues</li><li>• Preparation of PPTs by the students</li><li>• Students are encouraged to handle seminar</li><li>• Students are motivated to do online quizzing through Jostel</li></ul>
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Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will	
CO1	Understand the foundations and importance of Management.	K1
CO2	Demonstrate an understanding of Planning	K2
CO3	Analyze the Organisational levels and Process of selection	K3
CO4	Discuss the relevance of Organizational Culture	K4
CO5	Examine the importance of quality control	K5

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23UEC13AC01A	Allied Course - 1: Fundamentals of Management								4	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of Cos
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	3	2	3	3	2	2	2	2.5
CO2	3	3	2	2	2	3	3	2	3	3	2.6
CO3	3	1	2	3	2	2	3	2	2	2	2.2
CO4	3	2	2	2	1	3	3	2	2	2	2.2
CO5	3	3	3	3	2	3	3	2	2	3	2.7
Mean overall Score											2.44 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UEC13AC01B	Allied Course - 1: Introduction to Sociology	4	3

Course Objectives
To understand the nature and scope of sociology and its development
To identify the origin and development of sociology and its basic concepts
To evaluate stages and agencies of socialization
To understand social stratification and its determinants
To know the social change, evolution and revolution

### UNIT I: Introduction (12 Hours)

Definition – Nature and Scope of Sociology –Origins and development of Sociology – Founding fathers and their contributions: Auguste Comte, Herbert Spencer, Karl Marx, Emile Durkheim and Max Weber –Sociology and other social sciences

**UNIT II: Basic Concepts of Sociology (12 Hours)**  
Society, Community, Institutions, Association, Social Structure, Status – Role, Norms, and Values; Folkways and Mores, Associative and Dissociative processes – Cooperation- Assimilation-Accommodation- Competition and Conflict

### UNIT III: Individual and Society (12 Hours)

Individual and Society- Socialization- Stages and Agencies of Socialization- Types of Groups – Primary and Secondary Groups, In-Group and Out-group, Reference Group.

### UNIT IV: Social Stratification (12 Hours)

Social Stratification: Meaning, Definition and Dimensions –Social mobility and its determinants.

### UNIT V: Social Change (12 Hours)

Meaning and Types: Evolution and Revolution, Progress and Development — Factors of Social Change-Culture and Civilization

<b>Teaching Methodology</b>	<ul style="list-style-type: none"> <li>• PPTs</li> <li>• ICT</li> <li>• Brainstorming method</li> <li>• Written assignment on Current Issues</li> <li>• Preparation of PPTs by the students</li> <li>• Students are encouraged to handle seminar</li> <li>• Students are motivated to do online quizzing through Jostel</li> </ul>
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### Book for Study

1. Bottomore, T.B. (1972). *Sociology: A guide to problems and literature*.
2. Jayaram, N. (1988). *Introductory sociology*. Madras: Macmillan.

3. Bhushan, D.R.S.V. (2020). *An Introduction to sociology*. Kitab Mahal.
4. Macionis, J. J. (2018). *Sociology*. (17th ed.). Pearson.
5. Rao, C.N.S. (2019). *Sociology: Principles of sociology with an introduction to sociology thought*. S.Chand Publication.

### Books for Reference

1. Allen, G., Unwin., & Harlambos, M. (1998). *Sociology: Themes and perspectives*. Oxford University Press.
2. Inkeles, Alex. (1987). *What is sociology?*. Prentice-Hall of India.
3. Johnson., & Harry, M. (1995). *Sociology: A systematic introduction*. Allied Publishers.
4. Bhende, A., & Kanitkar, T.R. (1982). *Principles of population studies*. Himalaya Publishing House.
5. Bogue, D.J. (1969). *Principles of demography*. John Wiley.

### Web Source

1. <https://data.worldbank.org/indicator/SP.POP.TOTL>
2. <https://www.iom.int/>
3. <https://libguides.humdolt.edu>
4. <https://openstax.org/books/introduction-sociology-3e/>
5. <https://www.sociologygroup.com/important-books-free-notes-sociology-optional/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will	
CO1	Understand the contributions of sociologists in the field of sociology	K1
CO2	Understand the basic aspects of Sociology	K2
CO3	Examine the impact of individuals, groups and society	K3
CO4	Understand the dimensions of social stratification	K4
CO5	Analyze and design Policy for social change	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UEC13AC01B		Allied Course - 1: Introduction to Sociology							4	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	3	2	3	3	2	2	2	2.5
CO2	3	3	2	2	2	3	3	2	3	3	2.6
CO3	3	1	2	3	2	2	3	2	2	2	2.2
CO4	3	2	2	2	1	3	3	2	2	2	2.2
CO5	3	3	3	3	2	3	3	2	2	3	2.7
Mean overall Score											2.44 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UEC14SE01	<b>Skill Enhancement Course – 1 (Non Major Elective): Demography</b>	2	2

Course Objectives
To understand the meaning and scope of demography
To discuss the basic concepts of demographic measurements
To describes the concepts of urbanisation and migration
To evaluate the international aspects of population growth and tis environment
To analyse the trends in population policy in India

### **UNIT I: Introduction (6 Hours)**

Meaning Scope of Demography – Components of Population Growth – Theories of Population: Malthusian Theory, Optimum Theory and Theory of Demographic Transition.

### **UNIT II: Birth Rate, Death Rate and Fertility (6 Hours)**

Census Data - Life Tables: Meaning and Uses – Reproductive and Child Health in India – Temporal and Spatial Variation in Sex Ratios – Crude Birth and Death Rate- Age Specific Birth and Death Rates – Standardized Birth and Death Rates –Fertility – Total Fertility Rate – Gross Reproduction Rate – Net Reproduction Rate

### **UNIT III: Migration and Urbanisation (6 Hours)**

Migration and Urbanisation – Concept - Types of Migration- Effects of Migration and Urbanisation on Population— Recent Trends in Migration.

### **UNIT IV: Population Trends (6 Hours)**

Population Trends– International Aspects of Population Growth and Distribution – Population and Environment Pattern of Age and Sex Structure in Developed and Developing Countries – Age Pyramids and Projections.

### **UNIT V: Population Policy in India (6 Hours)**

Population Policy in India and its Evaluation – Population and Strategies for Human Development of Different Social Groups –National Population Commission.

<b>Teaching Methodology</b>	<ul style="list-style-type: none"> <li>• PPTs</li> <li>• ICT</li> <li>• Brainstorming method</li> <li>• Written assignment on Current Issues</li> <li>• Preparation of PPTs by the students</li> <li>• Students are encouraged to handle seminar</li> <li>• Students are motivated to do online quizzing through Jostel</li> </ul>
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### Books for Study

1. Jhingan, M. L., Bhatt, B.K., & Desai, J.N. (2003). *Demography*. Vrinda Publications.
2. Sharma, R.K. (2007). *Demography and population problems*. Atlantic Publishers and Distributors Pvt. Ltd.
3. Lundquist, J.H., Anderton, D.L., & Yaukey, D. (2015). *Demography: The study of human population*. Waveland Press Inc.
4. Poston, D.L., Jr., & Bouvier, L.F. (2015). *Population and society: An introduction to demography*. Cambridge University Press.
5. Thomas, R.K. (2018). *Concepts, methods and practical applications in applied demography*. Springer.

### Books for Reference

1. Agarwala, S.N. (1985). *India's population problem*. Tata McGraw-Hill.
2. Bhende, A., & Kanitkar, T.R. (1982). *Principles of population studies*. Himalaya Publishing House.
3. Bogue, D.J. (1969). *Principles of demography*. John Wiley.
4. Harper, S. (2018). *Demography: A very short introduction*. Oxford Press.
5. Cox, P.R. (n.d). *Demography*. (5th ed.). Cambridge University Press.

### Web Source

1. <https://data.worldbank.org/indicator/SP.POP.TOTL>
2. <https://www.iom.int/>
3. <https://censusindia.gov.in>
4. <https://www.nationalgeographic.org/encyclopedia/demography/>
5. <https://www.nature.com/scitable/knowledge/library/introduction-to-population-demographics-83032908/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will	
CO1	Describe the various theories of Population Growth	K1
CO2	Understand Demographic Indicators	K2
CO3	Assess the causes and impact of Migration on rural-urban population distribution	K3
CO4	Analyse the major demographic trends and their determinants	K4
CO5	Evaluate Population Policy of India and analyse recent trends.	K5

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23UEC14SE01	Skill Enhancement Course – 1 (Non Major Elective): Demography								2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	3	2	3	3	2	2	2	2.5
CO2	3	3	2	2	2	3	3	2	3	3	2.6
CO3	3	1	2	3	2	2	3	2	2	2	2.2
CO4	3	2	2	2	1	3	3	2	2	2	2.2
CO5	3	3	3	3	2	3	3	2	2	3	2.7
Mean overall Score											2.44 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UEC14SE01	Skill Enhancement Course – 1 (Non Major Elective): Demography	2	2

Course Objectives
To know the meaning objectives and role of communication and media
To understand the need and importance of communication in management
To apply the need and function of business letter
To study the business correspondents with insurance and other organisation
To understand the meaning and importance of report writing

### **UNIT I: Communication (6 Hours)**

Communication: Meaning and Definition - Objectives - Role of Communication – Process and Elements of Communication - Communication Networks - Types and Media of Communication – Barriers to Communication - Characteristics for Successful Communication

### **UNIT II: Communication in Management (6 Hours)**

Management and Communication: Need and Importance of Communication in Management – Corporate Communication - Communication Training for Managers - Communication Structure in an Organization.

### **UNIT III: Business Letters (6 Hours)**

Business Letter: Need – Functions – Kinds – Essentials of effective Business Letter - Language and Layout – Planning, Enquiries and Replies - Sales Letter - Orders, Tender and Notice - Complaints - Letter of Appointment.

### **UNIT IV: Correspondence (6 Hours)**

Correspondence: Bank Correspondence - Insurance Correspondence – Agency Correspondence - Import-Export Correspondence

### **UNIT V: Report Writing (6 Hours)**

Report Writing: Meaning and Importance - Purpose - Types of Business Reports - Characteristics of a Good Report - Report Preparation - Report by Individual and Committees - Agenda and Minutes of Meeting.



<b>Teaching Methodology</b>	<ul style="list-style-type: none"> <li>• PPTs</li> <li>• ICT</li> <li>• Brainstorming method</li> <li>• Written assignment on Current Issues</li> <li>• Preparation of PPTs by the students</li> <li>• Students are encouraged to handle seminar</li> <li>• Students are motivated to do online quizzing through Jostel</li> </ul>
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### **Books for Study**

1. Korlahalli, J. S., & Pal, R. (1979). *Essentials of business communication*. S. Chand.
2. Kaul A, ( 2015 ). *Effective business communication*. (2nd ed.). Prentice Hall India Learning Private Limited.
3. Lesikar, R., & Pettit, J.J. (2016). *Report writing for business*. McGraw Hill Education .
4. Mclean,S. (2010). *Business communication for success*. Flat World Knowlegde.
5. Jain, V.K. (2008). *Business communication*. S. Chand Limited.

### **Books for Reference**

1. Kumar, R. (2010). *Basic business communication*. Excel Books.
2. Bovee, C. L. (2008). *Business communication today*. Pearson Education.
3. Lesikar, R. V., & Pettit, J. D. (1989). *Business communication: Theory and application*. Irwin Professional Publishing.
4. Guffy, M.E., & Loewy, D. (2012). *Essentials of business communication*. Cengage Learning.
5. Gupta, C.B .(2019). *Essentials of business communication*. Cengage Learning India Pvt. Ltd.

### **Web Source**

1. [https://www.managementstudyguide.com/business\\_communication](https://www.managementstudyguide.com/business_communication).
2. html <https://studiousguy.com/business-communication/>
3. <https://www.indeed.com/career-advice/resumes-cover-letters/business-communicationskills>
4. <https://www.softskillsaha.com/what-is-meaning-of-business-communication-skills.php>
5. <https://www.mindtools.com/page8.html>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On completion of this course, students will	
CO1	Understand the basics of communication and its Process, Elements, and its importance.	K1
CO2	Acquire communication skills.	K2
CO3	Employ the art of report preparation and writing Business Letters	K3
CO4	Use appropriate technology for business presentations and digital communication and write E-mails in a structured pattern.	K4
CO5	Employ the art of report preparation	K5

Relationship Matrix												
Semester	Course code		Title of the Course								Hours	Credits
1	23UEC14FC01		Foundation Course: Business Communication								2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	3	2	3	2	3	3	2	2	2	2.5	
CO2	3	3	2	2	2	3	3	2	3	3	2.6	
CO3	3	1	2	3	2	2	3	2	2	2	2.2	
CO4	3	2	2	2	1	3	3	2	2	2	2.2	
CO5	3	3	3	3	2	3	3	2	2	3	2.7	
Mean overall Score											2.44 (High)	

PROGRAMME PATTERN			
M. A. ECONOMICS			
Course Code	Title of the Course	Hours	Credits
23PEC1CC01	Core Course - 1: Advanced Micro Economics	6	5
23PEC1CC02	Core Course - 2: Indian Economic Development and Policy	6	5
23PEC1CC03	Core Course - 3: Statistics for Economists	6	4
23PEC1ES01	Elective - 1: Modern Economic Thought	5	3
23PEC1ES02	Elective - 2: Welfare Economics	5	3
23PEC1AE01	Ability Enhancement Course: Business Management with Tally	2	1
Total		30	21

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PEC1CC01	Core Course - 1: Advanced Micro Economics	6	5

Course Objectives
To make the students to understand consumer behavior and Consumer Choice
To Explore Economics of Information to study real-world applications such as the market for lemons, adverse selection and Principal agent problem
To examine different market structures, including perfect competition, monopoly, monopolistic competition, and oligopoly
To explore alternative theories of firm behavior, such as full-cost pricing, limits pricing theory, Bains Theory, and Modigliani's Models
To grasp the neo-classical approach to distribution, including the marginal productivity theory and the product exhaustion theorem

### **UNIT I: Consumer Choice (18 Hours)**

Cardinal and ordinal utility - Indifference curve approach – Slutsky’s Decomposition of price effect into substitution effect and income effect – Consumer surplus - Marshall’s and Hicksian measures – Compensatory Demand Curve- Revealed Preference Theorem- and derivation of Marginal Utility schedule for money income.

### **UNIT II: Economics of Information (18 Hours)**

Informational asymmetry – Choice under Uncertainty - N-M Index – Inter-temporal choice - Market for lemons- Adverse selection – Insurance market and adverse selection – Solution to principal agent problem- Hidden action (Moral Hazard) - Signaling and Screening.

### **UNIT III: Market Structure Models (18 Hours)**

- Perfect competition – Price and output determination – Optimum firm-
- Monopoly – Short run and long run equilibrium - Price discrimination monopoly control, and regulation – Contestable Market-
- Monopolistic competition–Chamberlin Model- selling costs - Excess capacity –
- Oligopoly – Duopoly price game-dominant strategy-Nash Equilibrium Non-collusive Models - Cournot- Bertrand – Chamberlin – Edgeworth –Sweezy – Stackelberg- Oligopoly - Collusive Models - Cartels and mergers -Price leadership - Base point price system
- Monopsony – Price and output determination – Workable competition.

**UNIT IV: Alternative Theories of Firm****(18 Hours)**

Full Cost Pricing Rule- Limits pricing theory- Bains Theory- Sylos-Labini Model- Modigliani's Models- Input-output model -Linear programming applications in decision making- Peak Load Pricing – Administered Pricing- Purchasing Power Parity Price.

**UNIT V: Distribution Theories****(18 Hours)**

Neo-classical approach – Marginal productivity theory; Product exhaustion theorem; - Modern theory of distribution – Factor Pricing in imperfect product and factor markets- Determination of Wages –Labour supply and wage determination – Role of trade unions and collective bargaining- Theories of Interest- Theories of Profit.

<b>Teaching Methodology</b>	PPTs -Brainstorming method-Written assignment on Current Issues-Preparation of PPTs by the students-Students are encouraged to handle seminar-Students are motivated to do online quizzing through Jostel
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**Books for Study**

1. Jhingan, M. L. (2004). *Advanced economic theory* (Reprint) Vrindha Publications (P) Ltd.
2. Agarwal, H. S. (n.d). *Micro economic theory*. Ane's Books Pvt. Ltd.

**Books for References**

1. Varian, H. R. (2004). *Intermediate micro economics*. East-West Press.
2. Roy, R. J. (1992). *Intermediate micro economics*. Harper & Collins Publishers.
3. Koutsyiannis, A. (1978). *Modern micro economics*. Macmillan.

**Web Resources**

- 1.<http://open.oregonstate.education/intermediatemicroeconomics/chapter/module-1>
- 2.[http://saylordotorg.github.io/text\\_introduction-to-economicanalysis/s16-monopoly.html](http://saylordotorg.github.io/text_introduction-to-economicanalysis/s16-monopoly.html)
- 3.[http://saylordotorg.github.io/text\\_introduction-to-economicanalysis/s17-games-and-strategic-behaviour.html](http://saylordotorg.github.io/text_introduction-to-economicanalysis/s17-games-and-strategic-behaviour.html)

<b>CO No.</b>	<b>Course Outcomes</b>	<b>Cognitive Levels (K – Levels)</b>
<b>CO1</b>	To illustrate and analyse the theories of consumer behavior	<b>K1</b>
<b>CO2</b>	To illustrate and identify the choice under uncertainty.	<b>K2</b>
<b>CO3</b>	To compare how price and output is determined in different market situations and evaluate the market structures	<b>K3</b>
<b>CO4</b>	To identify and examine the alternative theories of firms.	<b>K4</b>
<b>CO5</b>	To define, explain, and compare the theory of distribution.	<b>K5</b>
<b>CO6</b>	To Explore distribution theories to understand income distribution and economic equity	<b>K6</b>

Relationship Matrix												
Semester	Course code		Title of the Course								Hours	Credits
1	23PEC1CC01		Core Course - 1: Advanced Micro Economics								6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	3	2	3	2	3	3	2	2	2	2.5	
CO2	3	3	2	2	2	3	3	2	3	3	2.6	
CO3	3	1	2	3	2	2	3	2	2	2	2.2	
CO4	3	2	2	2	1	3	3	2	2	2	2.2	
CO5	3	3	3	3	2	3	3	2	2	3	2.7	
CO6	3	3	3	2	2	2	3	2	2	3	2.5	
Mean overall Score											2.45 (High)	

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PEC1CC02	Core Course - 2: Indian Economic Development and Policy	6	5

Course Objectives
To develop a comprehensive understanding of the Indian economy's historical growth and structural changes since independence
To analyze the performance and dynamics of the agricultural and industrial sectors in India
To examine the fiscal developments and trends in the financial sector in the post-liberalization period, along with the impact of Goods and Services Tax (GST) on the economy
To evaluate the concepts of poverty and inequality in India and examine the impact of economic growth on poverty
To explore various social sector issues in India
To develop a comprehensive understanding of the Indian economy's historical growth and structural changes since independence

### UNIT 1: Introduction

(18 Hours)

Growth and Structural Changes in Indian economy during Independence- The policy framework: statist policy, transition to market-oriented policy, role of erstwhile Planning Commission and NITI Aayog- Two phases of growth (1950-1980 and 1980 onwards), factors underlying turn around- Structural change in Indian economy.

### UNIT 2: Agricultural and Industrial Sector

(18 Hours)

Agricultural and Industrial Sectors - Agricultural Sector Performance of agricultural sector, factors determining agricultural growth - Factors underlying food inflation- Agricultural price policy and food security Industrial Growth - Industrial growth before and after reforms - Dualism in Indian manufacturing- Issues in performance of public sector enterprises and privatization.

### UNIT 3: Fiscal Developments

(18 Hours)

Fiscal Developments, Finance and External Sector Expenditure trends- GST: rationale and impact- Evolution of the financial sector in post-liberalization period- External sector performance: emergence of India as major exporter in services, performance of manufacturing sector.

**UNIT 4: Poverty and Inequality****(18 Hours)**

Poverty and Inequality - Measuring poverty in India: Selection of poverty lines- Poverty in pre and post liberalization periods- Impact of growth on poverty- PDS vs cash transfers, feasibility of universal basic income in India - Inequality in India in pre and post liberalization periods.

**UNIT 5: Social Sector****(18 Hours)**

Social Issues Gender gap in India and trends in female labour force participation rates, factors determining female labour force participation- Employment: changing nature of employment in India, "jobless growth"- Labour in informal sector- India's graphic transition.

<b>Teaching Methodology</b>	PPTs -Brainstorming method-Written assignment on Current Issues-Preparation of PPTs by the students-Students are encouraged to handle seminar-Students are motivated to do online quizzing through Jostel
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**Books for Study**

1. Sundaram, K. P. M. (2002). *Indian economy* (42nd revised ed.). S. Chand Publications.
2. Misra, S. & Puri, V. (2020). *Indian economy* (Revised ed.). S. Chand Publications

**Books for Reference**

1. Basu, K. (Ed.) (2012). *Oxford companion to Indian economy* (3rd ed.). OUP.
2. Kapila, U. (Ed.) (2018). *Indian economy since Independence* (29th ed.). Academic Foundation.
3. Goyal, A. (Ed.) (n.d). *The oxford handbook of the Indian economy in the 21st century: understanding the inherent dynamism*. Oxford University Press.

**Web References**

1. <https://www.adb.org/countries/india/economy>
2. <https://www.oecd.org/economy/india-economic-snapshot/>  
<https://www.indiabudget.gov.in/economicsurvey/>

CO No.	Course Outcomes	Cognitive Levels (K – Levels)
CO1	understand the structural change in Indian economy	K1
CO2	assess the performance of agricultural and industrial sector	K2
CO3	ability to learn the trends in the economy	K3
CO4	understand the impact of poverty	K4
CO5	identify social issues like unemployment, gender disparities	K5
CO6	critically assess the fiscal developments in India	K6

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23PEC1CC02	Core Course - 2: Indian Economic Development and Policy								6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	3	2	3	3	2	2	2	2.5
CO2	3	3	2	2	2	3	3	2	3	3	2.6
CO3	3	1	2	3	2	2	3	2	2	2	2.2
CO4	3	2	2	2	1	3	3	2	2	2	2.2
CO5	3	3	3	3	2	3	3	2	2	3	2.7
CO6	3	2	3	3	2	3	3	2	3	3	2.7
Mean overall Score											2.48 (High)



Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PEC1CC03	Core Course - 3: Statistics for Economists	6	4

Course Objectives
To provide a strong foundation in statistical concepts and develop skills in data handling and research.
To infer the intensity of relationship between multiple variables and building appropriate statistical models.
To analyze test of significance for large and small samples.
To perform ANOVA for both one-way and two-way classifications.
To learn the key definitions and concepts of statistical decision theory.

### **UNIT I: Probability (18 Hours)**

Probability - Addition and Multiplication Theorems - Conditional Probability - Discrete and Continuous - Random Variables - Mathematical Expectations – Bayes Theorem - Theoretical Distributions - Binomial, Poisson and Normal.

### **UNIT II: Sampling and Hypothesis Testing (18 Hours)**

Sampling Theory - Types of Sampling - Sampling Distributions - Parameter and Statistic - Testing of Hypothesis - Level of Significance - Type I and Type II Errors - Standard Error - Properties of Estimator.

### **UNIT III: Test of Significance Large and Small Sample (18 Hours)**

Difference between Large and Small Samples - Test of Significance for Large Samples - Test for Two Means and Standard Deviations - Proportion and Confidence Interval - Small Sample Test – t-test - Paired t- test - Chi-square Test- Test of Goodness of Fit.

### **UNIT IV: Analysis of Variance (18 Hours)**

F test: Assumptions in F test - Analysis of Variance: Assumptions – One-Way and Two-Way Classifications

### **UNIT V: Statistical Decision Theory (18 Hours)**

Definitions – Concepts – Maximin - Minimax - Bayes Criterion - Expected Monetary Value - Decision Tree Analysis: Symbols - Steps - Advantages and Limitations.

<b>Teaching Methodology</b>	PPTs -Brainstorming method-Written assignment on Current Issues-Preparation of PPTs by the students-Students are encouraged to handle seminar-Students are motivated to do online quizzing through Jostel
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### Books for Study

1. Gupta, S. P. (2017). *Statistical methods*. Sultan Chand & Sons.
2. Anderson., Sweeney., & Williams (2014). *Statistics for business and economics*. Cengage.

### Books for References

1. Aggarwal, Y. P. (2002). *Statistics methods – Concepts, application and computation*. Sterling Publishers Private Ltd.
2. Vittal, P. R. (n.d). *Mathematical statistics*. Margham Publications
3. Pillai, R. S. N., & Bagavathi, V. (2010). *Statistics*. Sultan & Chand Sons.

### Web Resources

1. <https://www.statista.com>.
2. <https://techjury.net>
3. [https://dss.princeton.edu/online\\_help/analysis/interpreting\\_regression.htm](https://dss.princeton.edu/online_help/analysis/interpreting_regression.htm)

CO No.	Course Outcomes	Cognitive Levels ( K – Levels)
<b>CO1</b>	summarize the basic Probability rules and understand theoretical distributions.	<b>K1</b>
<b>CO2</b>	acquire knowledge on the various sampling methods and testing of Hypotheses	<b>K2</b>
<b>CO3</b>	use ‘t’ test and chi square test for analysis	<b>K3</b>
<b>CO4</b>	understand the importance of one and two way ANOVA	<b>K4</b>
<b>CO5</b>	know the various decision making tools available	<b>K5</b>
<b>CO6</b>	apply statistical decision theory to make informed decisions	<b>K6</b>

<b>Relationship Matrix</b>											
<b>Semester</b>	<b>Course code</b>	<b>Title of the Course</b>								<b>Hours</b>	<b>Credits</b>
<b>1</b>	<b>23PEC1CC03</b>	<b>Core Course - 3: Statistics for Economists</b>								<b>6</b>	<b>4</b>
<b>Course Outcomes</b>	<b>Programme Outcomes (POs)</b>					<b>Programme Specific Outcomes (PSOs)</b>					<b>Mean Score of COs</b>
	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	<b>PSO4</b>	<b>PSO5</b>	
<b>CO1</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2.5</b>
<b>CO2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2.6</b>
<b>CO3</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2.2</b>
<b>CO4</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2.2</b>
<b>CO5</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>2.7</b>
<b>CO6</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>2.6</b>
<b>Mean overall Score</b>											<b>2.46 (High)</b>

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PEC1ES01	Elective - 1: Modern Economic Thought	5	3

Course Objectives
To trace the ideas of Modern Economists.
To understand the foundational principles of Classical Economic Thought.
To analyze the key aspects of Neo-Classical Economic Thought.
To examine the fundamental tenets of Keynesian Economic Thought.
To evaluate the contributions of Indian economists.

#### **UNIT I: Classical Economic Thought (15 Hours)**

Economic ideas of Irving Fisher –The Quantity theory of Money- Theory of Interest. Joseph Alois Schumpeter - Method of Study –Deductive Method –Inductive Method-Theory of Economic Development- Role of Entrepreneur – Innovation-Business Cycles – Capitalism and Socialism . J.K. Galbraith – The objective of Economic Progress- Concept of Countervailing Power.

#### **UNIT II: Neo Classical Economic Thought (15 Hours)**

Ragnar Nurske – Foreign Resources – Capital Formation –Disguised Unemployment ,Mrs- Joan Robinson –Imperfect Competition – F.Y .Edgeworth –Mathematical Economic Analysis –Three Dimensional Utility

#### **UNIT III: Keynesian Economic Thought (15 Hours)**

Lord Lionel Robbins – Definition of Economics-Causes of Depression -Milton Friedman – Quantity Theory of Money –Permanent Income Hypothesis ,Friedman and Savage Hypothesis , Paul A.Samuelson –Impact of Keynesian Economics –Revealed Preference Theory –Business Cycles –Social Welfare Function-Samuelson’s Utility Possibility Approach

#### **UNIT IV: Post Keynesian Economic Thoughts (15 Hours)**

Ideas of Modern Indian Economists-R.K.Mukerjee- Institutional theory of Economics- Regional Economics - Ecological Theory of Population -Planning in India, J.K.Mehta – Static and Dynamic Economics -Economics of Welfare -Economics of Growth and Development-Economics of Fast

**UNIT V: Indian Economists****(15 Hours)**

C.N.Vakil -Planning- Wage -Goods Model-Role of Technological Progress-Poverty -Deficit Financing and Public Expenditure, V.K.R.V.Rao -Economic Activities -Institutional Development-Deficit Financing-Fiscal Policy-Human Factor in Economic Growth- AmartyaKumarSen – Poverty and Famine ,Poverty and Inequality-Concept of Capability- Entitlement -Choice of Techniques.

<b>Teaching Methodology</b>	PPTs -Brainstorming method-Written assignment on Current Issues-Preparation of PPTs by the students-Students are encouraged to handle seminar-Students are motivated to do online quizzing through Jostel
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**Books for Study**

1. Kulshrestha, U. C. (1994). *History of economic thought*. Lakshmi Narain Agarwal
2. Sankaran, S. (2006). *A history of economic thought*. Margham Publications

**Books for Reference**

1. Roll, E. (1956). *A history of economic thought*. Prentice Hall, Inc.
2. Srivastava, P. (2018). *Economic thinkers*. DND Publications.
3. Jhingan, M. L., Girija, M. & Sasikala, L. (2011). *History of economic thought*. Vrindha Publications

**Web Resources**

1. [https://ebrary.net/112930/history/a\\_brief\\_history\\_of\\_economic\\_thought](https://ebrary.net/112930/history/a_brief_history_of_economic_thought)
2. <https://www.exploring-economics.org>
3. <https://www.econlib.org>

CO No.	Course Outcomes	Cognitive Levels (K –Levels)
CO1	Understand modern economic concept of role of Entrepreneur Innovation, Business Cycles and Capitalism and Socialism.	K1
CO2	Ability to understand about Capital Formation, Disguised Unemployment Imperfect Competition and Mathematical Economic Analysis	K2
CO3	Understand the ideas of Permanent Income Hypothesis, Revealed Preference Theory, Social Welfare Function and Samuelson's Utility Possibility Approach	K3
CO4	Gain knowledge about the ideas of Modern Indian Economists-Regional Economics, Ecological Theory of Population - Economics of Growth and Development-Economics of Fast	K4
CO5	Understand economic ideas like role of Technological Progress-Poverty -Deficit Financing and Public Expenditure, Human Factor in Economic Growth and Inequality and Concept of Capability	K5
CO6	Synthesize various economic theories and concepts proposed by classical, neo-classical, Keynesian, and post-Keynesian economists.	K6

Relationship Matrix												
Semester	Course code	Title of the Course									Hours	Credits
1	23PEC1ES01	Elective - 1: Modern Economic Thought									5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	3	2	3	2	3	3	2	2	2	2.5	
CO2	3	3	2	2	2	3	3	2	3	3	2.6	
CO3	3	1	2	3	2	2	3	2	2	2	2.2	
CO4	3	2	2	2	1	3	3	2	2	2	2.2	
CO5	3	3	3	3	2	3	3	2	2	3	2.7	
CO6	3	3	3	2	2	3	2	2	3	2	2.5	
Mean overall Score											2.45 (High)	

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PEC1ES02	Elective - 2: Welfare Economics	5	3

Course Objectives
To understand the core concepts and principles of welfare economics
To compare and contrast cardinal and ordinal approaches in welfare economics
To examine the conditions for Pareto optimality and its application in perfect competition
To analyze the concepts and applications of New Welfare Economics
To Study the theories of social choice

#### **UNIT I: Introduction to Welfare Economics (15 Hours)**

Welfare Economics: Meaning- Concepts: Individual and Social Welfare- Value Judgments- Preferences and Utility - Utility function: Properties - Interpersonal comparisons of utility: degrees of interpersonal comparability. –Social Welfare Function: –Bentham’s Utilitarianism- Pigouvian Welfare Economics.

#### **UNIT II: Approaches to Welfare (15 Hours)**

Cardinal and Ordinal Approaches- Hicks’s Four Measures of Consumers’ Surplus- Partial and General Equilibrium- Edgeworth Box Diagram- General Equilibrium of Production and Exchange.

#### **UNIT III: Pareto Optimality Conditions (15 Hours)**

Pareto-Optimality Criterion -Definition-Marginal Conditions of Pareto Optimum – Perfect Competition and Pareto Optimality- Exceptions –Externalities – Public Goods and Market Failure – Theory of Second Best.

#### **UNIT IV: New Welfare Economics (15 Hours)**

New Welfare Economics – Kaldor- Hicks Compensation Criterion – Utility Possibility Curve -Shortcomings – Scitovsky Paradox – Scitovsky’s Double Criterion of Welfare– Little’s Criterion.

**UNIT V: Theories of Social Choice****(15 Hours)**

Utility Possibility Curve and Frontier Grand Utility Possibility Curve- Iso Welfare Curves  
Arrow's Impossibility Theorem –Amartya Sen and Capability Theorem – Rawls Theory  
of Social Justice.

<b>Teaching Methodology</b>	PPTs -Brainstorming method-Written assignment on Current Issues-Preparation of PPTs by the students-Students are encouraged to handle seminar-Students are motivated to do online quizzing through Jostel
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**Books for Study**

1. Verma, K. N. (2012). *Microeconomic theory*. Vishal Publishing House
2. Johannson, P. O. (2009). *An introduction to modern welfare economics*. Cambridge University Press.

**Books for References**

1. Arrow, K. J. (1963). *Social choice and individual values* (2nd ed.). Cowles Foundation Monograph 12, Yale University.
2. Bossert, W., & Suzumura, K. (2010). *Consistency, choice and rationality*. Harvard University Press.
3. Broadway, R.W., & Bruce, N. (1984). *Welfare economics*. Basil Blackwell.

**Web Resources**

1. <https://conceptually.org/concepts/pareto-principle>
2. <https://web.stanford.edu/~jdlevin/Econ 202/General Equilibrium.pdf>
3. <https://policonomics.com/lp-welfare-economics1-general-equilib...>



CO No.	Course Outcomes	Cognitive Levels ( K –Levels)
CO1	summarize the Contribution to welfare economics	K1
CO2	analyse the different approaches to welfare economics	K2
CO3	interpret the development of Pareto Optimality conditions	K3
CO4	Explain the compensation Criteria of Economics	K4
CO5	Evaluate and critique the theories of Social Choice.	K5
CO6	Apply the Pareto optimality criterion to various economic scenarios,	K6

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23PEC1ES02	Elective - 2: Welfare Economics								5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	3	2	3	3	2	2	2	2.5
CO2	3	3	2	2	2	3	3	2	3	3	2.6
CO3	3	1	2	3	2	2	3	2	2	2	2.2
CO4	3	2	2	2	1	3	3	2	2	2	2.2
CO5	3	3	3	3	2	3	3	2	2	3	2.7
CO6	3	2	3	3	2	2	3	2	2	3	2.5
Mean overall Score											2.45 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PEC1AE01	<b>Ability Enhancement Course:</b> Business Management with Tally	2	1

Course Objectives
To understand the nature of a business organization
To explore flexible purchase and sales management
To gain proficiency in inventory management
To familiarize with banking and job work functionalities
To learn to generate and analyze accounting and financial reports

#### **UNIT I: Simple Accounting Management ( 6 Hours)**

Pre-Defined accounting groups and flexible chart of accounting – Groups and Ledgers management – Multi Currency support – Post-dated transactions

#### **UNIT II: Flexible purchase and Sales Management (6 Hours)**

GST complaint invoice – Multiple billing formats – Multiple price list and discount management – multiple mailing address – sales and purchase order processing

#### **UNIT III: Inventory Management (6 Hours)**

Physical stock Verification - Manufacture and expiry date management – Flexible unit of measurement – Job costing –Reorder level - Multiple stock valuations

#### **UNIT IV: Banking and Job work (6 Hours)**

Auto Configuration - Cheque book management – Auto Bank reconciliation – Post-dated cheque management – E payment – Job Order and Work Processing

#### **UNIT V: Accounting and Financial Reports (6 Hours)**

Ledger reports – Cash/Bank Report – Bill receivable and payment – balance sheet – profit and loss A/C – Stock Summery – Stock Transfers – Order Summery

<b>Teaching Methodology</b>	PPTs -Brainstorming method-Written assignment on Current Issues-Preparation of PPTs by the students-Students are encouraged to handle seminar-Students are motivated to do online quizzing through Jostel
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### Books for Study

1. (2020). *Tally.ERP 9 with GST in simple steps (Paperback)*. DT Editorial Services.
2. Agrawal, N. (2019). *Comdex Tally.ERP 9 course lit*. Dreamtech press.

### Books for References

1. Nadhani, A. K. (2018). *Tall. ERP 9 training guide*. BPB Publications.
2. Gupta, V. (2018). *Comdex Tally.ERP 9 course kit with GST and MS Excel*. Dream tech press.
3. Singh, S. (n.d). *Tally Erp 9*. Vand S Publishers

### Web Resources

1. <https://tallysolutions.com/learning-hub/>
2. <https://www.rivereastlibrary.org/Pages/Index/183493/tech-time-online-resources-with-tally>
3. [https://www.tallysoft.com/wp-content/uploads/2017/07/TallyExplorer-Manual\\_v5.1.0.0.pdf](https://www.tallysoft.com/wp-content/uploads/2017/07/TallyExplorer-Manual_v5.1.0.0.pdf)

CO No.	Course Outcomes	Cognitive Levels (K –Levels)
CO1	Learn to create Banking Transactions and E- payment	K4
CO2	Acquire knowledge about Accounting and Inventory Reports in Tally ERP	K5
CO3	Generate and interpret a variety of accounting and financial reports.	K6

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23PEC1AE01	Ability Enhancement Course: Business Management with Tally								2	1
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	1	2	3	2	2	3	2	2	2	2.2
CO2	3	2	2	2	1	3	3	2	2	2	2.2
CO3	3	3	3	3	2	3	3	2	2	3	2.7
Mean overall Score											2.36 (High)



## PG & RESEARCH DEPARTMENT OF HUMAN RESOURCES MANAGEMENT St. JOSEPH'S COLLEGE (Autonomous)

Accredited at A++ Grade (4<sup>th</sup> Cycle) by NAAC Special Heritage Status awarded by UGC  
College with Potential for Excellence by UGC DBT-STAR & DST-FIST sponsored College

TIRUCHIRAPPALLI - 620 002.

Phone : 0431 - 4226499, 4226386, Fax : 0431 - 2701501

Website : [www.sjctni.edu](http://www.sjctni.edu),

### Minutes of the Board of Studies Meeting of Human Resource Management

The Board of Studies Meeting for discussing and approving the I Semester PG syllabus of HRM offered by TANSCHCE was held on 21<sup>st</sup> July 2023 at 11.30 AM in the Department of Human Resource Management. The meeting started with a silent prayer. Later, Mr. G. Louis Victor, Head of the Department welcomed the external member of the Board as well as the internal board members. The members of the Board of Studies comprises of the following;

#### External Members invited were;

1. Dr. S. Anbazhagan, Professor & Head, Department of Life Long Learning, Bharathidasan University, Khajamalai Campus, Tiruchirappalli-23 (University Representative)
2. Dr. K. Selvavinayagam, Professor, Department of Management Studies, Periyar University Centre for Post Graduate and Research studies, Dharmapuri (Subject expert)
3. Mr. S. Ramesh Kumar, Manager – HR, Egston Electronics (India) Pvt Ltd, Pudukkottai Main Road, Tiruchy- 620 007 (Industrial expert)

Out of which Dr. K. Selvavinayagam, Professor Department of Management Studies, Periyar University Centre for Post Graduate and Research studies, Dharmapuri (Subject expert) Participated in the board of studies.

#### Internal Members participated in the Board of Studies were;

1. Mr. G. Louis Victor, Head of the Department, Dept. of HRM, SJC, Trichy-2
2. Rev Fr. K. Arockiam SJ, Assistant Professor, Dept. of HRM, SJC, Trichy-2
3. Dr. J. Michael Raj, Assistant Professor, Dept. of HRM, SJC, Trichy-2
4. Dr. J. Wilfred Angelo Gerald, Assistant Professor, Dept. of HRM, SJC, Trichy-2
5. Dr. Y. Vijila, Assistant Professor, Dept. of HRM, SJC, Trichy-2

#### Agenda for the Board of Studies Meeting

Following are the areas discussed in the Board of Studies meeting;

- Revised I Semester 2022 PG syllabus
- Value added Course and Certificate Course
- Evaluation Pattern

The Head of the Department, Mr. G. Louis Victor highlighted the inclusion of one POs and PSOs in the HRM syllabus in-order to enhance the COs, POs and PSOs Mapping Table. A brief discussion was made after the digital presentation of the revised I Semester 2022 HRM Syllabus of TANSCHCE along with the table pertaining to the additions and deletions of the contents in the five units of each course was well appreciated by the external board member. Only few corrections in the form of restricting the contents of the I semester courses of MA HRM syllabus framed by TANSCHCE was carried out.

BOARD OF STUDIES MEETING HELD ON 21.07.2023		
DEPARTMENT OF HUMAN RESOURCE MANAGEMENT		
St. JOSEPH'S COLLEGE(AUTONOMOUS)		
TIRUCHIRAPPALLI -620002		
S. No.	Name and address	Signature
1.	Dr S. Anbazhagan, Professor, Department of Lifelong Learning, Khajamalai Campus, Bharathidasan University, Tiruchirappalli – 620 023 (University Representative)	ABSENT
2.	Dr. K. Selvavinayagam, Principal, Dept. of Management Studies, Periyar University Center for Post Graduate and Research Studies, Dharmapuri (Subject Expert)	K. S. 21.7.23
3.	Mr. S. Ramesh Kumar Manager – HR, EGSTON Electronics (India) Pvt. Ltd.No.37/1 & 37/2, Pudukkottai Main Road Trichy – 7.	ABSENT
4.	Mr. G. Louis Victor	G. Louis Victor
5.	Rev. Dr. K. Arockiam SJ	K. Arockiam SJ
6.	Dr. J. Michael Raj	J. Michael Raj
7.	Dr. J. Wilfred Angello Gerald	J. Wilfred Angello Gerald
8.	Dr. Y. Vijila	Y. Vijila

PROGRAMME PATTERN			
M.A. HUMAN RESOURCE MANAGEMENT			
Course Code	Title of the Course	Hours	Credits
23PHR1CC01	<b>Core Course - 1:</b> Management Principles	6	5
23PHR1CC02	<b>Core Course - 2:</b> Organisational Behaviour	6	5
23PHR1CC03	<b>Core Course - 3:</b> Strategic Human Resource Management	6	4
23PHR1ES01	<b>Elective - 1:</b> Managerial Economics	5	3
23PHR1ES02	<b>Elective - 2:</b> Accounting for Managers	5	3
23PHR1AE01	<b>Ability Enhancement Course:</b> Corporate Communication	2	1
	<b>Total</b>	<b>30</b>	<b>21</b>

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PHR1CC01	Core Course - 1: Management Principles	6	5

Course Objectives
To introduce the students to concepts and theories of Management
To understand the basic functions of Management
To give them an exposure to the different schools of management thoughts
To give them Knowledge about leading and motivating people
To make them learn about the decision-making process in the organization

### **UNIT I: Introduction to Basic Managerial Concepts (18 Hours)**

**Management:** Definition, Nature, Objectives of Management, Functions of management. Management Roles, Levels of Management, Managerial Skills and Challenges of Management. **Development of management thought:** 1. Classical Approach-FW Taylor's and Scientific Management, Henry Fayol's Contribution, 2. Neo Classical or Behavioral Approach to Management - Human Relations Approach, Behavioral Sciences Approach, 3. Modern Approaches to Management - Systems Approach, Contingency approach and Management Science.

### **UNIT II: Planning and Decision (18 Hours)**

Planning –Definition, Nature, Steps in Planning, types of planning, Forecasting- Definition, Difference between Planning and Forecasting.

Decision Making- Definition, Types of Decisions, Steps in Rational Decision Making, Models of Decision-Making Behavior, Difficulties in Decision Making.

### **UNIT III: Organizing (18 Hours)**

Organizing-Meaning, Definition, Process of Organizing, Formal and Informal Organization, Importance of organization, Guidelines for effective organizing, Span of Management-Meaning and Importance, Factors governing span of management, Pros and cons of narrow and wide spans of control. Types of organizations: 1. Line: Definition, Features, Merits and Demerits 2. Functional Organization: Definition, Features, Merits and Demerits, 3. Line and Staff: Definition, Features, Merits and Demerits, Departmentalization- Definition and bases for Departmentalization, Organization Structure - Contemporizing theories of Organization Structure.

### **UNIT IV: Delegation, Decentralization, Centralization and Communication (18 Hours)**

Delegation of Authority-Meaning, Advantages, Barriers to Effective Delegation, Guidelines for Effective Delegation, Decentralization of Authority-Definition, Advantages, Disadvantages, Centralization-Definition, Advantages, Disadvantages. Communication – Definition, Process. Types of communication - Formal and Informal, Methods or Channels of Communication, Barriers of Communication and how to overcome.

**UNIT V: Co-ordination and Control****(18 Hours)**

Co-ordination-meaning, Definition, Need, Requisites for Effective co-ordination, Types, Techniques of co-ordination, Difficulty of co-ordination. Controlling-Meaning, Definition, Principles, Objectives, Process and techniques.

<b>Teaching Methodology</b>	Videos, Power Point Presentation and Case Study
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**Books for Study**

1. Prasad. L.M. (2015). *Principles and practices of management*. Sultan hand & Sons New Delhi.
2. Drucker, P. (2006). *The practices of management*. Harper Business publications.

**Books for Reference**

1. Hellriegel ., Jackson., Solum. (2007). *A Competency based approach*. South-Western College Pub Hardcover.
2. Allen, L.A. (2008). *Management and organization*. Mcgraw Hill publishing co.ltd.
3. Chandrabose.D. (2004). *Principles of management and administration*. Prentice Hall India Pvt. Limited.
4. Hannagan, T. (2007). *Management concepts and practices*. Macmillan India Ltd.
5. Donnell, K.O. (2012). *Principles of management* . Tata McgrawHill publishing Company,Ltd.



Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	remember the basic concepts and functions of Management.	K1
CO2	understand the planning process of an organization.	K2
CO3	apply the different Organisational Structure based on the size of the organization.	K3
CO4	implement the direction techniques through the sub functions of Leadership, Motivation, Supervision and Communication	K4
CO5	synthesize those concepts into various Controlling techniques of an organization.	K5
CO6	analyze the effective management control system.	K6

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23PHR1CC01	Core Course - 1: Management Principles								6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	1	1	1	2	2	2	2	1	3	3	1.8
CO2	3	2	2	3	2	3	2	2	2	2	2.3
CO3	3	2	2	3	3	3	2	2	3	3	2.6
CO4	3	3	2	3	2	3	3	3	3	3	2.5
CO5	3	3	2	2	2	3	3	2	2	2	2.4
CO6	3	3	3	3	3	2	2	2	2	2	2.5
Mean overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PHR1CC02	Core Course - 2: Organisational Behaviour	6	5

Course Objectives
To acquaint with various forms of organizational dynamics
To familiarize with the concepts of organizational culture and climate
To understand the dynamics of stress and its management in organizations
To explain group dynamics and the needed skills to work in teams
To familiarize them with the process of organizational conflict

### **UNIT I: Introduction to OB and Determinants (18 Hours)**

Organizational Behaviour - Meaning, Definition, Nature, Role of OB, Foundations of OB, Importance of OB, Personality- Meaning, Nature, Theories of Personality, Perception- Meaning, Definition, Factors influencing Perception, Perceptual Process, Perceptual grouping, Factors affecting interpretation of data-perceptual set, attribution, stereotyping, halo effect, perceptual context, perceptual defense, implicit personality theory and projection.

### **UNIT II: Attitudes and Values (18 Hours)**

Attitudes and Values -Meaning, Definition, Nature, components of Attitudes, Formation of Attitudes, Functions of Attitudes, Types of Values-Terminal, Instrumental, Categories of Values-Theoretical, Economic, Aesthetic, Social, Political, Religious.

### **UNIT III: Motivation and Leadership (18 Hours)**

Motivation: Meaning, Definition, Nature of Motivation, Importance of Motivation, Motivational Challenges, Theories on Motivation, Motivation at work-Designing Motivating Jobs, Leadership-Meaning, Definition, Nature, Styles- Authorization, Participative, Free-rein style, Likert's Four Style, Theories of Leadership-trait, Behavioral and Contingency theories.

### **UNIT IV: Groups and Team Dynamics (18 Hours)**

Group Dynamics-Meaning, Nature, and Characteristics of Groups, Types of Groups, Reasons for Group Formation, Stages of Group Development, Functions of Groups, Benefits of groups in organizations, Disadvantages of Group Formation, Communication and group decision making, Inter group relations, Team Dynamics -Meaning, nature, Benefits, Types, Challenges, essentials for effective teamwork, Team Vs Group, Organizational Conflict-Meaning, Definition, Nature, Causes, Types of Conflicts, Levels of Conflicts, Stages / Process of Conflict, Management Conflicts.

### **UNIT V: Power and Organisational Culture (18 Hours)**

Power-Meaning, Definition, Types of Power-Reward Power, Coercive Power, Referent Power, Legitimate Power, Expert Power, Politics- Meaning, Types of Political Activity, traits, Behavioral Analysis (T.A), Work Stress- Meaning, Definition of Stress, Work Stress Model, Burnout –Meaning, Stress Vs Burnout, Stress Management. Organizational Culture – Meaning and Definition, Levels of Culture, Strategies for Sustaining culture, Climate-Meaning, OCTAPACE, Geert Hofstede s study on Organizational Culture.

Teaching Methodology	PPT, Videos, Role Play, Case studies
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### Books for Study

1. Robbins, S.P. (2013). *Organizational behaviour*. (15th ed.). Personal education.
2. Luthans, F. (n.d). *Organization behavior*. (12th ed.). TATA McGraw Hill.

### Books for Reference

1. Reigel, H., Slocum., & Woodman. (n.d). *Organization behavior*. (9th ed.). South western, Thomson learning.
2. Dwivdi, R.S. (1995). *Human relations and organizational behaviour*. (5th ed.). Englewood Cliffs, Prentice Hall.
3. Staw. (1995). *B.M.psychological dimensions of organizational behaviour*. (3<sup>rd</sup> ed.). Engle wood Cliffs, Prentice Hall.
4. Mc.Shane, S.L., & Glinow, M.A.V. (n.d). *Organizational behaviour*. (7<sup>th</sup> ed.). Tata Mc.Graw Hill.
5. Herse., & Blanchard. (n.d). *Management of organizational behaviour*. (10<sup>th</sup> ed.). PHI.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	To know how the individual difference will affect the organization performance.	K1
CO2	To analyze the learning approaches and attitudes-behaviour relationship	K2
CO3	To apply motivational theories in practice to motivate employees	K3
CO4	To ethically use the power in the appropriate place in the organization	K4
CO5	To make employees use the strategies for overcoming workplace stress	K5
CO6	To enhance the employees, learn about values, attitudes and power.	K6

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23PHR1CC02	Core Course - 2: Organisational Behaviour								6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	2	3	2	3	2	3	2	3	2.5
CO2	3	3	2	2	2	3	2	2	2	2	2.3
CO3	3	2	3	2	3	2	3	2	2	2	2.4
CO4	2	3	2	2	2	2	2	2	2	3	2.2
CO5	3	2	2	2	2	2	2	2	2	2	2.1
Mean overall Score											2.2 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PHR1CC03	Core Course - 3: Strategic Human Resource Management	6	4

Course Objectives
To understand the various concepts and principles of HR.
To expose the students to the strategic role of specific HR systems.
To apply the approaches of SHRM in the organization.
To implement the competitive compensation practices in the industry.
To adopt the emerging trends in HRM.

#### **UNIT I: Introduction (18 Hours)**

Definition of HRM, Objectives – Importance- Nature- Scope, Role and Qualities of a HR Manager. Human Resource Planning - Meaning, Definition, Importance, Factors affecting HRP, Process involved in Human Resource Planning. Job Analysis, Need for Job Analysis, Steps in Job Analysis, Job Description and Specification.

#### **UNIT II: Procurement and Development Function (18 Hours)**

Recruitment - Definition-Importance–Internal Sources and External sources, Modern sources of recruitment, Factors governing recruitment, Recruitment process. Selection – Meaning, Definition, Steps in Selection process, Barriers to Effective selection - Induction and Placement. Training and Development – Nature and need of Training and development, Inputs in Training, Training Process.

#### **UNIT III: Maintenance Function (18 Hours)**

Job Evaluation-Meaning, Definition, methods of Job evaluation; Performance Appraisal- Definition-objectives- Methods of Performance Appraisal-Process of Performance Appraisal; Compensation –Nature, Objectives, Components of Pay Structure, Factors Influencing Compensation Levels - Employee Engagement - Employee Separations.

#### **UNIT IV: Strategic HRM (18 Hours)**

Definition of Strategy, Strategic Human Resource Management (SHRM), Importance of SHRM, Difference between Traditional and Strategic Human Resource Management, “Best Fit” approach Vs. Best practices of SHRM, Role of HR Strategy& practices in National, Sectoral and Organizational context, Investment perspective of SHRM,Porter’s 5P’s model.

#### **UNIT V: Aligning HR Systems with Business Strategy and Evaluating HR Function (18 Hours)**

Sustained Competitive Advantage, How HR Adds value to the firm, HR as scarce resource, non-substitutable resource. Linking HRM practices to Organizational outcomes; Assessing and Reducing costs, Behavioral impact of HR practices, Auditing HR practices and Department. Linking strategy to HRM practices, Corporate HR philosophy and companywide HR standards, HRM leading strategy formulation. Alternative HR Systems; Universalistic,

Contingency, Configuration, Congruence and Integrated HR Systems. Evaluation HR function- Approaches to evaluation; HR Score card, Benchmarking, HR Accounting

<b>Teaching Methodology</b>	PPT, Videos, Role Play, Case studies
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### **Books for Study**

1. Ashwatappa, K. (2013). *Human resource management: Text and cases*. (7th ed.). McGraw Hill Education.
2. DeCenzo, D.A., Robbins, S.P., & Verhulst, S.L. (2016). *Fundamentals of human resource management*.
3. Greer, C. R. (2003). *Strategic human resource management*. Pearson Education.
4. Mello, J.A. (2002). *Strategic human resource management*. Thompson Learning.

### **Books for Reference**

1. Dessler, G. (2015). *Human resource management*. (15th ed.). Pearson.
2. Sharma, A. (2006). *Strategic human resource management: An Indian perspective*.
3. Prasad, K. (2017). *Strategic human resources management*., Macmillan Publisher.
4. Sanghi, S. (2012). *Human resource management*. Macmillan Publishers India Ltd.
5. Anjali, G. (2009). *Essentials of strategic human resource management*.
6. Gomez-Mejia, L.R., Balkin, D.B., & Cardy, R.L. (2002). *Managing human resource*, PHI.
7. Mammoria, C.B. (n.d). *Personnel management*. Himalayan Publishing Co.

### **Web Sources**

1. <https://www.digitalhrtech.com/hrm-books/>
2. [https://www.academia.edu/39035303/PDF\\_Download\\_Human\\_Resource\\_Management\\_15th\\_Edition\\_Free\\_Online](https://www.academia.edu/39035303/PDF_Download_Human_Resource_Management_15th_Edition_Free_Online)
3. <https://open.umn.edu/opentextbooks/textbooks/human-resource-management>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	Upon completion of the course students will be able to	
CO1	understand and apply the concepts of HRM.	K1
CO2	gain the competency to recruit and choose people for the organization	K2
CO3	apply the Performance Evaluation and Compensation Strategies in practice	K3
CO4	develop the employability skills needed for the workplace	K4
CO5	approach the feasibility and the link between business strategy and HR	K5
CO6	recommend to organization management improvements resulting in the effective application of HRM processes	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PHR1CC03		Core Course - 3: Strategic Human Resource Management							6	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	2	3	3	3	2	3	3	2.7
CO2	3	3	3	2	3	3	3	2	3	3	2.8
CO3	3	3	3	2	3	3	3	2	3	2	2.7
CO4	3	3	3	3	3	2	3	3	3	3	2.9
CO5	3	3	3	2	3	2	3	2	3	3	2.7
CO6	2	3	2	3	2	3	3	2	2	3	2.6
Mean overall Score											2.7 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PHR1CC03	Core Course - 3: Strategic Human Resource Management	6	4

Course Objectives
To understand concepts and techniques used in micro economic theory and to enable them to apply this knowledge in business decision-making.
To give in-depth knowledge in emerging global trends in business environment and Macro-economic management.
To facilitate students to participate in debates on economic matters.
To develop skills in solving business problems by using various economic techniques.
To familiarize various models, policies and Acts of economics.

### **UNIT I: Introduction (12 Hours)**

Fundamentals of Economics- Meaning, Definitions, Branches of Economics, Managerial Economics- Definition, Characteristics, Significance and Scope of Managerial Economics in an Organization; Difference between Economics and Managerial Economics; Role of Managerial Economist.

### **UNIT II: Demand Analysis & Forecasting (12 Hours)**

Demand Analysis & Forecasting: Demand-Meaning, Law of Demand, Demand Schedule and Demand Curve, Why Demand Curve Slopes Downward, Exception to Law of Demand Factors determining Demand, Elasticity of Demand Meaning and Definition, types, Factors and Importance. Demand Forecasting-Meaning, Definition, Types, Objectives, Purpose, Importance, Levels and Approaches

### **UNIT III: Supply and Production (12 Hours)**

Supply and Production: Supply-Meaning, Supply Schedule, Law of Supply, Supply Curve, Factors determining Supply, Expansion and Contraction of Supply Curve, Elasticity of Supply. Production -Meaning, Types, Factors, Function and Laws of Production.

### **UNIT IV: Cost and Revenue Concepts (12 Hours)**

Cost and Revenue Concepts: Cost and Concepts, Break Even Analysis-Meaning, Determinants of BEA, Usefulness & Limitations of BEA; Revenue – Meaning, Kinds of Revenue

### **UNIT V: National Income & Economic Policies (12 Hours)**

National Income, Social Accounting Aggregates, Computation of National Income, Business Cycle and Phases, Characteristics of Business Policy, Inflation and Deflation, Monetary Policy, RBI Functions, RBI and Credit Control measures used by RBI, Fiscal Policy-Meaning, Objectives, Instruments and Limitations. Economic Planning-Definition, Features, and Objectives, Foreign Exchange Management Act 1999, Global Economic Scenario.



<b>Teaching Methodology</b>	Chalk & Talk, Digital Presentation, Group Discussion & Role Play
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**Books for Study:**

1. Gupta, G.S. (2017). *Managerial economics*. McGraw Hill Education.
2. Mithani, D.M. (2016). *Managerial economics*. Himalaya Publication House.
3. Petersen, H.C., Lewis, W.C., & Jain, S.K. (2008). *Indian economy: Developments and challenges*. Pearson Education.

**Books for Reference:**

1. Ahuja, H.L. (2014). *Managerial economics*. S Chand Publishers.
2. Salvatore, D. (2016). *Managerial economics: Principles and worldwide applications*. Oxford University Press.
3. Dwivedi, D.N. (2015). *Managerial economics*. Vikas Publishing House.
4. Varshney, R.L. (2014). *Managerial economics*. Sultan Chand & Sons.
5. Baye, M., & Prince, J. (2017). *Managerial economics and business strategy*. McGraw Hill Education.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	Describe the basic terms of managerial economics	K1
CO2	Restate the fundamental concepts of managerial economics and their managerial implications in human resources	K2
CO3	Illustrate the concepts like demand, supply, production and economic policies in competitive examinations	K3
CO4	Investigate the trade policies and its impact in human resources of an organization	K4
CO5	Justify their decision by sharing their enriched skills and knowledge in managerial economics with the HR professionals	K5
CO6	Create opportunities for developing business policies to meet competitive demand and production	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PHR1CC03		Core Course - 3: Strategic Human Resource Management							6	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	2	2	2	2	2	2	2	2	2.0
CO2	3	3	3	2	3	3	3	3	2	3	2.8
CO3	2	2	2	3	3	2	2	2	3	3	2.4
CO4	2	3	3	2	3	2	3	3	2	3	2.6
CO5	2	3	3	2	3	2	3	3	2	3	2.6
Mean overall Score											2.4 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
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1	23PHR1ES02	Elective - 2: Accounting for Managers	5	3
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Course Objectives
To introduce the students about the fundamentals of Financial, Management and Cost Accounting
To learn the tools and techniques involved in Financial, Management and Cost Accounting.
To equip the students to handle decisions by applying Financial, Management and Cost accounting
To apply the standard accounting techniques in assessing the different outcomes
To make them know the accounting information will support in decision making

### UNIT I: Introduction

(15 Hours)

Financial Accounting- Meaning, Definition, Objectives, Need, Significance and Limitations of Financial Accounting, Accounting Cycle, Relationship between Accountancy, Accounting and Book Keeping, Distinction between book keeping and accounting, Users of Accounting Information, Branches of Accounting-Financial, Cost and Management Accounting.

**Basic Accounting Terms**-Transactions, Proprietor, Capital, Assets, Liabilities, Drawings, Debtors, Creditors, Purchases, Purchase return or returns outward, Sales, Sales return or return inward, Stock, Revenue, Income, Expense, Voucher, Invoice, Receipt, Account, Basic Assumptions: Accounting entity assumption, Money measurement assumption, accounting period assumption, going concern assumption – Passing of Journal Entries, Preparation of Ledgers and Trial Balance

### UNIT II: Financial Accounts

(15 Hours)

Final Accounts- Meaning, Parts of Final Accounts-Trading Account, Profit and Loss Account, Balance Sheet- Definitions and Meaning, Only Definitions of the following terms-Closing stock, Outstanding expenses, Prepaid expenses, Accrued incomes, Incomes received in advance, Interest on capital, Interest on drawings, Interest on loan, Interest on investment, Depreciation, Bad debts, Provision for bad and doubtful debts, Provision for discount on debtors, Provision for discount on creditors – Preparation of Final Accounts with Simple Adjustments.

Financial Statement Analysis-Meaning, Objectives, Nature, Importance and Limitations of Financial Statements, Window Dressing –meaning, methods, Techniques or Tools for Financial Statement Analysis, Limitations of Financial Statements analysis – Ratio Analysis.

**UNIT III: Management Accounting****(15 Hours)**

Management Accounting-Meaning, Definition, Characteristics, Scope and Importance and Limitations of Management Accounting, Difference between Management Accounting and Financial Accounting, Installation of Management Accounting System, Functions and Duties of Management Accountant.

**UNIT IV: Cost Accounting****(15 Hours)**

Cost Accounting - Definitions, Objectives, Scope, Advantages and Limitations of Cost Accounting, Difference between Cost Accounting and Financial Accounting, Difference between Cost Accounting and Management Accounting, Classification of Cost, Methods of Costing, Elements of Cost-Material ( Direct and indirect material), Labour ( Direct and Indirect), Expenses ( Direct and indirect), Direct and Indirect Costs/ Overheads, Classification of Overhead-Factory Overhead, Administration or Office Overhead, Selling and Distribution Overhead, Cost Sheet – Preparation of Cost Sheets.

**UNIT V: Marginal Costing****(15 Hours)**

Marginal Costing- Definition, Marginal Cost-Definition, Features of Marginal Costing, Advantages of Marginal Costing, Limitations of Marginal Costing, Cost-Volume-Profit Analysis-Meaning, Important Concepts used in Cost-Volume-Profit analysis-Fixed Cost, Variable Cost, Contribution, Contribution to sales, Profit Volume ratio, Break even analysis and Break-even point, Composite Breakeven point, Margin of Safety – Simple Problems.

<b>Teaching Methodology</b>	Chalk & Talk, Videos, PPTs, Demonstration and Creation of Models
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**Books for Study:**

1. Kuchhal, S.C. (2017). *Financial management – Analysis & conceptual approach*. S.S. Chand.
2. Prasad, N.K. (2017). *Principles and practices of cost accounting*, Sultan Chand.
3. Pandey, I.M. (2019). *Management accounting*, Pearson Publications.
4. Maheswari, S. N. (2018). *Financial management*, Sultan Chand.

**Books for Reference:**

1. Hingorani., Ramanathan., & Grewa. (2018). *Management accounting*, Sultan Chand.
2. Anthony, R.N. (2020). *Management accounting – Text and cases*. Irwin.
3. Maheswari, S.N. (2015). *Management accounting*. Sultan Chand.
4. Guthman, H.G. (2020). *Analysis of financial statements*, Prentice Hall.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On Successful completion of this course, students will be able to	
<b>CO1</b>	describe the various types of the organization and the financial system they follow.	<b>K1</b>
<b>CO2</b>	ascertain the trading results of a concern	<b>K2</b>
<b>CO3</b>	evaluate profitability, liquidity, financial and turnover ratio of the various companies	<b>K3</b>
<b>CO4</b>	analyze the data of the financial statements of different companies.	<b>K4</b>
<b>CO5</b>	know how the different accounting practices are to planning	<b>K5</b>
<b>CO6</b>	apply the accounting information in managerial decision making	<b>K6</b>

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
<b>1</b>											
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
<b>CO1</b>	3	3	2	3	2	2	3	2	2	2	2
<b>CO2</b>	2	2	2	3	2	3	2	3	2	2	2
<b>CO3</b>	2	2	2	2	3	2	3	2	3	2	2
<b>CO4</b>	3	2	3	3	2	3	2	3	2	2	2
<b>CO5</b>	2	2	3	2	2	2	2	3	3	3	3
<b>CO6</b>	2	2	3	2	2	2	2	3	3	3	3
Mean overall Score											<b>2.3 (High)</b>

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PHR1AE01	Ability Enhancement Course: Corporate Communication	2	1

Course Objectives
To familiarize the students with the basic concepts of business communication and its applications in business
To develop communication skills of the students
To equip students to apply IT and audio-visual tools for effective communication
To stimulate the thinking skills of the students
To improve both the technical and the business communication of the students

#### **UNIT I: Introduction to Communication (8 Hours)**

Communication-Functions and Importance of communication in Business organization; Communication process; Types and Channels of Communication –Barriers of Communication.

#### **UNIT II: Oral Communication (8 Hours)**

Oral Communication: inter personal communication- interviews- Group discussions conversational skill- public speaking- nature, structure and styles of speeches- public meeting- board meeting- business presentations-Video Conferencing-role of IT and computers in oral presentations-Cyber Security and Cyber Information.

#### **UNIT III: Written Communication (8 Hours)**

Written Communication- letter writing: different types- report writing- types of report appointment orders-preparation of resume and job applications- memorandum.

#### **UNIT IV: Business Correspondence (8 Hours)**

Business Correspondence; structure and formats of various official documents like memo, note, quotation, inter office and intra office communications, correspondence with external organizations. Managing business communications; role of computer networks in business communication.

#### **UNIT V: Non-verbal Communication (8 Hours)**

Non-verbal communication-Art of listening- listening vs. hearing – barriers to effective listening- non-verbal communication- body language- NLP

<b>Teaching Methodology</b>	Chalk & Talk, Digital Presentation, Group Discussion & Role Play
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**Books for Study**

1. Guffey., Ellen, M., Seefer., & Carolyn, M. (2010). *Essentials of business communication*. Cengage Learning.
2. Lesikar., Raymond, V. (2005). *Basic business communication*. Mc Graw Hill.

**Books for Reference**

1. Chaturvedi, P.D., Chaturvedi., & Mukesh. (2011). *Business communication*. Pearson Education.
2. Stuart., Bonnye, E., Stuart, L., & Sarow. (2012). *Integrated business communication: In a global marketplace*. Wiley India.
3. Raman., Meenakshi., Singh., & Prakash. (2012). *Business communication(2/e)*. Oxford University Press.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	understand the communication process used in the organizations.	K1
CO2	apply both verbal and non-verbal communication in practice.	K2
CO3	demonstrate the communication skills in the area of public relations.	K3
CO4	have the skills that will maximize the effectiveness to be a part in team.	K4
CO5	effectively solve the real life problems using the communication skills.	K5
CO6	Create official documents in the real work environment	K6

Relationship Matrix												
Semester	Course code		Title of the Course								Hours	Credits
1	23PHR1AE01		Ability Enhancement Course: Corporate Communication								2	1
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	2	3	2	2	2	2	2	3	2	2.3	
CO2	3	2	2	3	2	3	2	2	3	3	2.5	
CO3	3	3	2	2	2	3	2	2	2	3	2.4	
CO4	3	2	2	2	2	3	2	2	2	2	2.2	
CO5	3	3	2	3	3	3	2	2	3	3	2.7	
Mean overall Score											2.4 (High)	

School of

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PHYSICAL SCIENCES

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## DEPARTMENT OF CHEMISTRY

### St. JOSEPH'S COLLEGE (Autonomous)

Accredited at A<sup>++</sup> Grade (Cycle IV) by NAAC Special Heritage Status awarded by UGC  
College with Potential for Excellence by UGC DBT-STAR & DST-FIST sponsored College

TIRUCHIRAPPALLI - 620 002.

Phone : 0431 - 4226390, 2700320, Fax : 0431 - 2701501

Website : [www.sjctni.edu](http://www.sjctni.edu)

#### Board of Studies Meeting Minutes of Meeting

21.07.2023

The meeting started with a silent prayer. Dr. S. Joseph Selvaraj, Head of the Department welcomed the external expert and the faculty members.

The TANSCHS syllabus with minor modifications by the faculty was presented.

Dr. D. Saravanan, External expert suggested that the I UG (NME) Food chemistry contents could be reduced to meet the available working hours.

He also observed that the organic practical contents for I MSc Chemistry in the syllabus should be retained as in the TANSCHS syllabus.

Dr. I. Arockiaraj presented the syllabus for the value added course and he noted the suggestions given by the faculty and external expert to be carried out. Dr. D. Saravanan suggested that the course can be restricted only to the science students.



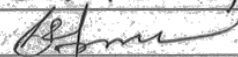



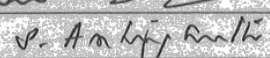
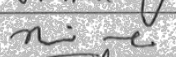









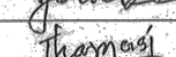





Dr. S. Antony Sakthi proposed the vote of thanks.

External Expert

Head of the Department

**Dr. D. Saravanan**  
Associate Professor of Chemistry  
National College (Autonomous)  
Tiruchirappalli

**Dr. S. JOSEPH SELVARAJ, M.Sc, Ph.D.,**  
Head, Department of Chemistry,  
St. Joseph's College (Autonomous),  
Tiruchirappalli-620 002.

BOARD OF STUDIES MEETING HELD ON 21.07.2023		
DEPARTMENT OF CHEMISTRY		
St. JOSEPH'S COLLEGE(AUTONOMOUS) TIRUCHIRAPPALLI -620002		
S. No.	Name and address	Signature
1.	Dr. D.Saravanan, Associate Professor (S.S.), Department of Chemistry, National College (Autonomous), Tiruchirappalli – 620 001 (University Representative)	
2.	Dr. Karvembu, Professor, Dept. of Chemistry National Institute of Technology Tiruchirappalli. (Subject Expert)	
3.	Mr. Thyagarajan, Regional Manager, Metrohm India Pvt. Ltd, Metrohm – S.I Towers 31 & 3 Fourtis Avenue, Annai Indira Nagar, Thoraipakkam, Chennai 600 097.	
4.	Dr. S. Joseph Selvaraj	
5.	Dr. S. Denis Arockiaraj	
6.	Dr. A.N. Paul Angelo	
7.	Dr. A. Rose Venis	
8.	Dr. A. Irudaya Joithi	
9.	Dr. S. Antony Sakthi	
10.	Dr. A. Edwin Vasu	
11.	Dr. A.S. Stella Shalini	
12.	Dr. A. Simi	
13.	Dr. S. Britto	
14.	Mr. A. Ceril Jeoffrey	
15.	Dr. C. Rajarathinam	
16.	Dr. S. Mangalaraj	
17.	Dr. A. Leo Standly	
18.	Dr. A. Arun Viveke	
19.	Dr. I. Arockiaraj	
20.	Rev. Dr. A. Sebastin Thangadurai SJ	
21.	Rev. Fr. A.I. Rajasekaran, SJ	
22.	Dr. A. Arun Joseph Rosario	
23.	Mr. P. Arockiadoss	
24.	Dr. J.K. Alphonsa Juliet Helina	
25.	Dr. G. DAYANA JEYALEELA	

PROGRAMME PATTERN				
B. Sc. CHEMISTRY				
Part	Course Code	Title of the Paper	Hours	Credits
<b>I</b>	23UTA11GL01A	<b>General Tamil - 1</b> தமிழ் இலக்கிய வரலாறு - 1	5	3
	23UFR11GL01	French-1		
	23UHI11GL01	Hindi-1		
	23USA11GL01	Sanskrit-1		
<b>II</b>	23UEN12GE01	General English-1	5	3
<b>III</b>	23UCH13CC01	<b>Core Course -1:</b> General Chemistry-I	5	5
	23UCH13CP01	<b>Core Practical -1:</b> Quantitative Inorganic Estimation (Titrimetry) and Inorganic Preparations	3	3
	23UMA13AC01A	<b>Allied Course -1:</b> Allied Mathematics for Chemistry - 1	6	5
<b>IV</b>	23UCH14FC01	<b>Foundation Course:</b> Fundamentals of Chemistry	2	2
	23UCH14SE01A	<b>Skill Enhancement Course - 1(Non Major Elective):</b> Food Chemistry	2	2
	23UCH14SE01B	<b>Skill Enhancement Course - 1(Non Major Elective):</b> Role of Chemistry in Daily Life		
	23UHE14VE01	<b>Value Education:</b> Essentials of Humanity	2	1
<b>Total</b>			<b>30</b>	<b>24</b>

Semester	Course code	Title of the Course	Hours/Week	Credits
1	23UCH13CC01	Core Course -1: General Chemistry-I	5	5

Course Objectives
To understand the various atomic models and atomic structure
To know about the wave particle duality of matter
To discuss periodic table, periodicity in properties and its application in explaining the chemical behaviour
To highlight nature of chemical bonding
To familiarize about fundamental concepts of organic chemistry

### UNIT I: Atomic Structure and Periodic Trends (15 hours)

History of atom (J.J. Thomson, Rutherford); Moseley's Experiment and Atomic number, Atomic Spectra; Black-Body Radiation and Planck's quantum theory - Bohr's model of atom; The Franck-Hertz Experiment; Interpretation of H- spectrum; Photoelectric effect, Compton effect; Dual nature of Matter - De-Broglie wavelength - Davisson and Germer experiment- Heisenberg's Uncertainty Principle; Electronic Configuration of Atoms and ions - Hund's rule, Pauli's exclusion principle and Aufbau principle. Numerical problems involving the core concepts.

### UNIT II: Introduction to Quantum Mechanics (15 Hours)

Classical mechanics, Wave mechanical model of atom, distinction between Bohr orbit and orbital; Postulates of quantum mechanics; probability interpretation of wave functions, Formulation of Schrodinger wave equation - Probability and electron density - visualizing the orbitals - Probability density and significance of  $\Psi$  and  $\Psi^2$ . Modern Periodic Table: Cause of periodicity; Features of the periodic table; classification of elements - Periodic trends for atomic size - Atomic radii, Ionic, crystal and Covalent radii; ionization energy, electron affinity, electronegativity - electronegativity scales, applications of electronegativity. Problems involving the core concepts.

### UNIT III: Structure and Bonding - I (15 Hours)

Ionic bond: Lewis dot structure of ionic compounds; properties of ionic compounds; Energy involved in ionic compounds; Born Haber cycle – lattice energies, Madelung constant; relative effect of lattice energy and solvation energy; Ion polarisation – polarising power and polarizability; Fajans' rules - effects of polarisation on properties of compounds; problems involving the core concepts. Covalent bond: Shapes of orbitals - overlap of orbitals –  $\sigma$  and  $\Pi$  bonds; directed valency - hybridization; VSEPR theory - shapes of molecules of the type  $AB_2$ ,  $AB_3$ ,  $AB_4$ ,  $AB_5$ ,  $AB_6$  and  $AB_7$ . Partial ionic character of covalent bond - dipole moment, application to molecules of the type  $A_2$ ,  $AB$ ,  $AB_2$ ,  $AB_3$ ,  $AB_4$ ; percentage ionic character - numerical problems based on calculation of percentage ionic character.

### UNIT IV: Structure and Bonding – II (15 Hours)

VB theory – application to hydrogen molecule; concept of resonance - resonance structures of some inorganic species –  $CO_2$ ,  $NO_2$ ,  $CO_3^{2-}$ ,  $NO_3^-$ ; limitations of VBT; MO theory -

bonding, antibonding and nonbonding orbitals, bond order; MO diagrams of  $H_2$ ,  $C_2$ ,  $O_2$ ,  $O_2^+$ ,  $O_2^-$ ,  $O_2^{2-}$ ,  $N_2$ ,  $NO$ ,  $HF$ ,  $CO$ ; magnetic characteristics, comparison of VB and MO theories. Coordinate bond: Definition, Formation of  $BF_3$ ,  $NH_3$ ,  $NH_4^+$ ,  $H_3O^+$  properties. Metallic bond-electron sea model, VB model; Band theory - mechanism of conduction in solids; conductors, insulator, semiconductor – types, applications of semiconductors. Weak Chemical Forces - Vander Waals forces, ion-dipole forces, dipole-dipole interactions, induced dipole interactions, Instantaneous dipole-induced dipole interactions. Repulsive forces; Hydrogen bonding – Types, special properties of water, ice, stability of DNA; Effects of chemical force, melting and boiling points.

### UNIT V: Basic Concepts In Organic Chemistry And Electronic Effects (15 Hour)

Types of bond cleavage – heterolytic and homolytic; arrow pushing in organic reactions; reagents and substrates; types of reagents - electrophiles, nucleophiles, free radicals; reaction intermediates – carbanions, carbocations, carbenes, arynes and nitrynes. Inductive effect - reactivity of alkyl halides, acidity of halo acids, basicity of amines; inductomeric and electromeric effects. Resonance – resonance energy, conditions for resonance - acidity of phenols, basicity of aromatic amines, stability of carbonium ions, carbanions and free radicals, reactivity of vinyl chloride, dipole moment of vinyl chloride and nitrobenzene, bond lengths; steric inhibition to resonance. Hyperconjugation - stability of alkenes, bond length, orienting effect of methyl group, dipole moment of aldehydes and nitromethane. Types of organic reactions – addition, substitution, elimination and rearrangements.

<b>Teaching Methodology</b>	Interactive videos, PPT, demonstration and creation of models
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#### Books for Study

1. Madan, R. D. & Prakash, S. (2003). *Modern inorganic chemistry* (2nd ed.). S.Chand & Company.
2. Rao, C.N. R. (2000). *University General Chemistry*. Macmillan Publication.
3. Puri, B. R. & Sharma, L. R. (2002). *Principles of physical chemistry* (38th ed.) Vishal Publishing Company.
4. Bruce, P. Y. & Prasad, K. J. R. (2008). *Essential organic chemistry*. Pearson Education.
5. Dash, U. N., Dharmarha, O. P., & Soni P. L. (2016). *Textbook of physical chemistry*. Sultan Chand & Sons.
6. Lee, J. D. (1991). *Concise inorganic chemistry*, (4th ed.). ELBS WilliamHeinemann.
7. Atkins, P.W. & Paula, J. (2014). *Physical chemistry* (10th ed.). Oxford University Press.

#### Books for Reference

1. Maron, S. H. & Prutton C. P. (1972). *Principles of physical chemistry* (4th ed.). The Macmillan Company.
2. Raj, G. (2001). *Advanced inorganic chemistry* (26th ed.). Goel Publishing House.
3. Huheey, J. E. (1993). *Inorganic chemistry: Principles of structure and reactivity* (4th ed.). Addison-Wesley Publishing Company.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	Explain the atomic structure, wave particle duality of matter, periodic properties bonding, and properties of compounds.	K1
CO2	Classify the elements in the periodic table, types of bonds, reaction intermediates electronic effects in organic compounds, types of reagents.	K2
CO3	Apply the theories of atomic structure, bonding, to calculate energy of a spectral transition, $\Delta x$ , $\Delta p$ electronegativity, percentage ionic character and bond order.	K3
CO4	Evaluate the relationship existing between electronic configuration, bonding, geometry of molecules and reactions; structure reactivity and electronic effects	K4
CO5	Construct MO diagrams, predict trends in periodic properties, assess the properties of elements, and explain hybridization in molecules, nature of H – bonding and organic reaction mechanisms.	K5

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23UCH13CC01	Core Course -I: General Chemistry-I								5	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	2	2	2	2	2	3	2	1	2.1
CO2	2	2	2	3	2	3	2	2	2	3	2.3
CO3	3	3	3	2	2	3	3	3	2	3	2.7
CO4	2	2	2	2	2	2	3	3	2	2	2.2
CO5	3	3	3	2	2	3	2	3	2	2	2.5
Mean overall Score											2.3 (High)

Semester	Course code	Title of the Course	Hours/Week	Credits
1	23UCH13CP01	<b>Core Practical -1:</b> Quantitative Inorganic Estimation (Titrimetry) and Inorganic Preparations	3	3

Course Objectives
To learn laboratory safety
To learn to handle glassware in chemistry laboratory
To know the principles behind the quantitative estimation of inorganic compounds
To analyze active ingredients in some pharmaceutical formulations like iron content in iron tablets.
To know the preparative methods of simple inorganic compounds

### UNIT I: Chemical Laboratory Safety in Academic Institutions

Introduction - importance of safety education for students, common laboratory hazards, assessment and minimization of the risk of the hazards, prepare for emergencies from uncontrolled hazards; concept of MSDS; importance and care of PPE; proper use and operation of chemical hoods and ventilation system; fire extinguishers-types and uses of fire extinguishers, demonstration of operation; chemical waste and safe disposal.

#### Common Apparatus Used in Quantitative Estimation (Volumetric)

Description and use of burette, pipette, standard flask, measuring cylinder, conical flask, beaker, funnel, dropper, clamp, stand, wash bottle, watch glass, wire gauge and tripod stand.

#### Principle of Quantitative Estimation (Volumetric)

Equivalent weight of an acid, base, salt, reducing agent, oxidizing agent; concept of mole, molality, molarity, normality; primary and secondary standards, preparation of standard solutions; theories of acid-base, redox, complexometric, iodimetric and iodometric titrations; indicators – types, theory of acid–base, redox, metal ion and adsorption indicators, choice of indicators.

### UNIT II: Quantitative Estimation (Volumetric)

- Preparation of standard solution, dilution from stock solution Permanganometry
- Estimation of sodium oxalate using standard ferrous ammonium sulphate Dichrometry
- Estimation of ferric alum using standard dichromate (external indicator)
- Estimation of ferric alum using standard dichromate (internal indicator) Iodometry
- Estimation of copper in copper sulphate using standard dichromate Argentimetry
- Estimation of chloride in barium chloride using standard sodium chloride/Estimation of chloride in sodium chloride (Volhard's method)

### UNIT III: Complexometry

- Estimation of hardness of water using EDTA
- Estimations
- Estimation of iron in iron tablets
- Estimation of ascorbic acid.
- Preparation of Inorganic compounds

- Potash alum
- Tetraammine copper (II) sulphate
- Hexamminecobalt (III) chloride
- Mohr's Salt

### Books for Study

1. Venkateswaran, V., Veeraswamy, R., & Kulandivelu, A.R. (1997). *Basic principles of practical chemistry* (2nd ed.). Sultan Chand & Sons.
2. Nad, A. K., Mahapatra, B., & Ghoshal, A. (2007). *An advanced course in practical chemistry* (3rd ed.). New Central Book Agency.

### Books for Reference

1. Mendham, J. & et al. (2000). *Textbook of quantitative chemical analysis* (6<sup>th</sup> ed.). Pearson Education Ltd.

### Web Source

1. <http://www.federica.unina.it/agraria/analytical-chemistry/volumetric-analysis>
2. <https://chemdictionary.org/titration-indicator/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	To recall the basic principles of laboratory safety	K1
CO2	To know the handling of chemicals and glassware in the laboratory.	K2
CO3	To know the terms and principles in volumetric estimations.	K3
CO4	To develop strategies to analyze inorganic compounds.	K4
CO5	To know the basics, methodology and procedure of simple inorganic compounds.	K5

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23UCH13CP01	Core Practical -1: Quantitative Inorganic Estimation (Titrimetry) and Inorganic Preparations								3	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	3	2	2	3	1	2	2	2	2.2
CO2	3	3	2	2	2	2	3	2	2	3	2.4
CO3	2	2	3	3	2	2	3	2	2	2	2.3
CO4	3	2	2	3	2	2	1	3	2	2	2.2
CO5	3	1	2	3	2	1	2	2	3	3	2.2
Mean overall Score											2.26 (High)



Semester	Course code	Title of the Course	Hours/Week	Credits
1	23UCH14FC01	<b>Foundation Course:</b> Fundamentals of Chemistry	2	2

Course Objectives
To understand the basic concentration terms in volumetric analysis
To practice using the chemicals in laboratory
To understand the significance of modern periodic table.
To analyse different methods of volumetric techniques
To understand the structure of organic compounds on the basis of hybridization

#### **UNIT I: Concentration Terms (6 Hours)**

International system of units, The distinction between mass and weight, The Mole, Calculating amount of substances in moles, and molecular weight calculations, Molar volume, oxidation number, Concentration of solutions- molality, molarity, normality, mole fraction and parts per million, parts per billion.

#### **UNIT II: Chemicals and Apparatus Using in Laboratory (6 Hours)**

Selecting and handling reagents and other chemicals, classifying chemicals, reagent grade, primary standard grade and special purpose reagent grade. Rules for handling reagents and solutions, cleaning and making of laboratory ware. Measuring mass using electronic analytical balance. Desiccators and Desiccants. Apparatus for precisely measuring volume pipet, buret and volumetric flask.

#### **UNIT III: Periodic Table (6 Hours)**

Significance of the modern periodic table (IYPT 2019), Using interactive periodic table ([rsc.org/periodic-table](http://rsc.org/periodic-table)), format of the modern periodic table. grouping of elements as metals, non-metals and metalloids. Atomic number, mass number, atomic weight, isotopes, writing electronic configuration of elements, valency and variable valency, calculation of oxidation state of inorganic compounds.

#### **UNIT IV: Volumetric Analysis (6 Hours)**

Principles of Titrations, Theory of Indicators, Types of Titrations – Acidimetry, Alkalimetry, Permanganometry, Dichrometry, Iodometry, Argentometry, Complexometry. Error analysis: Accuracy, Precision, Error: Types of Errors.

#### **UNIT V: Basics of Organic Chemistry (6 Hours)**

Ionic, covalent, and polar bonds, dipole moment, Lewis structures, atomic orbitals, an introduction to molecular orbital theory, hybridization concept (Example, methane, ethane, ethylene and acetylene), Electrophile, nucleophile

<b>Teaching Methodology</b>	Interactive videos, PPT, demonstration and creation of models
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### Books for Study

1. Skoog, D. A., West, D. M., Holler, J. and Crouch, S. R. (2014). *Fundamentals of analytical chemistry* (9<sup>th</sup> ed.). Brooks/Cole-Cengage Learning, Belmont.
2. Lee, J. D. (1991). *Concise inorganic chemistry* (4<sup>th</sup> ed.). ELBS William Heinemann,
3. Morrison R. T, Boyd R. N. (1987). *Organic chemistry* (4<sup>th</sup> ed.). Prentice-Hall of India, Pvt, Ltd.
4. Bruice. P. Y. (2007). *Organic chemistry* (4<sup>th</sup> ed.). Pearson Education, Inc.

### Books for Reference

1. Maron, S. H., & Prutton C. P. (1972). *Principles of physical chemistry* (4th ed.). The Macmillan Company.
2. Lee, J. D. (1991). *Concise inorganic chemistry* (4th ed). ELBS William Heinemann.
3. Raj, G. (2001). *Advanced inorganic chemistry* (26th ed.). Goel Publishing House.
4. Huheey, J. E. (1993). *Inorganic chemistry: Principles of structure and reactivity* (4<sup>th</sup> ed.). Addison-Wesley Publishing Company.

### Web Source

1. <https://onlinecourses.nptel.ac.in>
2. [http://www.mikeblaber.org/oldwine/chm1045/notes\\_m.htm](http://www.mikeblaber.org/oldwine/chm1045/notes_m.htm)
3. [http://www.ias.ac.in/initiat/sci\\_ed/resources/chemistry/Inorganic.html](http://www.ias.ac.in/initiat/sci_ed/resources/chemistry/Inorganic.html)
4. <https://swayam.gov.in/course/64-atomic-structure-and-chemical-bonding>
5. <https://www.chemtube3d.com/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	Recall the basics of laboratory operations	K1
CO2	Remember the basic concentration terms in volumetric analysis	K2
CO3	Identify the properties of elements in the periodic table	K3

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UCH14FC01		Foundation Course: Fundamentals of Chemistry							2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	2	2	2	3	3	2	2	2	2.1
CO2	3	3	3	2	2	3	2	3	2	2	2.3
CO3	2	2	2	2	2	2	3	2	2	2	2.5
Mean overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UCH14SE01A	Skill Enhancement Course - 1(Non Major Elective): Food Chemistry	2	2

Course Objectives
To know the types of food
To analyze and detect the food for adulteration
To acquire the knowledge about food poisoning
To discuss the chemistry of food additives
To know about the chemistry of food preservatives, Beverages and Edible oils

#### **UNIT I: Food Adulteration (6 Hours)**

Sources of food, types, advantages and disadvantages. Food adulteration - contamination of wheat, rice, milk, butter etc. with clay stones, water and toxic chemicals-Common adulterants, Ghee adulterants.

#### **UNIT II: Food Poison (6 Hours)**

Food poisons - natural poisons (alkaloids - nephrotoxin) - pesticides, (DDT, BHC, Malathion) -Chemical poisons - First aid for poison consumed victims.

#### **UNIT III: Food Additives (6 Hours)**

Food additives -artificial sweeteners – Saccharin - Cyclamate and Aspartate Food flavours esters, aldehydes and heterocyclic compounds – Food colours – Emulsifying agents – preservatives -leavening agents. Baking powder –yeast – tastemakers – MSG - vinegar.

#### **UNIT IV: Beverages (6 Hours)**

Beverages-soft drinks – soda-fruit juices-alcoholic beverages-examples. Carbonation-addiction to alcohol– diseases of liver and social problems.

#### **UNIT V: EDIBLE OILS (6 Hours)**

Fats and oils - Sources of oils - production of refined vegetable oils - preservation. Saturated and unsaturated fats - iodine value - role of MUFA and PUFA in preventing heart diseases

#### **Books for Study**

1. Chopra, H. K., Panesar, P. S. (2010). *Food chemistry*. Narosa Publishing House.
2. Subbulakshmi, G., Udipi, S. A., & Ghugre, P S. (2021). *Food processing and preservation* (2<sup>nd</sup> ed.). New Age International Publishers.
3. Cheung, P. C.K. & Mehta B. M. (2015). *Handbook of Food Chemistry*, Springer.
4. Velisek, J. (2014). *The chemistry of food*. Wiley Blackwell.
5. Swaminathan, M. (1979). *Food science and experimental foods*. Ganesh and Company.
6. Hasenhuettl, G. L. & Hartel, R. W. (2008) *Food emulsifiers and their applications* (2<sup>nd</sup> ed.). Springer.

**Books for Reference**

1. Ghosh, J. (2006). *Fundamental concepts of applied chemistry* (2nd ed.). S.Chand &Co. Publishers.
2. Hasenhuettl, G. L. & Hartel, R. W. (2008). *Food emulsifiers and their applications* (2<sup>nd</sup> ed.). Springer.
3. Belitz, H. D. & Grosch, W. (2009). *Food chemistry* (4<sup>th</sup> ed.). Springer Science & Business Media.
4. Swaminathan, M. (1979). *Food Science and experimental foods*. Ganesh and Company.

**Web resources:**

1. <https://vikaspedia.in/health/health-campaigns/beware-of-adulteration/methods-for-detection-of-common-adulterants-in-food>
2. <https://fssai.gov.in/dart/>
3. <http://ecoursesonline.iasri.res.in/mod/page/view.php?id=111840>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	Apply the iodine value in MUFA and PUFA in prevention of heart disease.	K3
CO2	Comprehend the concepts of food additives	K4
CO3	Acquire the knowledge of the adulteration in food	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UCH14SE01 A		Skill Enhancement Course - 1(Non Major Elective): Food Chemistry							2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO3	1	3	1	1	3	2	2	3	3	1	2
CO4	1	3	1	3	2	2	3	2	1	2	2
CO5	2	1	3	3	2	2	3	2	2	3	2.3
Mean overall Score											2.2 (High)

Semester	Course code	Title of the Course	Hours/ Week	Credits
1	23UCH14SE01B	<b>Skill Enhancement Course – 1(Non Major Elective):</b> Role of Chemistry in Daily Life	2	2

Course Objectives
To understand the importance of Chemistry in everyday life
To compare electrodes between current density and over potential.
To discuss the chemistry of building materials
To highlight the different types of fertilizers and their applications
To know the biological functions of drugs and pharmaceuticals

#### **UNIT I: Chemistry of Air and Water (6 Hours)**

General survey of chemicals used in everyday life. Air - components and their importance; photosynthetic reaction, air pollution, green - house effect and the impact on our life style. Water - Sources of water, qualities of potable water, soft and hard water, methods of removal of hardness-water pollution

#### **UNIT II: Cement, Ceramics and Plastics (6 Hours)**

Building materials - cement, ceramics, glass and refractories - definition, composition and application only. Plastics - polythene, PVC, bakelite, polyesters, melamine-formaldehyde resins -preparation and uses only.

#### **UNIT III: Food and Cosmetics (6 Hours)**

Food and Nutrition - Carbohydrates, Proteins, Fats - definition and their importance as food constituents – balanced diet – Calories minerals and vitamins (sources and their physiological importance). Cosmetics – tooth paste, face powder, soaps and detergents, shampoos, nail polish, perfumes - general formulation and preparations - possible hazards of cosmetic use.

#### **UNIT IV: Fertilizers and Fuels (6 Hours)**

Chemicals in food production – fertilizers - need, natural sources; urea, NPK fertilizers and super phosphate. Fuel – classification - solid, liquid and gaseous; nuclear fuel examples and uses.

#### **UNIT V: Drugs, Pigments and Explosives (6 Hours)**

Pharmaceutical drugs - analgesics and antipyretics - paracetamol and aspirin. Colour chemicals - pigments and dyes - examples and applications. Explosives - classification and examples.

<b>Teaching Methodology</b>	Videos, PPT, demonstration, group discussion and creation of models
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**Books for Study**

1. Chopra, H. K. & Panesar, P. S. (2010). *Food chemistry*. Narosa publishing house.
2. Ghosh, J. (2012). *A textbook of pharmaceutical chemistry*. S Chand publishing.
3. Sharma, B. K. (2014). *Industrial Chemistry* (16<sup>th</sup> ed). GOEL publishing house, Meerut.
4. Elkins, K. M. (2019) *Introduction to forensic chemistry* CRC Press Taylor & Francis Group.

**Books for Reference**

1. Ghosh, J. (2006). *Fundamental concepts of applied chemistry* (2<sup>nd</sup> ed.). S. Chand & Co. Publishers.
2. Vaithyanathan, S. (2006). *Text book of ancillary chemistry*. Priya Publications, Karur.
3. Shreve, R. N. (1977). *Chemical process industries* (4<sup>th</sup> ed.). McGraw-Hill, Texas.
4. Poucher, W.A. & Brink, Jr. J. A. (2000). *Perfumes, cosmetics and soaps*. Springer.
5. De, A.K. (1990). *Environmental chemistry*. New Age International Public Co.

**Web Sources**

1. <https://youtu.be/gsqvO5uF1-c>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K – Level)
	On successful completion of this course, students will be able to	
CO1	discuss about the fertilizers like urea, NPK fertilizers and super phosphate and their applications	K4
CO2	understand the pharmaceutical drugs, analgesics and antipyretics like paracetamol and aspirin and also about pigments and dyes and its applications.	K5
CO3	explain the fuel classification solid, liquid and gaseous, nuclear fuel - examples and uses	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UCH14SE01B		Skill Enhancement Course – 1(Non Major Elective): Role of Chemistry in Daily Life							2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	1	3	3	2	3	3	1	3	2	2.4
CO2	3	2	3	2	3	2	3	2	3	1	2.4
CO3	2	3	2	3	2	3	2	3	2	3	2.5
Mean overall Score											2.4 (High)

PROGRAMME PATTERN			
M.Sc. CHEMISTRY			
Course Code	Title of the Course	Hours	Credits
23PCH1CC01	<b>Core Course -1:</b> Organic Reaction Mechanism-1	6	5
23PCH1CC02	<b>Core Course -2:</b> Structure and Bonding in Inorganic Compounds	6	5
23PCH1CP01	<b>Core Practical -1:</b> Organic Chemistry	6	4
23PCH1ES01	<b>Elective - 1:</b> Nano Materials and Nano Technology	5	3
23PCH1ES02	<b>Elective - 2:</b> Electrochemistry	5	3
23PCH1AE01	<b>Ability Enhancement Course:</b> Analytical Techniques	2	1
	<b>Total</b>	<b>30</b>	<b>21</b>



Semester	Course code	Title of the Course	Hours/Week	Credits
1	23PCH1CC01	Core Course -1: Organic Reaction Mechanism-1	6	5

Course Objectives
To understand the feasibility and the mechanism of various organic reactions.
To comprehend the techniques in the determination of reaction mechanisms.
To understand the concept of stereochemistry involved in organic compounds.
To correlate and appreciate the differences involved in the various types of organic reaction mechanisms.
To design feasible synthetic routes for the preparation of organic compounds.

### UNIT I: Methods of Determination of Reaction Mechanism (18 hours)

Reaction intermediates, The transition state, Reaction coordinate diagrams, Thermodynamic and kinetic requirements of reactions: Hammond postulate. Methods of determining mechanism: non-kinetic methods - product analysis, determination of intermediates-isolation, detection, and trapping. Cross-over experiments, isotopic labelling, isotope effects and stereochemical evidences. Kinetic methods - relation of rate and mechanism. Effect of structure on reactivity: Hammett and Taft equations. Linear free energy relationship, partial rate factor, substituent and reaction constants.

### UNIT II: Aromatic and Aliphatic Electrophilic Substitution (18 hours)

Aromaticity: Aromaticity in benzenoid, non-benzenoid, heterocyclic compounds and annulenes. Aromatic electrophilic substitution: Orientation and reactivity of di- and polysubstituted phenol, nitrobenzene and halobenzene. Reactions involving nitrogen electrophiles: nitration, nitrosation and diazonium coupling; Sulphur electrophiles: sulphonation; Halogen electrophiles: chlorination and bromination; Carbon electrophiles: Friedel-Crafts alkylation, acylation and arylation reactions. Aliphatic electrophilic substitution Mechanisms:  $S_E2$  and  $S_Ei$ ,  $S_E1$ - Mechanism and evidences.

### UNIT III: Aromatic and Aliphatic Nucleophilic Substitution (18 hours)

Aromatic nucleophilic substitution: Mechanisms -  $S_NAr$ ,  $S_N1$  and Benzyne mechanisms - Evidences - Reactivity, Effect of structure, leaving group and attacking nucleophile. Reactions: Oxygen and Sulphur-nucleophiles, Bucherer and Rosenmund reactions, von Richter, Sommelet- Hauser and Smiles rearrangements.  $S_N1$ , ion pair,  $S_N2$  mechanisms and evidences. Aliphatic nucleophilic substitutions at an allylic carbon, aliphatic trigonal carbon and vinyl carbon.  $S_N1$ ,  $S_N2$ ,  $S_Ni$ , and  $S_E1$  mechanism and evidences, Swain- Scott, Grunwald-Winstein relationship - Ambident nucleophiles.

**UNIT IV: Stereochemistry-I****(18 hours)**

Introduction to molecular symmetry and chirality – axis, plane, center, alternating axis of symmetry. Optical isomerism due to asymmetric and dissymmetric molecules with C, N, S based chiral centers. Optical purity, prochirality, enantiotopic and diastereotopic atoms, groups, faces, axial and planar chirality, chirality due to helical shape, methods of determining the configuration. Racemic modifications: Racemization by thermal, anion, cation, reversible formation, epimerization, mutarotation. D, L system, Cram's and Prelog's rules: R, S-notations, proR, proS, side phase and re phase Cahn-Ingold-Prelog rules, absolute and relative configurations. Configurations of allenes, spiranes, biphenyls, cyclooctene, helicene, binaphthyls, ansa and cyclophanic compounds, exo-cyclic alkylidene-cycloalkanes. Topicity and prostereoisomerism, chiral shift reagents and chiral solvating reagents. Criteria for optical purity: Resolution of racemic modifications, asymmetric transformations, asymmetric synthesis, destruction. Stereoselective and stereospecific synthesis.

**UNIT V: Stereochemistry-II****(18 hours)**

Conformation and reactivity of acyclic systems, intramolecular rearrangements, neighbouring group participation, chemical consequence of conformational equilibrium - Curtin-Hammett Principle. Stability of five and six-membered rings: mono-, di- and polysubstituted cyclohexanes, conformation and reactivity in cyclohexane systems. Fused and bridged rings: bicyclic, poly cyclic systems, decalins and Brett's rule. Optical rotation and optical rotatory dispersion, conformational asymmetry, ORD curves, octant rule, configuration and conformation, Cotton effect, axial haloketone rule and determination of configuration.

<b>Teaching Methodology</b>	Chalk & Talk, PPT, videos and demonstration
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**Books for study**

1. March, J. & Smith, M. (2001). *Advanced organic chemistry* (5th ed.). John-Wiley & Sons.
2. Gould, E. S. (1959). *Mechanism and structure in organic chemistry*. Holt, Rinehart & Winston Inc.
3. Kalsi, P. S. (2015). *Stereochemistry of carbon compounds* (8th ed.). New Age International Publishers.
4. Bruice, P. Y. (2013). *Organic chemistry* (7th ed.). Prentice Hall.
5. Clayden, J., Greeves, N. & Warren, S. (2014). *Organic Compounds* (2nd ed.). Oxford University Press.

**Books for Reference**

1. Carey, F. A. & Sundberg, R. J. (2007). *Advanced Organic Chemistry Part-A and B*, (5th ed.). Kluwer Academic / Plenum Publishers.
2. Morris, D. G. (2001). *Stereochemistry*. RSC Tutorial Chemistry Text 1.
3. Isaacs, N. S. (1987). *Physical Organic Chemistry*. ELBS, Longman.
4. Eliel, E. L. (2000). *Stereochemistry of carbon compounds*. Tata-McGraw Hill.
5. Finar, I. L. (2004). *Organic chemistry, Vol-1 & 2*, (6th ed.). Pearson Education Asia.

## Web Sources

1. <https://sites.google.com/site/chemistryebookscollection02/home/organic-chemistry/organic>
2. <https://www.organic-chemistry.org/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	understand the concepts of stereochemistry and write the configurational nomenclature	K1
CO2	examine the mechanisms of nucleophilic substitution reactions and describe nucleophilic substitution on aromatic rings.	K2
CO3	compose multiple ways for addition–elimination reactions and predict the stereochemistry of elimination mechanisms.	K3
CO4	assess the concept of aromaticity and classify the reactions on aromatic rings.	K4
CO5	identify the types of intermediates and justify their role in identifying organic mechanisms.	K5
CO6	evaluate the orientation of aliphatic and aromatic substitution reactions	K6

Relationship Matrix											
Semester	Course code	Title of the Course									Credits
1	23PCH1CC01	Core Course -1: Organic Reaction Mechanism-1									5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	3	2	2	3	1	2	2	2	2.2
CO2	3	3	2	2	2	2	3	2	2	3	2.4
CO3	2	2	3	3	2	2	3	2	2	2	2.3
CO4	3	2	2	3	2	2	1	3	2	2	2.2
CO5	3	1	2	3	2	1	2	2	3	3	2.2
CO6	3	1	2	3	2	1	2	2	3	3	2.2
Mean overall Score											2.26 (High)

Semester	Course code	Title of the Course	Hours/Week	Credits
1	23PCH 1CC02	Core Course -2: Structure and Bonding in Inorganic Compounds	6	5

Course Objectives
To determine the structural properties of main group compounds and clusters
To gain fundamental knowledge on the structural aspects of ionic crystals.
To familiarize various diffraction and microscopic techniques.
To study the effect of point defects and line defects in ionic crystals.
To evaluate the structural aspects of solids.

### UNIT I: Structure of Main Group Compounds and Clusters (15 Hours)

VB theory – Effect of lone pair and electronegativity of atoms (Bent's rule) on the geometry of the molecules; Structure of silicates - applications of Pauling's rule of electrovalence - isomorphous replacements in silicates – ortho, meta and pyro silicates – one dimensional, two dimensional and three-dimensional silicates. Structure of silicones, Structural and bonding features of B-N, S-N and P-N compounds; Poly acids – types, examples and structures; Borane cluster: Structural features of closo, nido, arachano and klado; carboranes, hetero and metalloboranes; Wade's rule to predict the structure of borane cluster; main group clusters – zintl ions and mno rule

### UNIT II: Solid State Chemistry – I (15 Hours)

Ionic crystals: Packing of ions in simple, hexagonal and cubic close packing, voids in crystal lattice, Radius ratio, Crystal systems and Bravais lattices, Symmetry operations in crystals, glide planes and screw axis; point group and space group; Solid state energetics: Lattice energy – Born-Landé equation -Kapustinski equation, Madelung constant.

### UNIT III: Solid State Chemistry – II (15 Hours)

Structural features of the crystal systems: Rock salt, zinc blende & wurtzite, fluorite and anti-fluorite, rutile and anatase, cadmium iodide and nickel arsenide; Spinels -normal and inverse types and perovskite structures. Crystal Growth methods: From melt and solution (hydrothermal, sol-gel methods) – principles and examples.

### UNIT IV: Techniques in Solid State Chemistry (15 Hours)

X-ray diffraction technique: Bragg's law, Powder diffraction method – Principle and Instrumentation; Interpretation of XRD data – JCPDS files, Phase purity, Scherrer formula, lattice constants calculation; Systematic absence of reflections; Electron diffraction technique – principle, instrumentation and application. Electron microscopy – difference between optical and electron microscopy, theory, principle, instrumentation, sampling methods and applications of SEM and TEM.

## UNIT V: Band Theory and Defects in Solids

(15 Hours)

Band theory – features and its application of conductors, insulators and semiconductors, Intrinsic and extrinsic semiconductors; Defects in crystals – point defects (Schottky, Frenkel, metal excess and metal deficient) and their effect on the electrical and optical property, laser and phosphors; Linear defects and its effects due to dislocations.

<b>Teaching Methodology</b>	Interactive videos, PPT, demonstration and creation of models
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### Books for Study

1. West, A. R. (2014). *Solid state Chemistry and its applications* (2nd ed.) (Students Edition). John Wiley & Sons Ltd.
2. Bhagi, A. K. & Chatwal, G. R. (2001). *A textbook of inorganic polymers*. Himalaya Publishing House.
3. Smart, L. & Moore, E. (2012). *Solid State Chemistry – An Introduction* (4th ed.). CRC Press.
4. Purcell, K. F. & Kotz, J. C. (1977). *Inorganic Chemistry*. W.B. Saunders Company.
5. Huheey, J. E., Keiter, E. A. & Keiter, R. L. (1983). *Inorganic Chemistry* (4th ed.). Harper & Row.

### Books for Reference

1. Douglas, D. E., Mc Daniel, D. H. & Alexander, J. J. (1994). *Concepts and models in inorganic chemistry* (3rd ed.).
2. Tilley, R. J. D. (2013). *Understanding solids - The science of materials*, (2nd ed.). Wiley Publication.
3. Rao, C. N. R. & Gopalakrishnan, J. (1995). *New directions in solid-state chemistry*, (2nd ed.). Cambridge University Press.
4. Moeller, T. (1982). *Inorganic Chemistry, A Modern Introduction*. John Wiley.
5. Shriver, D. F., Atkins, P. W. & Langford, C.H. (2001). *Inorganic Chemistry*. (3rd ed.). Oxford University Press.

### Website and e-learning source

1. [https://ocw.mit.edu/courses/3-091-introduction-to-solid-state-chemistry-fall-2018/video\\_galleries/lecture-videos/](https://ocw.mit.edu/courses/3-091-introduction-to-solid-state-chemistry-fall-2018/video_galleries/lecture-videos/)

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	Predict the geometry of main group compounds and clusters.	K1
CO2	Explain about the packing of ions in crystals and apply the radius ratio rule to predict the coordination number of cations.	K2
CO3	Understand the various types of ionic crystal systems and analyze their structural features.	K3
CO4	Explain the crystal growth methods.	K4
CO5	Understand the principles of diffraction techniques and microscopic techniques	K5
CO6	design and improve the new crystals in main group compounds and clusters	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PCH 1CC02		Core Course -2: Structure and Bonding in Inorganic Compounds							6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	2	2	2	2	3	2	2	2	2.1
CO2	2	3	2	2	2	3	3	2	2	2	2.3
CO3	3	3	3	2	2	3	2	3	2	2	2.5
CO4	2	2	2	2	2	2	3	3	2	2	2.2
CO5	2	2	2	2	3	2	3	2	2	2	2.7
CO6	3	3	3	2	2	3	3	3	2	3	2.2
Mean overall Score											2.3 (High)

Semester	Course code	Title of the Course	Hours/Week	Credits
1	23PCH1CP01	Core Practical -1: Organic Chemistry	6	4

Course Objectives
To understand the concept of separation, qualitative analysis and preparation of organic compounds
To develop analytical skill in the handling of chemical reagents for separation of binary and ternary organic mixtures
To analyze the separated organic components systematically and derivatize them suitably
To construct suitable experimental setup for the organic preparations involving two stages
To experiment different purification and drying techniques for the compound processing

### UNIT I: Separation and Analysis

Two component mixtures.

### UNIT II: Estimations

- Estimation of Phenol (bromination)
- Estimation of Aniline (bromination)
- Estimation of Ethyl methyl ketone (iodimetry)
- Estimation of Glucose (redox)
- Estimation of Ascorbic acid (iodimetry)

### UNIT III: Two Stage Preparations

- p*-Bromoacetanilide from aniline
- p*-Nitroaniline from acetanilide
- 1,3,5-Tribromobenzene from aniline
- Acetyl salicylic acid from methyl salicylate

### Book for study

- Ganapragasm, N. S. & Ramamurthy, C. (2015). *Organic Chemistry Lab Manual* (2nd ed.). Vishwanathan S Printers and Publishers (P) Ltd..
- Furniss, B. S., Hannaford, A. J., Smith, P. W. G. & Tatchell, A. R. (n.d). *Vogel's Textbook of Practical Organic Chemistry* (5th ed.). Pearson publication.

### Books for Reference

- Venkateswaran, V., Veeraswamy, R. & Kulandaivelu, A. R. (1997). *Basic principles of practical chemistry* (2nd ed.). Sultan Chand & Sons.
- Organic Chemistry Lab Manual for Micro Qualitative Analysis*, Department of Chemistry, St. Joseph's College, Tiruchirappalli-620 002. (Private circulation).

## Website and E-learning Sources

1. <https://youtu.be/EyWGc-vizic>
2. <https://youtu.be/mQ035ZrdD4Y>
3. <https://youtu.be/N96JaRnE7n0>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	To recall the basic principles of organic separation, qualitative analysis and preparation.	K1
CO2	To explain the method of separation and analysis of separated organic mixtures and convert them as derivatives by suitable preparation method.	K2
CO3	To determine the characteristics of separation of organic compounds by various chemical reactions.	K3
CO4	To develop strategies to separate, analyze and prepare organic compounds.	K4
CO5	To formulate a method of separation, analysis of organic mixtures and design suitable procedure for organic preparations.	K5
CO6	To evaluate the basic principles of organic separation, qualitative analysis and preparation.	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PCH1CP01		Core Practical -1: Organic Chemistry							6	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	3	2	2	3	1	2	2	2	2.2
CO2	3	3	2	2	2	2	3	2	2	3	2.4
CO3	2	2	3	3	2	2	3	2	2	2	2.3
CO4	3	2	2	3	2	2	1	3	2	2	2.2
CO5	3	1	2	3	2	1	2	2	3	3	2.2
CO6	3	1	2	3	2	1	2	2	3	3	2.2
Mean overall Score											2.26 (High)



Semester	Course code	Title of the Course	Hours	Credits
1	23PCH1ES01	Elective - 1: Nano Materials and Nano Technology	5	3

Course Objectives
To understand the different types of nanomaterials and their characteristics.
To comprehend the different synthetic strategies available for the synthesis of nanomaterials.
To evaluate the unique properties of the nanomaterials.
To determine the suitable characterization tools for the nanomaterials.
To propose various applications for the nanomaterials.

#### **UNIT I: Introduction to Nanochemistry (15 Hours)**

Introduction of nanomaterials and nanotechnologies, Introduction-role of size, classification-0D, 1D, 2D, 3D. Consolidation of Nano powders. Features of nanostructures, Background of nanostructures. Fullerenes- Discovery -endohedral chemistry of Fullerenes- - Introduction of Carbon nanotubes and its types, Core-shell nanoparticles-types of core-shell nanoparticles.

#### **UNIT II: Synthesis Methodologies Of Nanomaterials (15 Hours)**

Synthesis- Top-down and bottom up approach. Physical methods- arc discharge, laser ablation, inert gas condensation, and chemical methods - sol-gel, solvothermal, sonochemical and hydrothermal-CVD-types, metallo organic, plasma enhanced, and low-pressure CVD. Microwave assisted and electrochemical synthesis.

#### **UNIT III: Properties of Nanomaterials (15 Hours)**

Properties of Nanoparticles, Metal Nano Clusters – Magic numbers, theoretical modeling of nanoparticles, geometric structures, electronic structure, reactivity, fluctuations, magnetic clusters, bulk to nanotransition. Semiconducting nanoparticles-optical properties, photofragmentation, coulombic explosion. Molecular clusters-inert gas clusters, molecular clusters.

#### **UNIT IV: Characterization Techniques 1 (15 Hours)**

Characterization- principle and instrumentation. Tools to Characterize Nanomaterials – X-Ray Diffraction (XRD) -Small Angle X-Ray Scattering (SAXS) – Scanning Electron Microscopy (SEM)- Transmission Electron Microscopy (TEM) – Atomic Force Microscopy (AFM). Interpretation of results from microscopic analysis.

## UNIT V: Characterization Techniques 2 and Advanced Applications (15 Hours)

Scanning Tunnelling Microscope (STM) – Field Ion Microscope (FIM) – 3-Dimensional Atom Probe (3DAP) – Energy Dispersive X-Ray Analysis(EDX) - Nanoindentation

### Advanced Applications of Nanomaterials

Nano-electronics- Fundamentals of semiconductor devices-MOSFET-Solid State quantum effect devices-Hybrid micro-nano-electronic resonant tunneling transistors-Molecular electronic devices- Novel opto-electronic devices

<b>Teaching Methodology</b>	Interactive videos, PPT, demonstration and creation of models
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### Books for Study

1. Pradeep, T. (2009). *Nano: The essentials-understanding nanoscience and nanotechnology*, McGraw-Hill Education.
2. Poole, C. P. Jr. & Owens, F. J. (2009). *Introduction to nanotechnology*. Wiley.
3. Shah, M. A. & Ahmad, T. (2010). *Principles of nanoscience and nanotechnology*. Narosa Publishing House.
4. Murty, B. S., Shankar, P., Raj, B. B., Rath, B. & Murday, J. (n.d). *Textbook of nanoscience and nanotechnology*. University Press-IIM- Series in Metallurgy and Materials Science.
5. Rao, C. N. R., Muller, A. & Cheetham, A. K. (2004). *The chemistry of nanomaterials*, WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim.

### Books for Reference

1. Mohan, S. & Arjunan, V. (2016). *Principles of Materials Science*. MJP Publishers.
2. Arumugam. (2007). *Materials science*. Anuradha Publications.
3. Giacavazzo et. al., (2010). *Fundamentals of crystallography*. International Union of Crystallography. Oxford Science Publications.
4. Woolfson. (2012). *An introduction to crystallography*, Cambridge University Press.
5. Shackelford, J. F & Muralidhara, M. K. *Introduction to materials science for engineers*. (6th ed.). Pearson Press.

### Web Sources

1. Baig, N, et al. Mater. Adv., 2021, 2, 1821.
2. Manzano, M. et al. Nanomaterials 2023, 13(12), 1828.
3. <http://xrayweb.chem.ou.edu/notes/symmetry.html>.
4. <http://www.uptti.ac.in/classroom-content/data/unit%20cell.pdf>
5. <https://nanohub.org/>

Course Outcomes		
CO No.	CO – Statements	Cognitive Levels (K - level)
	On successful completion of this course, students will be able to	
<b>CO1</b>	describe and consolidate the various types of nanomaterials.	<b>K 1</b>
<b>CO2</b>	explain methods of fabricating nanostructures.	<b>K 2</b>
<b>CO3</b>	relate the unique properties of nanomaterials to reduce dimensionality of the material.	<b>K 3</b>
<b>CO4</b>	discuss the tools to characterize the nanoparticles.	<b>K4</b>
<b>CO5</b>	discuss the advanced applications of nanomaterials.	<b>K5</b>
<b>CO6</b>	synthesize and characterize the various nanomaterials.	<b>K6</b>

Semester	Course Code	Title of the Course								Hours	Credits
1	23PCH1ES01	Elective 1: NANO MATERIALS AND NANO TECHNOLOGY								5	4
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	2	3	2	2	3	2	2	2	2.3
CO.2	2	3	2	2	3	3	3	2	2	2	2.4
CO3	3	3	3	2	2	3	2	3	2	2	2.5
CO4	2	3	2	2	3	2	3	3	2	2	2.4
CO5	3	3	3	2	2	3	3	3	2	3	2.7
CO6	2	2	2	3	3	2	3	2	2	2	2.3
Mean overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours	Credits
1	23PCH1ES02	<b>ELECTIVE 2:</b> Electrochemistry	5	4

Course Objectives
To understand the behavior of electrolytes in terms of conductance, ionic atmosphere, interactions and structure of electrical double layer.
To compare electrodes between current density and over potential.
To discuss the mechanism of electrochemical reactions.
To highlight the different types of over voltages and its applications in electroanalytical techniques.
To familiarize about electro active species and energy production systems

### UNIT I: Ionics

(15 Hours)

Arrhenius theory –limitations- Debye Huckel theory of strong electrolytes-ion- solvent and ion-ion interactions- radius of ionic atmosphere – calculations of thickness of ionic atmosphere – evidences of ionic atmosphere – asymmetry effect –electrophoretic effect – Debye Falkenhagen effect – Wien effect- Born equation- Debye-Huckel Bjerrum model- Derivation of Debye-Huckel limiting law at appreciable concentration of electrolytes- modifications and applications - Electrolytic conduction-Debye-Huckel Onsager treatment of strong electrolyte-qualitative and quantitative verification and limitations-finite ion size model – Huckel–Bronsted equation – calculation of activity coefficient – determination of ion size parameter - Evidence for ionic atmosphere, Ion association and triple ion formations.

### UNIT II: Electrode-electrolyte interface

(15 Hours)

Interfacial phenomena –Evidences for electrical double layer- polarizable and non-polarizable interfaces- Electrocapillary phenomena – Lippmann equation- electro capillary curves- Electro-kinetic phenomena- electro-osmosis- electrophoresis- streaming and sedimentation potentials - colloidal and poly electrolytes - Structure of double layer: Helmholtz –Perrin, Guoy- Chapman and Stern models of electrical double layer- Zeta potential and potential at zero charge- Applications and limitations.

**UNIT III: Electrodicts of Elementary Electrode Reactions****(15 Hours)**

Behavior of electrodes: Standard electrodes and electrodes at equilibrium- Anodic and Cathodic currents- condition for the discharge of ions- Nernst equation- polarizable and non-polarizable electrodes- Model of three electrode system- over potential- Rate of electro chemical reactions: Rates of simple elementary reactions- Butler-Volmer equation-significance of exchange current density- net current density and symmetry factor- Low and high field approximations- Symmetry factor and transfer coefficient- Tafel equations and Tafel plots.

**UNIT IV: Electrodicts of Multistep Multi Electron System****(15 Hours)**

Rates of multi-step electrode reactions- Butler – Volmer equation for a multi-step reaction - Rate determining step- electrode polarization and depolarization- Transfer coefficients- its significance and determination- Stoichiometric number- Electro-chemical reaction mechanisms-rate expressions- order- and surface coverage- Reduction of  $I_3^-$ ,  $Fe^{2+}$ , and dissolution of Fe to  $Fe^{2+}$ - Overvoltage – Chemical and electro chemical- phase- activation and concentration over potentials- Evolution of oxygen and hydrogen at different pH- Pourbiax and Evan's diagrams.

**UNIT V: Concentration Polarization, Batteries and Fuel cells****(15 Hours)**

Modes of Transport of electro active species – Diffusion- migration and hydrodynamic modes - Role of supporting electrolytes- Polarography-principle and applications- Principle of square wave polarography- Cyclic voltammetry- anodic and cathodic stripping voltammetry and differential pulse voltammetry- Sodium and lithium-ion batteries and redox flow batteries- Mechanism of charge storage: conversion and alloying- Capacitors- mechanism of energy storage- charging at constant current and constant voltage- Energy production systems -Fuel Cells: classification- alkaline fuel cells- phosphoric acid fuel cells- high temperature fuel cells.

<b>Teaching Methodology</b>	Videos, PPT, demonstration, group discussion and creation of models
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**Books for Study**

1. Glasstone, S. (2008). *An introduction to electro chemistry*. Affiliated East-West Press Pvt., Ltd.
2. Bockris, J. O. M. & Reddy, A. K. N. (2008). *Modern electro chemistry*. Vol.1, 2A and 2B, Springer, Plenum Press.
3. Antropov, L. I. (1977). *Theoretical electrochemistry*. (2nd ed.). Mir Publishers.

**Books for Reference**

1. Rajaram, J. & Kuriakose, J. C. (2011). Kinetics and mechanism of chemical transformations. Macmillan India Ltd.
2. Viswanathan, B., Sundaram, B., Venkataraman, R., Rengarajan, K. & Raghavan, P. S. (2007). *Electrochemistry-principles and applications*. S. Viswanathan Printers.
3. Crow, D. R. (2014). *Principles and applications of electrochemistry*. (4<sup>th</sup>ed.).

Chapman & Hall.

4. Joseph Wang. (n.d). Analytical electrochemistry. (2<sup>nd</sup> ed.). Wiley.
5. Philip H. Rieger. (2010). Electrochemistry. (2<sup>nd</sup> ed.). Springer.
6. Kapoor, K. L. (2001). A Text book of Physical Chemistry. Vol.3, Macmillan.

#### Web Sources

1. <https://www.pdfdrive.com/modern-electrochemistry-e34333229>.

Course Outcomes		
CO No.	CO - Statements	Cognitive Levels (K - level)
	On successful completion of this course, students will be able to	
CO1	identify the behaviour of electrolytes in solution and the structures of electrical double layers	K 1
CO2	predict the kinetics of electrode reactions	K 2
CO3	apply the different concepts of electrolytes and electrode – electrolyte interface	K 3
CO4	explain the theories of electrolytes, electrical double layer and electrodicts	K4
CO5	evaluate and interpret the outcomes of Debye Huckel theory and electrode kinetics	K5
CO6	design and improve information regarding electroytes, electrode kinetics and devise new storage devices	K6

Relationship Matrix											
Semester	Course Code		Title of the Course						Hours		Credits
1	23PCH1ES02		DSE–2: Electrochemistry						5		4
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	2	3	2	2	3	2	2	2	2.3
CO2	2	3	2	2	3	3	3	2	2	2	2.4
CO3	3	3	3	2	2	3	2	3	2	2	2.5
CO4	2	3	2	2	3	2	3	3	2	2	2.4
CO5	3	3	3	2	2	3	3	3	2	3	2.7
CO6	2	2	2	3	3	2	3	2	2	2	2.3
Mean overall Score											2.3(High)

Semester	Course code	Title of the Course	Hours	Credits
1	23PCH1AE01	Ability Enhancement Course: Analytical Techniques	2	1

Course Objectives
To understand the principles of analytical methods.
To evaluate the different analytical methods for better results.
To discuss the instrumentation technique of spectrophotometry, thermo-analytical, chromatographic and spectral techniques.
To emphasize the importance of the analytical methods in research.
To familiarize the handling of spectral instruments.

### **Unit – I Spectrophotometric methods (6 Hours)**

Spectrophotometric Methods – Principle and Instrumentation - Colorimetry, Flame Photometry, Fluorimetry, Phosphorimetry, Atomic Absorption Spectroscopy (AAS). Colorimetry – Fundamental laws – deviation from Beer's law.

### **Unit – II Thermal methods (6 Hours)**

General characteristic of thermo-analytical methods – Thermogravimetric analysis (TGA) – Principle, instrumentation and applications – Factors affecting thermogram – Differential Thermal Analysis (DTA) –instrumentation.

### **Unit – III Chromatography (6 Hours)**

Principles of Chromatography - Classification of chromatographic techniques – Principle, instrumentation and application of gas chromatography (GC), Thin-layer chromatography (TLC) and High-performance liquid Chromatography (HPLC).

### **Unit – IV Spectroscopy (6 Hours)**

Principle and instrumentation of UV-Visible and IR spectroscopy. Principle and instrumentation of Cyclic voltammetry (CV).

### **Unit – V Spectroscopy Demonstration (6 Hours)**

Spectral interpretation and Demonstration of Chromatographic techniques, UV-Visible, Fluorescence, Infra-red, Cyclic Voltammetry and High-performance liquid Chromatography.

<b>Teaching Methodology</b>	Chalk & Talk, PPT, videos and demonstration.
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### Book for study

1. Jeffery, G. H., Bassett, J., Mendham, J. & Denney, R. C. (1989). *Vogel's textbook of quantitative chemical analysis* (5th ed.). Longman Scientific & Technical.
2. Pavia, D. L., Lampman, G. M., Kriz, G. S. & Vyvyan, J. R. (2015). *Introduction to spectroscopy*, (5th ed.). Cengage Learning.
3. Gopalan, R., Subramanian, P. S. & Rengarajan, K. (2005). *Elements of analytical chemistry* (3rd ed.). Sultan Chand & Sons.

### Books for Reference

1. Skoog, D. A., West, D. M., Holler, F. J. & Crouch, S. R. (2014) *Fundamental of analytical chemistry* (9th ed.). Brooks/Cole Cengage Learning.
2. Silverstein, R. M. & Bassler, G. C. (1993). *Spectrometric identification of organic compounds* (4th ed.). John-Wiley & Sons.
3. Kemp, W. (1987). *Organic spectroscopy*, (3rd ed.). ELBS.

### Website and E-learning Sources

1. <https://www.classcentral.com/course/analyticalchem-838>
2. <https://ocw.mit.edu/courses/chemistry/>

CO No.	CO–Statement	Cognitive Level (K–Level)
	On successful completion of this course, students will be able to	
CO1	apply the thermal methods to characterize materials	K4
CO2	interpret and predict the presence of functional groups and structural information of molecules using IR and UV–Vis spectra	K5
CO3	demonstrate spectral instruments like IR, UV-Visible and CV	K6

Relationship Matrix											
Semester	Course code		Title of the Course					Hours		Credits	
1	23PCH 1AE01		Ability Enhancement Course: Analytical Techniques					2		1	
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of Cos
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	3	3	2	2	3	2	2	2	2.3
CO2	3	2	2	3	2	2	1	3	2	2	2.2
CO3	3	1	2	3	2	1	2	2	3	3	2.2
Mean overall Score											2.3 (High)





## DEPARTMENT OF ELECTRONICS St. JOSEPH'S COLLEGE (Autonomous)

Accredited at A++ Grade (Cycle IV) by NAAC Special Heritage Status awarded by UGC  
College with Potential for Excellence by UGC DBT-STAR & DST-FIST sponsored College

TIRUCHIRAPPALLI - 620 002.

Phone : 0431 - 4226467, 4226386, Fax : 0431 - 2701501

Website : [www.sjctni.edu](http://www.sjctni.edu)

### MINUTES OF THE BOARD OF STUDIES MEETING - JULY 2023

TIME: 2:30pm

DATE: 21-07-2023

#### Board Members

1. Dr. B. Kanickairaj (Chairman)
2. Dr. S. Kalidass (University Representative)
3. Dr. John Bosco Balaguru (Academic Expert)
4. Mr. Sathyan kaliyamoorthy (Industrial Expert)
5. Rev. Fr. J. John Wilson (Member)
6. Ms. V. Sivakamasundari (Member)
7. Dr. P. Subuthai (Member)
8. Dr. V. Manickam (Member)
9. Ms. M. Aishwariya Harini (Member)
10. Mr. V. Victor (Member)
11. Dr. S. Mary Margaret (Member)

All the board members were present.

The Board of Studies Meeting began with prayer led by Prof J John Wilson. Dr B. Kanickairaj, the Head of the Department Welcomed Dr Kalidass, the University Representative and the staff members of Electronics Department.

Dr John Bosco Balaguru, the Academic Expert and Mr Sathyan the industrial Expert could not be present for the meeting.

Minutes of the last Board of studies was read out and it was passed in the board.

#### UG and PG COURSE PATTERN

The Head of the Department, Dr. B. Kanickairaj presented the UG and PG Course Pattern and passed.

*M. S. Kanickairaj*  
HOD

**I UG SEMESTER I:**

I UG Electronics Syllabus is not given by TANSCHÉ. The Template given for I UG Physics by TANSCHÉ is utilised for I UG Electronics.

**SEMICONDUCTOR THEORY AND ELECTRONIC DEVICE:**

Dr Kalidass, the University Representative was positive about the template prepared for I UG Electronics. He suggested to make the first unit a little lighter as the students may feel hard to understand semiconductor theories. The suggestion was taken into consideration. And some topics in the first unit will be dealt at the introductory level.

Electronics Practical-I and Consumer Electronics papers were passed without any suggestion.

**INTRODUCTORY ELECTRONICS:**

Dr Kalidass suggested to have Unit V -Circuits as the fourth unit and shift the Unit IV- House Wiring as Fifth Unit as House wiring deals with Electrical Circuits and the other units are about Electronics Circuits.

Thus, I UG Syllabus is passed by the board.

**I PG SEMESTER I:**

I PG Syllabus is from TANSCHÉ.

**EMBEDDED SYSTEMS DESIGN WITH PIC:**

TANSCHÉ Given Syllabus for Embedded system Design with PIC deals with old processors. So, it was suggested to introduce latest processors through Value added courses for students to be in touch with latest developments.

Digital Communication System, Core Practical -I and Digital Signal Processing and Instrumentation Control Techniques Papers were passed by the Board without any correction.

**ELECTRONICS INNOVATION AND ENTREPRENEURSHIP:**

Electronics Innovation and Entrepreneurship is Ability Enhancement Course. Research orientation is given to students through this paper. It was suggested to have the word Research

*Shiraj*  
H20

explicitly in the title itself. The title of the paper is labelled as Electronics Innovation, Research and Entrepreneurship.

Thus, I PG Syllabus was passed by the Board of Studies.

The Question pattern proposed by the COE was passed by the Board of studies after long discussion.

Dr B. Kanickairaj the Head of the Department thanked Dr Kalidass, the university Representative, Dr. John Bosco Balaguru, subject expert and the staff members of Electronics Department for their active participation and contribution in the board of studies meeting.

Dr. S. Kalidass  
University Representative

  
Dr. B. Kanickairaj  
Chairman  
HEAD OF THE DEPARTMENT  
DEPARTMENT OF ELECTRONICS,  
St. Joseph's College (Autonomous)  
Tiruchirappalli - 620 002.

Dr. John Bosco Balaguru  
Subject Expert

Mr. Sathyan kaliyamoorthy (Industrial Expert)

Rev. Fr. J. John Wilson (Member)

Ms. V. Sivakamasundari (Member)

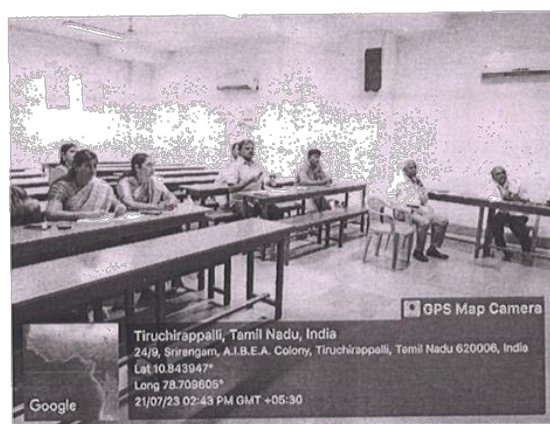
Dr. P. Subuthai (Member)

Dr. V. Manickam (Member)

Ms. M. Aishwariya Harini (Member)

Mr. V. Victor (Member)

Dr. S. Mary Margaret (Member)



PROGRAMME PATTERN				
B. Sc ELECTRONICS				
Part	Course Code	Title of the Course	Hours	Credits
<b>I</b>	23UTA11GL01A	General Tamil – 1 தமிழ் இலக்கிய வரலாறு - 1	5	3
	23UFR11GL01	French-1		
	23UHI11GL01	Hindi-1		
	23USA11GL01	Sanskrit-1		
<b>II</b>	23UEN12GE01	General English-1	5	3
<b>III</b>	23UEL13CC01	<b>Core Course -1:</b> Semiconductor Theory and Electronic Devices	5	5
	23UEL13CP01	<b>Core Practical - 1:</b> Semiconductor Devices	3	3
	23UMA13AC01D	<b>Allied Course- 1:</b> Allied Mathematics for Electronics -1	6	5
<b>IV</b>	23UEL14FC01	<b>Foundation Course:</b> Introductory Electronics	2	2
	23UEL14SE01	<b>Skill Enhancement Course - 1(Non Major Elective):</b> Consumer Electronics	2	2
	23UHE14VE01	<b>Value Education:</b> Essentials of Humanity	2	1
<b>Total</b>			<b>30</b>	<b>24</b>

Semester	Course Code	Title of the Course	Hours /Week	Credits
1	23UEL13CC01	<b>Core Course -1:</b> Semiconductor Theory and Electronic Devices	5	5

Course Objectives
To explain the physics of semiconducting materials and devices
To evaluate the characteristics of passive and active components
To apply the theory in simple applications
To provide simple solutions to the electronics problems
To develop simple electronic circuits

### UNIT I: Semiconductor Physics

(15 Hours)

Types of Solids- Crystal Structure- Crystal Plane and Miller Indices- Formation of Energy Bands - Electrical Conduction in Solids - Energy Band and Band Model - Classification of Materials Based on Band Theory – Semiconductor Materials - Intrinsic Semiconductors - Extrinsic Semiconductors– Drift and Diffusion Currents – Excess Carriers - Density of States - Fermi Function Carrier Distribution - Electron and Hole Concentration - np Product- Carrier Concentration Calculations- Fermi Level Determination - Band Bending - Carrier Generation and Recombination (concept only) - Continuity Equations - Minority Carrier Lifetime – Diffusion Length

### UNIT II: Passive Elements

(15 Hours)

Resistance - Resistor Color Code – Calculating Resistor Value - Resistor Parameters - Connecting Resistors Together - Capacitance and Charge - Dielectric Materials of a Capacitor - Voltage Rating of a Capacitor - Energy Stored in Capacitors -Types of Capacitors- Characteristics of Capacitors - Charging and Discharging of a Capacitor - Capacitor in Parallel- Capacitor in Series -Construction of Inductor –Inductance-Factors Affecting Inductance -Time Constant of an Inductor-Power and Energy in an Inductor- Inductor in Series and Parallel-Self Inductance -Mutual Induction -Working Principle of Transformer

### UNIT III: Semiconductor Diodes

(15 Hours)

Introduction PN-junction - Barrier Potential - Basic Diode Circuit – Ideal Diode- Diode Testing– DC Resistance of Diode – Unbiased Diode – Forward Bias – Breakdown – Reverse Biased Diode - Non uniformly Doped Junctions - PN Junction Current - Small-Signal Model of PN Junction- Charge Storage and Diode Transients - Tunnel Diode -Special Purpose Diodes -Zener Diode – Schottky Diode – Varactor Diode - Step Recovery Diode – Gunn Diode

### UNIT IV: Transistors

(15 Hours)

PNP and NPN Transistors - Transistor Characteristics - Unbiased Transistors – Biased Transistor - Transistor Current – CE, CB and CC Configurations – Base Curve – Collector Curve - Surface Mount Transistors- Variations in Current Gain - Load Line – Darlington Pair – JFET and Characteristics – MOSFET and Characteristics - High Electron Mobility Transistor

## UNIT V: Opto Electronic Devices

(15 Hours)

LED: Construction – Operation - Calculating an LED Resistor Value – Advantages and Disadvantages of LED – LCD: Construction and Working – Photodiode working Principle - Photo Transistor working Principle - PIN Diode – Solar Cell – LASER Diodes – Applications of optoelectronic devices.

<b>Teaching Methodology</b>	Demo Videos, Review, PPT, Exercises, circuit simulation
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### Books for Study

1. Neamen, D. A. (2012). *Semiconductor physics and devices* (4<sup>th</sup> ed.). McGraw Hill Higher Education.
2. Malvino, A. (2014). *Electronics principles*, (4<sup>th</sup> ed.). McGrawHill Education.
3. Borse, R. Y. (2014). *Basic electronic passive components* (1<sup>st</sup> ed.). Adhyayan Publishers and Distributors.

### Books for Reference

1. Thareja, B. L. (2012). *Basic electronics* (3<sup>rd</sup> ed.). S. Chand and Compnay.
2. Bell, D. (2009). *Electronic devices and circuits* (5<sup>th</sup> ed.). Oxford.
3. Mehta, V. K. (2008). *Principles of electronics* (11<sup>th</sup> ed.). S. Chand & Company.
4. Mims, F. M. (n.d). *Getting started in electronics*. E-book

### Web Sources

1. <https://www.instructables.com/Basic-Electronics/>
2. [https://www.tutorialspoint.com/electronic\\_circuits/electronic\\_circuits\\_filters.html](https://www.tutorialspoint.com/electronic_circuits/electronic_circuits_filters.html)
3. <https://www.physics-and-radio-electronics.com/electronic-devices-and-circuits.html>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	describe various passive and active electronic components	K1
CO2	discuss the functioning of passive and active electronic devices	K2
CO3	apply the theory to understand the working of semiconducting devices	K3
CO4	compare the characteristics of active and passive components	K4
CO5	assess the need of modern society with professional ethics in Electronics and recommend solutions for the same	K5

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23UEL13CC01	Core Course -1: Semiconductor Theory and Electronic Devices								5	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	2	1	3	3	3	2	2	2.4
CO2	3	3	3	2	1	3	2	2	2	2	2.3
CO3	3	3	3	2	2	3	2	3	2	2	2.5
CO4	3	3	2	2	2	3	3	2	2	2	2.4
CO5	3	3	2	2	1	3	3	2	3	2	2.4
Mean overall Score											2.4 (High)

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23UEL13CP01	Core Practical - 1: Semiconductor Devices	3	3

Course Objectives
To define various semiconductor devices
To summarize the characteristics of semiconductor devices
To apply the theory and verify it with the experiment results
To compare the properties of various devices
To evaluate the operations of semiconductor devices

### List of Experiments (Any twelve experiments)

1. Verification of ohm's law
2. Study of Series and parallel connection of resistance in circuits
3. Study of series and parallel connection of capacitor in circuits.
4. Study of RC time constant using DC source
5. Study of Diode characteristics
6. Study of Zener Diode characteristics
7. Study of Transistor characteristics – CB
8. Study of Transistor characteristics – CE
9. Study of Transistor characteristics - CC
10. Study of opto electronic devices I- photodiode, phototransistor and LDR
11. Study of different colour LED characteristics
12. Energy band gap of semiconductor
13. Study of sinusoidal steady state analysis of series RC and LC
14. Study of steady state and transient analysis of series RLC circuit.
15. Study of transient analysis of series RC and LC
16. Study of steady state and transient analysis of Parallel RLC circuit.
17. JFET Characteristics
18. MOSFET Characteristics
19. Diode rectifiers
20. Voltage regulator using Zener diode
21. Characteristics of LASER diode
22. Inductor and Transformer characteristics

### Book for Study

1. Practical Manual prepared by the Department



Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23UEL14FC01	Foundation Course: Introductory Electronics	2	2

Course Objectives
To describe the tools used to service electronic devices
To classify the electronic components
To apply the techniques to troubleshoot the electronic devices
To point out the problems in electronic devices
To wire a house and develop the circuits

**UNIT I: Tools (6 Hours)**

Line tester – Multimeter – CRO – DSO - Function Generator - LCR meter – soldering station  
De soldering pump.

**UNIT II: Electronic components (6 Hours)**

Electronic components identification - Transformer Identification - Resistance color code calculation and verification - testing and troubleshooting using tools

**UNIT III: PCB and Components assembling (6 Hours)**

PCB Layout design and etching - Soldering and de-soldering the components in PCB - SMD component Soldering and De-soldering - Construction of single power supply - Construction of Dual Power supply - SMPS

**UNIT IV: Circuits (6 Hours)**

LEDs in series and parallel - Simple emergency lamp with 12V battery - Hobby circuits

**UNIT V: House wiring (6 Hours)**

House wiring-I (fitting switches, AC pin sockets and indicator lamp in switch box) - House wiring-II (Two-way switches, circuit breaker-ELCB, MCB) – Industrial wiring – Safety.

<b>Teaching Methodology</b>	Practical, Demo Videos, PPT, simulation
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**Books for Study**

1. Text prepared by the department

**Books for Reference**

1. Gates, E. (2009). *Introduction to electronics* (6<sup>th</sup> ed.). Cengage Learning India Private Limited.
2. Tucker, D. G. (1959). *Introductory electronics*. Nature.
3. McComb, G. (2005). *Electronics for dummies*, Wesley Publishing Inc.

**Web Sources**

1. <https://www.makerspaces.com/basic-electronics/>
2. <https://www.open.edu/openlearn/science-maths-technology/an-introduction-electronics/content-section-0>
3. <https://www.explainthatstuff.com/electronics.html>
4. <https://www.makerspaces.com/basic-electronics/>
5. <https://ocw.mit.edu/courses/6-071j-introduction-to-electronics-signals-and-measurement-spring-2006/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	List the tools available to study the electronic devices	K1
CO2	Explain the procedure of components handling	K2
CO3	Use the components in electronic devices	K3

Relationship Matrix											
Semester	Course Code		Title of the Course							Hours	Credits
1	23UEL14FC01		Foundation Course: Introductory Electronics							2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	3	3	3	3	2	2	2	2.6
CO2	3	3	2	3	3	3	3	2	3	2	2.7
CO3	3	3	2	2	2	3	3	3	3	3	2.7
Mean overall Score											2.67 (High)

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23UEL14SE01	<b>Skill Enhancement Course - 1(Non Major Elective):</b> Consumer Electronics	2	2

Course Objectives
To define the operations of house hold electronic devices
To illustrate functions of different electronic devices
To apply the devices in home applications
To classify the electronic devices
To appraise the working of electronic devices

### **UNIT I: Audio System (6 Hours)**

Moving Coil Microphones - Capacitor Microphones - Wireless Microphones - Anatomy of a Hi-Fi system - Source Units - Signal Propagation - Stereo Multiplex – Compatibility - Theatre Sound System: DTS – DolbySound

### **UNIT II: Smart Devices (6 Hours)**

Tab – Smart Watch – Smart TV – DTH System – LCD Projector – Smart Door Lock – Smart LED Light.

### **UNIT III: Remote Controls (6 Hours)**

Ultrasonic Transducers - Remote Control Transmitter – Remote Control System - Remote Control Operation – NFC - Troubleshooting Remote Control Systems.

### **UNIT IV: Cctv And Smart Devices (6 Hours)**

CCTV Camera - Digital Video Recorder - Network Video Recorder – CCTV Installation  
Digital Voice Assistants - Google Assistants – Managing Smart Home Devices – Smart Security

### **UNIT V: Washing Machines (6 Hours)**

Electronic Controller for Washing Machines - Washing Machine Hardware - Hardware and Software Development – Types - Fuzzy Logic Washing Machines - Miscellaneous Features.

<b>Teaching Methodology</b>	Demo Videos, PPT, Handouts
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### **Books for Study**

1. Study material by the department

### **Books for Reference**

1. Chitode, J. S. (2007). *Consumer electronics* (1<sup>st</sup> ed.). Technical Publications, Pune.
2. Bali, S. P. (2008). *Consumer electronics* (1<sup>st</sup> ed.). Pearson Education Asia Pvt., Ltd.
3. Davidson, H. L. (2000). *Consumer electronics troubleshooting and repair hand book* (1<sup>st</sup> ed.). McGraw Hill.

### Web Sources

1. <https://www.sciencedirect.com/topics/engineering/consumer-electronics>
2. <https://www.pcmag.com/encyclopedia/term/consumer-electronics>
3. <https://www.ltts.com/industry/consumer-electronics>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	describe the electronic concepts used in consumer electronics systems.	K3
CO2	compare the preventive maintenance in various electronic appliances.	K4
CO5	use different product safety, compliance standards and techniques associated with electronic products.	K5

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23UEL14SE01	Skill Enhancement Course - 1(Non Major Elective): Consumer Electronics								2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO 1	PSO 2	PSO3	PSO 4	PSO5	
CO1	3	3	2	2	2	3	3	2	2	2	2.4
CO2	3	3	2	2	2	3	3	2	2	2	2.4
CO3	3	3	2	2	2	3	3	2	2	2	2.4
Mean overall Score											2.4 (High)

<b>PROGRAMME PATTERN</b>			
<b>M. Sc. ELECTRONICS</b>			
<b>Course Code</b>	<b>Title of the Course</b>	<b>Hours</b>	<b>Credits</b>
23PEL1CC01	<b>Core Courses -1:</b> Embedded Systems Design with PIC	6	4
23PEL1CC02	<b>Core Courses - 2:</b> Digital Communication Systems	5	4
23PEL1CP01	<b>Core Practical -1:</b> Embedded Systems Design With PIC	8	4
23PEL1ES01	<b>Elective - 1:</b> Digital Signal Processing	5	4
23PEL1ES01	<b>Elective - 2:</b> Instrumentation Control Techniques	4	4
23PEL1AE01	<b>Ability Enhancement Course:</b> Electronics Innovation and Entrepreneurship	2	1
	<b>Total</b>	<b>30</b>	<b>21</b>

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23PEL1CC01	Core Courses -1: Embedded Systems Design with PIC	6	4

Course Objectives
To study the architecture of the PIC -CPU, Memory and Micro C Programming Techniques
To understand Programming Parallel I/O Ports and Interface output devices
To understand Programming internal ADC, DAC and PWM
To understand how to handle Timers and interrupts
To understand Serial communication Protocols, programming various protocols, interface and communicate with GPS, Bluetooth Modules using serial communication protocols.

#### **UNIT I: PIC 18 Architecture and Embedded C Programming: (18 Hours)**

Architecture – WREG – File Register – Default Access Bank – Status Register – Program Counter - oscillator used in PIC - PIC Microcontroller Memory Types - Flash Program Memory, Data Memory (RAM) and EEPROM Data Memory - Program ROM Space - Embedded C Programming and data types in MikroC Pro for PIC – Variables – Conditional and Looping statements– arrays and user defined functions.

#### **UNIT II: Programming Parallel I/O Ports: (18 Hours)**

Port A, B, C, D, E and F – Reading and Writing Registers in PIC microcontroller - I/O Bit Manipulation Programming - LED Blinking Program - 16×2 LCD Interfacing with PIC - 7 Segment Display interfacing with PIC - Stepper Motor Interfacing with PIC

#### **UNIT III: ADC, DAC and PWM: (18 Hours)**

PIC18F ADC Module - PIC18F ADC Block Diagram - PIC18F ADC Registers - PIC18F4550 Microcontroller ADC Programming - PIC Microcontroller Built-in DAC Modules - DAC Module Control Registers - DAC Module Programming - PWM using PIC Microcontroller - PWM Duty cycle - PWM Programming - PWM for DC Motor Speed Control

#### **UNIT IV: Timers and Interrupts in PIC microcontroller: (18 Hours)**

Types of timers in PIC microcontroller - Clock source of PIC microcontroller timers - Delay Calculation of timers - Timers Registers Configuration - Working of PIC microcontroller timers - Code to generate delay with timers - Counter Programming - PIC 18 Interrupts – Programming Timer Interrupts – Programming External Hardware Interrupts

#### **UNIT V: PIC Communication Modules: (18 Hours)**

UART Communication with PIC- Use UART Interrupt of PIC - PIC SPI Module - I2C Communication using PIC - USB interfacing with PIC - Serial Communication Using PIC - GPS module interfacing with PIC - GSM Module interfacing with PIC - PIC Bluetooth module interfacing with PIC

<b>Teaching Methodology</b>	Demo Videos, PPT, Handouts, circuit simulations and analysis
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**Books for Study**

1. Mazidi, M. A., McKinlay, R., & Causey, D. (2013). *PIC microcontroller and embedded systems using assembly and C for pic 18*. Pearson.

**Books for Reference**

1. Peatman, J.B. (2009). *Design with PIC microcontroller*. Prentice Hall of India.
2. Predko, Myke. (2008). *PIC microcontroller*. Tata McGraw Hill Edition.

**Web Sources**

1. <https://electronicsdesk.com/pic-microcontroller.html>
2. <https://ww1.microchip.com/downloads/en/devicedoc/39632e.pdf>
3. <https://www.microchip.com/wwwproducts/pic18f4550>
4. [https://www.dauniv.ac.in/public/frontassets/coursematerial/embeddedsystems/Chap\\_5\\_L01Emsys3EIOPortsSerial\\_Parallel.pdf](https://www.dauniv.ac.in/public/frontassets/coursematerial/embeddedsystems/Chap_5_L01Emsys3EIOPortsSerial_Parallel.pdf)
5. <https://circuitdigest.com/microcontroller-projects/pic-to-pic-communication-using-rf-module>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	describe the architecture, characteristics embedded systems	K1
CO2	outline and restate the embedded system design	K2
CO3	solve hardware and software issues and apply in embedded system	K3
CO4	analyze the embedded system in various applications	K4
CO5	assess and develop programming skill	K5
CO6	design their own Embedded System using PIC microcontroller	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PEL1CC01		Core Courses -1: Embedded Systems Design with PIC							6	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	2	2	3	2	3	3	3	3	2.5
CO2	2	3	2	3	3	2	2	2	2	3	2.4
CO3	2	2	3	3	2	2	3	2	2	3	2.4
CO4	2	2	2	2	3	2	3	2	3	2	2.3
CO5	2	2	2	3	2	2	2	3	3	3	2.4
CO6	2	2	2	3	2	2	3	2	3	2	2.3
Mean overall Score											2.38 (High)

Semester	Course Code	Title of the Course	Hours /Week	Credits
1	23PEL1CC02	Core Courses - 2: Digital Communication Systems	5	4

Course Objectives
To know the principles of Digital Communication System and Information theory
To study various waveform coding schemes
To learn various baseband transmission schemes
To understand various Digital Modulation Schemes
To learn various error control coding

#### **UNIT I: Information Theory: (15 Hours)**

Digital Communication System - Discrete Memory less source, Information, Entropy, Mutual Information – Discrete Memory less channels – Binary Symmetric Channel, Channel Capacity – Hartley – Shannon law – Source coding theorem – Shannon – Fano & Huffman codes.

#### **UNIT II: Waveform Coding & Representation: (15 Hours)**

Prediction filtering and DPCM – Delta Modulation – ADPCM & ADM principles-Linear Predictive Coding- Properties of Line codes- Power Spectral Density of Unipolar / Polar RZ & NRZ – Bipolar NRZ – Manchester

#### **UNIT III: Baseband Transmission & Reception: (15 Hours)**

ISI – Nyquist criterion for distortion less transmission – Pulse shaping – Correlative coding – Eye pattern – Receiving Filters – Matched Filter, Correlation receiver, Adaptive Equalization.

#### **UNIT IV: Digital Modulation Scheme: (15 Hours)**

Geometric Representation of signals – Generation, detection, PSD & BER of Coherent BPSK, BFSK & QPSK – QAM – Carrier Synchronization – Structure of Non-coherent Receivers – Principle of DPSK.

#### **UNIT V: Error Control Coding: (15 Hours)**

Channel coding theorem – Linear Block codes – Hamming codes – Cyclic codes – Convolutional codes – Viterbi Decoder.

<b>Teaching Methodology</b>	Demo Videos, PPT, Handouts, circuit simulations and analysis
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#### Books for Study

1. Proakis, J. G., & Salehi, M. (2014). *Digital communication*. McGraw Hill Education Edition.
2. Bhattacharya, A. (2006). *Digital communication*. McGraw Hill Education (India) Pvt. Ltd.
3. Sklar, B., & Ray, P. K. (2014). *Digital communications fundamentals and applications*.



Pearson Education.

4. Haykin, S. (2005). *Digital communications*. John Wiley India.

#### Books for Reference

1. Shanmugam, K. S. (2012). *Digital and communication systems*. Wiley, India.
2. Nishanth, N. (2017). *Digital communication*. Cengage Learning India.
3. Rao, R. (2011). *Digital communication*. Tata McGraw Hill Education Pvt.
4. Haykin, S. (2012). *Communication systems* (4<sup>th</sup> ed.). Wiley, India.
5. Kundu, S. (2010). *Analog and digital communications*. Pearson.

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2. [https://www.tutorialspoint.com/digital\\_communication/digital\\_communication\\_quick\\_guide.htm](https://www.tutorialspoint.com/digital_communication/digital_communication_quick_guide.htm)
3. <https://www.egr.msu.edu/~tongli/teaching/ece865/Introduction>
4. <https://www.electronicdesign.com/technologies/communications/article/21798737/electronic-design-understanding-modern-digital-modulation-techniques>
5. <https://www.site.uottawa.ca/~yongacog/courses/elg3175/Lecture18-19-AY-Coding.pdf>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	Understand the basic of Digital communication systems	K1
CO2	illustrate various waveform coding	K2
CO3	sketch the signaling and transmission schemes	K3
CO4	analyze spectral characteristics of band pass signaling scheme and digital modulation	K4
CO5	Assess and develop PCM systems	K5
CO6	design a digital communication scheme and error control coding schemes	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PEL1CC02		Core Courses - 2: Digital Communication Systems							5	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	2	2	3	2	3	2	3	3	2.4
CO2	2	3	2	2	3	2	2	2	2	3	2.3
CO3	2	2	3	3	2	2	3	2	2	3	2.4
CO4	2	2	2	2	1	2	3	2	3	2	2.2
CO5	2	2	2	3	2	2	2	3	1	1	2.2
CO6	2	2	2	3	2	2	3	2	3	2	2.3
Mean overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23PEL1CP01	<b>Core Practical -1:</b> Embedded Systems Design With PIC	8	4

Course Objectives
To understand interfacing, I/O devices with PIC Parallel I/O and develop the embedded C programming in microC pro IDE / MPLAB IDE
To understand and develop timer, interrupt and Serial communication Programming
To study Digital communication Modulators and Demodulators
To develop MATLAB Programs to generate signals, Analyze the signal in Time and frequency domain
To develop MATLAB Programs to design FIR and IIR Filters

1. The DSP programs shall be implemented in software using MATLAB/C
2. BCD and ASCII Conversion
3. Testing PIC I/O Ports using LED and DIP switches
4. Interfacing Traffic Light Controller
5. Interfacing Seven Segment Display
6. Interfacing Relay and Buzzer
7. Interfacing LCD to PIC
8. ADC Programming in PIC
9. Interfacing Temperature Sensor to PIC
10. Interfacing Stepper Motor to PIC
11. Interfacing N x M Key Board to PIC
12. DAC Interfacing in PIC
13. Interfacing a DC Motor to PIC.
14. Timer Program
15. Event Counter Programmer
16. Interrupt Programming
17. PIC UART serial Interfacing
18. Study of ASK modulation and Demodulation
19. Study of FSK modulation and Demodulation
20. Study of BPSK modulation and Demodulation
21. Generation Of Basic Signals (unit impulse Signal, Step, Ramp, Exponential) Using Matlab
22. Generate Continuous Time and Discrete time sin/ cosine signal.
23. Compute Convolution of a given Sequence
24. Compute Correlation of a given Sequence
25. Compute Auto Correlation of a given Sequence
26. Compute Cross Correlation of a given sequence
27. Compute Correlation Coefficient of a given data
28. Find frequency response of a given system given in (Transfer Function/ Differential equation form).
29. Evaluate the impulse response of the system
30. Find the DFT / IDFT of given signal

31. Determination of Power Spectrum of a given signal(s).
32. Implementation of windows
33. Implementation of LP FIR filters for a given sequence.
34. Implementation of HP FIR filters for a given sequence.
35. Implementation of LP IIR filters for a given sequence.
36. Implementation of HP IIR filters for a given sequence.

Semester	Course Code	Title of the Course	Hours /Week	Credits
1	23PEL1ES01	Elective - 1: Digital Signal Processing	5	4

Course Objectives
To Study the basics of Discrete Time signals and systems
To understand Discrete Fourier Transformation techniques to analyze the signals
To Learn Z Transformation along with Transfer functions
To Explain Digital filters and design of FIR and IIR filters
Explain Adaptive filters and design Adaptive filters using steepest decent, LMS algorithms

### **UNIT I: Discrete Time Signals and Systems: (15 Hours)**

Sampling Theorem- Sampling of Analog Signals – Anti Aliasing Filter - Various Types of Signals -Standard Discrete Time Signals – Classification of Discrete Time Signals – Basic Operations on DTS – Discrete Time Systems – LTI invariant System (Discrete Convolution) - Classification of DT LTI systems – DT Deconvolution and Correlation.

### **UNIT II: Discrete Fourier Transformation: (15 Hours)**

Discrete Fourier Transform – Matrix Relation for Computing DFT and IDFT – Important Properties of DFT – Circular Convolution and its implementation – Linear Convolution from circular convolution –Decimation in Frequency FFT – Decimation in Time FFT – Radix -2 Inverse FFT – Frequency analysis of Known DT Signals – Power and Energy Spectral Density.

### **UNIT III: Z Transformation: (15 Hours)**

The Z Transform – Properties of Z-Transform – The Inverse Z-Transform – Elements of a Digital Filters – Transfer Functions of a Difference Equation – The z-Plane Pole-Zero Plot.

### **UNIT IV: Basics of Digital Filtering: (15 Hours)**

FIR Filter Structure – Properties of Linear Phase FIR Filters –Window Design Techniques – Design of Linear Phase FIR Filter Using Window- Generic Equation for IIR Filter - Design of Low Pass IIR Butterworth Filter – Design of Low Pass Chebyshev Filter

### **UNIT V: Adaptive Filters: (15 Hours)**

Basic Adaptive Filter - System Identification - Noise Cancellation – Equalization - Adaptive Prediction - Computing the coefficients of an adaptive filter - The Steepest Decent Algorithm – LMS Adaptive Algorithm – Adaptive Noise Canceller - Adaptive System identification.

<b>Teaching Methodology</b>	Demo Videos, PPT, Handouts, circuit simulations and analysis
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### Books for Study

1. Oppenheim A. V. & Schafer R. W. (1975). *Digital signal processing*.
2. Reddy, D.C. (2009). *Biomedical signal processing principles and techniques*. The Tata-McGraw Hill Publishing Company Ltd, New Delhi.
3. Apte, S.D. (2010). *Digital signal processing*. WILEY INDIA.
4. Proakis, J. G. & Monolakis, D. G. (2011). *Digital signal processing principals, algorithms and applications*. PEARSON.
5. Rao, K. D. & Swamy, M. N. S. (2012). *Digital signal processing*. JAICO Publishing House.

### Books for Reference

1. Cristi, R. (2012). *Modern digital signal processing*. Cengage Learning.
2. Salivhanan, S. (2019). *Digital signal processing* (4<sup>th</sup> ed.). McGraw-Hill.
3. Ingle, V. K., & Proakis, J. G. (2012). *Essentials of digital signal processing using MATLAB* (3<sup>rd</sup> ed.). Cengage Learning.
4. Tompkins, W. J. (2000). *Biomedical digital signal processing*. Prentice - Hall of India Pvt. Ltd.
5. Yong, W. Y., et al. (2001). *Signals and systems with MATLAB*. Springer International Edition.

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2. [https://www.tutorialspoint.com/digital\\_signal\\_processing/index.htm](https://www.tutorialspoint.com/digital_signal_processing/index.htm)
3. <https://www.geeksforgeeks.org/what-is-z-transform/>
4. [https://web.ece.ucsb.edu/~yoga/courses/DSP/P9\\_Intro\\_Digital\\_Filters.pdf](https://web.ece.ucsb.edu/~yoga/courses/DSP/P9_Intro_Digital_Filters.pdf)
5. <https://www.mathworks.com/help/dsp/ug/overview-of-adaptive-filters-and-applications.html>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	describe the discrete time signal and systems in time domain	K1
CO2	outline Digital Signal Processing	K2
CO3	solve the problem of discrete time signal and systems in time domain using convolution and correlation	K3
CO4	analyze the discrete time signal and systems in time domain using convolution and correlation	K4
CO5	Assess and develop an algorithm to design adaptive filters for system identification, noise cancellation and Equalization	K5
CO6	design an algorithm to design and analyze the FIR and IIR filters using Z – transform	K6

Relationship Matrix											
Semester	Course code	Title of the Course								Hours	Credits
1	23PEL1ES01	Elective - 1: Digital Signal Processing								5	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	2	2	3	2	2	2	3	3	2.3
CO2	2	3	2	2	3	2	2	2	2	3	2.3
CO3	2	2	2	2	2	2	3	2	3	3	2.3
CO4	2	2	2	2	3	2	3	2	3	2	2.3
CO5	2	2	2	3	2	2	2	2	3	3	2.3
CO6	2	2	2	3	2	2	3	2	3	3	2.4
Mean overall Score											2.32 (High)

Semester	Course Code	Title of the Course	Hours /Week	Credits
1	23PEL1ES01	Elective - 2: Instrumentation Control Techniques	4	4

Course Objectives
To learn the concept of measurement and error estimation
To learn various industrial detection sensor and its interfacing
To learn to design data acquisition systems
To learn DC motor construction, operations and its drive
To know industrial control techniques

**UNIT I: Measurement: (12 Hours)**

Performance characteristics of instruments- Static characteristics- Accuracy- Resolution- Precision- Expected value- Error- Sensitivity- Errors in Measurement, Dynamic Characteristics- speed of response- Fidelity- Lag and Dynamic error.

**UNIT II: Industrial Detection Sensors and Interfacing: (12 Hours)**

Proximity Detectors – Inductive Proximity Switches – Capacitive Proximity Switches – Hall Effect Sensor – IC Temperature Sensor – Optical Shaft Encoder Displacement Sensor - Photoelectric Sensor – Methods of Detection – Ultrasonic Sensors – Sensor Interfacing.

**UNIT III: Data acquisition and Handling: (12 Hours)**

Systems: Introduction-signal conditioners-Instrumentation amplifiers-filters- Data conversion – multiplexers - A/D-D/A conversion - PC based telemetry System.

**UNIT IV: DC Motor and Variable Speed Drive: (12 Hours)**

DC Motor: Principles of Operation - Practical DC Motor - Basic Motor Construction – Motor Classification – Coil terminal Identification – DC Servo Motor – Stepper Motor – Permanent Magnet Stepper Motor – Variable Reluctance Stepper Motor DC drive Fundamental – Variable Voltage DC drive – Motor Breaking.

**UNIT V: Process Control- Techniques and Control Methods: (12 Hours)**

Pressure Control system - Temperature Control System– Flow Control System – Level Control System – Analytical Instrumentation – Non-Destructive Testing – Open Loop Control – Closed Loop Control – Single Variable Control – Selecting a Controller – On-Off Control – Case Study – Continuous Control – Tuning the Controller.

<b>Teaching Methodology</b>	Demo Videos, PPT, Handouts, circuit simulations and analysis
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**Books for Study**

1. Nakra & Chaudhry, K. K. (2004). *Instrumentation- measurement and analysis*. Tata McGraw Hill Second Edition.
2. Bartelt, T. L. (2006). *Industrial electronics: Circuits instruments and control techniques*. Cengage Learning.

**Books for Reference**

1. Bose, B. K. (2004). *Modern power electronics and AC drives*. Pearson Education.
2. Biswanath, P. (2005). *Industrial electronics and control*. Prentice Hall of India.
3. Nagrath, I.J. & Gopal, M. (1995), *Control systems engineering*. New Age International Pvt. Ltd.
4. Mathivanan, N. (2009). *PC based instrumentation concept and practice*. Prentice Hall of India.
5. Biswas, S.N. (2000). *Industrial electronics*. Dhanpat Rai & Co.

**Web Sources**

1. <https://instrumentationtools.com/what-is-instrumentation-and-control-engineering/>
2. <https://www.britannica.com/technology/measurement#:~:text=measurement%2C%20the%20process%20of%20associating,to%20almost%20all%20everyday%20activities.>
3. <https://www.g2datasystems.co.uk/continuous-emissions-monitoring-software/data-acquisition-and-handling-system-dahs/134/#:~:text=What%20is%20a%20Data%20Acquisition,can%20then%20be%20stored%20digitally>
4. <https://www.haroldbeck.com/process-control/#:~:text=Process%20control%20is%20the%20ability,a%20heater%20and%20a%20thermostat.>
5. <https://www.sciencedirect.com/topics/engineering/process-control>



Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	remember the characteristics of instruments	K1
CO2	understand the basic techniques of instruments used in instrumentation control system	K2
CO3	explain the control techniques after measuring the signals	K3
CO4	select suitable instrument and control methods for different applications	K4
CO5	assess and develop the instruments for various applications	K5
CO6	design an instrument for a specific need	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PEL1ES01		Elective - 2: Instrumentation Control Techniques							4	4
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	2	2	3	2	3	2	3	2	2.3
CO2	2	3	2	3	3	2	2	2	2	2	2.3
CO3	2	2	2	3	2	2	3	2	2	3	2.3
CO4	2	2	2	2	3	2	3	2	3	2	2.3
CO5	2	2	2	3	2	2	2	2	3	3	2.3
CO6	2	2	2	3	2	2	3	2	3	3	2.3
Mean overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23PEL1AE01	<b>Ability Enhancement Course:</b> Electronics Innovation and Entrepreneurship	2	1

Course Objectives
To learn the basic concept of Matrices and Vectors
To learn various industrial detection sensor and its interfacing
To learn to design data acquisition systems
To learn DC motor construction, operations and its drive
To know industrial control techniques

### **UNIT I: Mathematics I (6 Hours)**

Matrices and Vectors-Eigenvalues and eigenvectors-Gradient-divergence and curl-Line and surface integrals- Stroke's Theorem

### **UNIT II: Mathematics II (6 Hours)**

Second order Ordinary Differential Equations with variable coefficients - Cauchy-Euler equation - Bessel functions and their properties- Introduction to Partial Differential Equations + Definition of Laplace transform and its electronics applications

### **UNIT III: Logical Reasoning and Data Interpretation (5 Hours)**

Understanding the structure of arguments: Venn diagram: Analogies - Data Interpretation - Graphical representation

### **UNIT IV: Research Skills (7 Hours)**

Meaning – types - characteristics – methods - research problem identification and formulation – Deductive and inductive theory – Hypothesis and quality of measure for the hypothesis - Thesis and article writing - Research ethics Introduction to reference management software (Mendeley) - Software for detection of plagiarism.

### **UNIT V: Troubleshooting skills (6 Hours)**

Identification of problems – understanding the symptoms – causes for the problems – analysing the solutions – implementing the solutions – testing and validation – Troubleshooting by observing the signals (voltage measurement, current measurement, resistance measurement, waveform, ...) – case study (troubleshooting an electronic device)

<b>Teaching Methodology</b>	Demo Videos, PPT, Handouts, Circuit Troubleshooting
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### **Books for Study**

1. Kreyszig, E. (2011). *Advanced engineering mathematics* (10<sup>th</sup> ed). Wiley Plus.
2. Sinha, N. K. (2019). *Logical reasoning and data interpretation for CAT* (6<sup>th</sup> ed).

- Pearson Education.
- Warburton, C & Bookman, S. (2007). *Basic college research skills*, University Press of America.
  - Text prepared by the Department

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- Bird, J. (2010). *Higher engineering mathematics* (6<sup>th</sup> ed). Elsevier.
- Tomal, D. R. & Agajanian, A. S. (2014). *Electronic troubleshooting* (4<sup>th</sup> ed). McGraw Hill Education.
- Kothari, C. R. & Garg, G. (2019). *Research methodology* (4<sup>th</sup> ed). New Age International Publishers.

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- [http://www.untag-smd.ac.id/files/Perpustakaan\\_Digital\\_1/ENTREPRENEURSHIP%20Innovation%20and%20entrepreneurship.PDF](http://www.untag-smd.ac.id/files/Perpustakaan_Digital_1/ENTREPRENEURSHIP%20Innovation%20and%20entrepreneurship.PDF)
- <https://www.globalknowledge.com/us-en/resources/resource-library/articles/4-tips-to-strengthen-your-troubleshooting-skills/>
- <https://cleverism.com/skills-and-tools/troubleshooting/>
- <https://www.universityofgalway.ie/academic-skills/readingandresearch/#:~:text=Research%20skills%20refer%20to%20the,relevant%20to%20a%20particular%20topic.>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	analyze the electronic circuits	K4
CO2	evaluate the symptoms	K5
CO3	trouble shoot the electronic circuits	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PEL1AE01		Ability Enhancement Course: Electronics Innovation and Entrepreneurship							2	1
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	2	3	3	2	3	2	3	2	2.4
CO2	2	2	2	3	2	2	2	3	3	3	2.4
CO3	2	2	3	3	3	2	3	2	3	2	2.5
Mean overall Score											2.4 (High)



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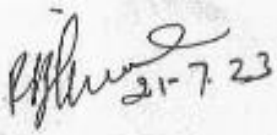
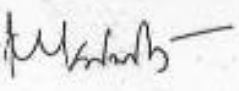

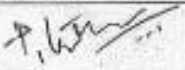
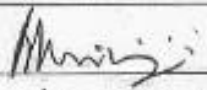


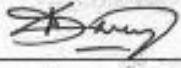
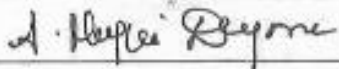
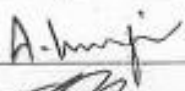
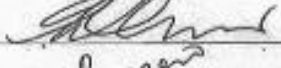
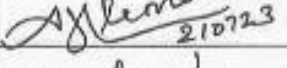

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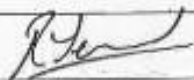
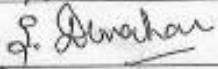
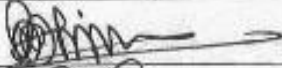
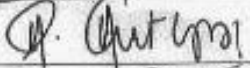

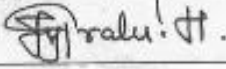
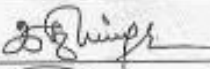
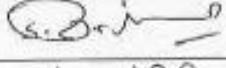
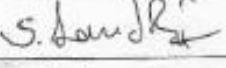
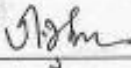
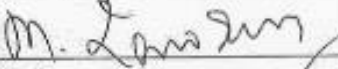
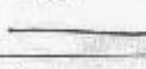

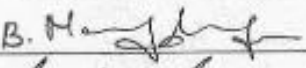
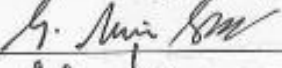
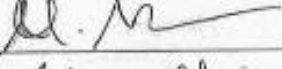
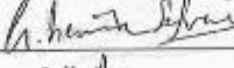
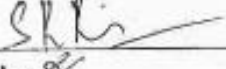

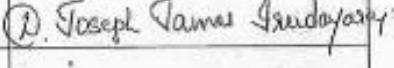
- The meeting of the Board of Studies in Physics Department began at 11.30 am in the Smart Class Room with the prayer. All the faculty members were present except Mr. J. Martin, Industrial expert and Dr. A. Sinthiya.
- The subject expert Dr. K. Marimuthu, Associate Professor of Physics, Gandhigram Rural University, Dindigul and University representative Dr. R. Raj Muhamed, Associate Professor of Physics, Jamal Mohamed College, Tiruchirappalli were present.
- The Chairman of the Board and Head of the Department Dr. I. Johnson welcomed the external members and faculty members of both Shift-I and Shift-II.
- HoD informed the agenda to the members and he read out the minutes of previous Board of Studies meeting held on 25-04-2023 and the same was passed.
- The Chairman briefed the course pattern and syllabus of both UG and PG (I Semester only).
- The modifications have been done for the following papers as suggested by External experts.
  - Board decided to increase the list of practicals from 8 experiments to 12 experiment for I UG Physics practical –I.
  - Solar Energy Utilization by GD Roy book to be included as a book for study for “Physics for Everyday Life” course. Also, Unit –II content to be elaborated.
  - Dr. K. Marimuthu suggested to add more content in Unit-I to the subject Classical Mechanics and Relativity. Also he suggested to add Plagiarism topic in Unit-II of AEC paper.
  - Above suggestions were well taken and accepted after a discussion.
- The proposed question paper pattern by examination reform committee was accepted and passed.
- The Chairman of BoS thanked the subject expert Dr. K. Marimuthu, and University representative Dr. R. Raj Muhamed. Also he thanked Dr. N. Ravi and Dr. S. Alfred Cecil Raj.
- Meeting came to an end by 1:00 PM.

*[Signature]*  
21.7.23  
Dr. R. Raj Muhamed  
Associate Prof. of Physics  
Jamal mohamed college  
Tiruchirappalli - 20

*[Signature]*  
Dr. K. Marimuthu  
K. Marimuthu  
Associate professor  
Dept. of Physics  
GRI-DT BU  
Gandhigram - 624302  
Dindigul.

*[Signature]*  
Dr. I. Johnson  
Dr. I. JOHNSON, M.Sc., M.Phil., Ph.D.  
Head  
Research Advisor & Principal Investigator  
Associate Professor, Dept. of Physics  
St. Joseph's College (Autonomous)  
Tiruchirappalli-620 002.

BOARD OF STUDIES MEETING HELD ON 21.07.2023		
DEPARTMENT OF PHYSICS		
St. JOSEPH'S COLLEGE(AUTONOMOUS)		
TIRUCHIRAPPALLI -620002		
S. No.	Name and address	Signature
1.	Dr. R. Raj Muhamed, Associate Professor, Department Of Physics, Jamal Mohamed College (Autonomous), Tiruchirappalli – 620 020 (University Representative)	 21-7-23
2.	Dr. K. Marimuthu, Assistant Professor, Dept. of Physics, Gandhigram Rural University Gandhigram, Dindigul. (Subject Expert)	
3.	Mr. J. Martin , IP Marketing & Distribution (P) Ltd, 13M/7K, St. Anne's Complex Convent Road, Melapudhur, Tiruchirappalli – 620 001.	AAA
4.	Dr. I. Johnson	
5.	Mr. A. Patrick Prabhu	
6.	Dr. B. Kanickairaj	
7.	Dr. J. Charles	
8.	Mr. S. Dominique	
9.	Dr. P. Christuraj	
10.	Dr. A. Maggie Dayana	
11.	Dr. A. Leo Rajesh	
12.	Dr. M.M. Armstrong Arasu	
13.	Dr. A. J. Clement Lourduraj	 21/07/23
14.	Dr. M. Antony Arockiaraj	 21/07/2023

15.	Dr. R. Jerald Vijay	
16.	Dr. S. Dinakaran	
17.	Dr. S. Anbarasu	
18.	Dr. A. Antony Raj	
19.	Dr. G. Samuel	
20.	Dr. H. Joy Prabu	
21.	Dr. R. Thomas	
22.	Dr. S. Prathap	
23.	Dr. S. Lourduraj	
24.	Dr. P. Adal Arasu	
25.	Dr. M. Lawrence	
26.	Dr. M. Dinesh Raja	
27.	Dr. A Sinthiya	
28.	Ms. B. Mary Dayana	
29.	Mr. G. Novin Senetra Roy	
30.	Dr. M. Augustin	
31.	Dr. G. Genifer Silvena	
32.	Dr. S. Rex Rosario	
33.	Dr. A. Alexandar	
34.	Mr. D. JOSEPH JAMES IRUDAYARAJ	

PROGRAMME PATTERN				
B. Sc. Physics				
Part	Course Code	Title of the Course	Hours	Credits
<b>I</b>	23UTA11GL01A	General Tamil- 1: தமிழ் இலக்கிய வரலாறு-1	5	3
	23UFR11GL01	French-1		
	23UHI11GL01	Hindi-1		
	23USA11GL01	Sanskrit-1		
<b>II</b>	23UEN12GE01	General English-1	5	3
<b>III</b>	23UPH13CC01	<b>Core Course -1:</b> Properties of Matter and Acoustics	5	5
	23UPH13CP01	<b>Core Practical - 1:</b> Properties of Matter	3	3
	23UMA13AC01C	<b>Allied Course -1:</b> Allied Mathematics for Physics-1	6	5
<b>IV</b>	23UPH14FC01	<b>Foundation Course:</b> Introductory Physics	2	2
	23UPH14SE01A	<b>Skill Enhancement Course - 1(Non Major Elective):</b> Physics for Everyday Life	2	2
	23UPH14SE01B	<b>Skill Enhancement Course - 1 (Non Major Elective):</b> Home Electrical Installation		
	23UHE14VE01	<b>Value Education:</b> Essentials of Humanity	2	1
<b>Total</b>			30	24

Semester	Course code	Title of the Course	Hours/ Week	Credits
1	23UPH13CC01	Core Course -1: Properties of Mater and Acoustics	5	5

Course Objectives
To Study of the properties of matter leads to information which is of practical value to both the physicist and the engineers
To inform about the internal forces which act between the constituent parts of the substance
To provide students an insight of the principles of waves and oscillation and their characteristics
To understand the physics of acoustics of a building and methods of production of ultrasonic waves
To understand the properties of matter and apply the concepts in practical applications

### UNIT I: Elasticity (15 Hours)

Hooke's law – stress-strain diagram – elastic constants –Poisson's ratio – relation between elastic constants and Poisson's ratio – work done in stretching and twisting a wire – twisting couple on a cylinder – rigidity modulus by static torsion– torsional pendulum (with and without masses)

### UNIT II: Bending of Beams (15 Hours)

cantilever– expression for Bending moment – expression for depression at the loaded end of the cantilever– oscillations of a cantilever – expression for time period – experiment to find Young's modulus – non-uniform bending– experiment to determine Young's modulus by Koenig's method – uniform bending – expression for elevation – experiment to determine Young's modulus using microscope

### UNIT III: Fluid Dynamics (15 Hours)

*Surface tension*: definition – molecular forces– excess pressure over curved surface – application to spherical and cylindrical drops and bubbles – determination of surface tension by Jaegar's method–variation of surface tension with temperature

*Viscosity*: definition – streamline and turbulent flow – rate of flow of liquid in capillary tube – Poiseuille's formula –corrections – terminal velocity and Stoke's formula– variation of viscosity with temperature

### UNIT IV: Waves and Oscillations (15 Hours)

Simple Harmonic Motion (SHM) – differential equation of SHM – graphical representation of SHM – composition of two SHM in a straight line and at right angles – Lissajous's figures-free, damped, forced vibrations –resonance and Sharpness of resonance.

Laws of transverse vibration in strings –sonometer – determination of AC frequency using



sonometer–determination of frequency using Melde’s string apparatus.

## UNIT V: Acoustics of Buildings and Ultrasonics

(15 Hours)

Intensity of sound – decibel – loudness of sound –reverberation – Sabine’s reverberation formula – acoustic intensity – factors affecting the acoustics of buildings.

*Ultrasonic waves*: production of ultrasonic waves – Piezoelectric crystal method – magnetostriction effect – application of ultrasonic waves.

Teaching Methodology	Black board teaching, Video lectures, Demonstrations with models, Handouts
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### Books for Study

1. Mathur, D. S. (2007). *Elements of Properties of matter* (1st ed.). S. Chand & Company.
2. Brij, L. & Subrahmanyam, N. (2003). *Properties of matter* (1st ed.). S. Chand & Company.
3. Khanna, D. R. & Bedi, R. S. (1969). *Textbook of sound*. AtmaRam & sons.
4. Brij & Subrahmanyam, N. (1995). *A Text Book of sound*. Vikas Publishing House.
5. Murugesan, R. (2012). *Properties of matter*. S.Chand & Company.

### Books for Reference

1. Smith, C. J. (1960). *General properties of matter* (1st ed.). Orient Longman Publishers.
2. Gulati, H. R. (1977). *Fundamental of general properties of matter* (5th ed.). R. Chand & Company.
3. French, A. P. (1973). *Vibration and waves*, MIT Introductory Physics, Arnold-Heinman.

### Web Resources

1. <https://www.biolinscientific.com/blog/what-are-surfactants-and-how-do-they-work>
2. <http://hyperphysics.phy-astr.gsu.edu/hbase/permot2.html>
3. <https://www.youtube.com/watch?v=gT8Nth9NWPM>
4. <https://www.youtube.com/watch?v=m4u-SuaSu1sandt=3s>
5. <https://www.biolinscientific.com/blog/what-are-surfactants-and-how-do-they-work>
6. <https://learningtechnologyofficial.com/category/fluid-mechanics-lab/>
7. <http://www.sound-physics.com/>
8. <http://nptel.ac.in/courses/112104026/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On the successful completion of the course, students will be able to	
CO1	acquire the knowledge on elastic moduli, elasticity and viscosity of liquids and gases, molecular theory of surface tension, diffusion, osmosis, acoustics of building and ultrasonics	K1
CO2	understand the concepts of elasticity, viscosity and surface tension in real situations, the diffusion in liquids, the methods of production of ultrasonic waves	K2
CO3	apply the knowledge to find the bending of beams, and to determine the molecular forces and excess pressure over curved surface	K3
CO4	apply the knowledge to determine the young modulus by Koenig's method and produce ultrasonic waves using piezoelectric crystal method	K4
CO5	analyze the bending moments in beams, flow of liquids in capillary tubes, surface tension of liquid versus temperature, different types of oscillations and factors affecting the acoustics of building	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UPH13CC01		Core Course -1: Properties of Mater and Acoustics							5	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	3	2	2	2	3	2	2	2	2.3
CO2	3	2	2	2	2	2	3	2	2	2	2.2
CO3	2	3	2	2	2	2	2	2	2	2	2.1
CO4	2	2	3	2	2	2	2	2	2	2	2.1
CO5	2	2	2	3	2	2	2	3	3	2	2.3
Mean overall Score											2.2 (High)

Semester	Course code	Title of the Course	Hours/ Week	Credits
1	23UPH13CP01	Core Practical - 1: Properties of Matter	3	3

### Any 12 Experiments

1. Determination of rigidity modulus without mass using Torsional pendulum
2. Determination of rigidity modulus with masses using Torsional pendulum
3. Determination of moment of inertia of an irregular body
4. Verification of parallel axes theorem on moment of inertia
5. Verification of perpendicular axes theorem on moment of inertia
6. Determination of moment of inertia and g using Bifilar pendulum
7. Determination of Young's modulus by stretching of wire with known masses
8. Verification of Hook's law by stretching of wire method
9. Determination of Young's modulus by uniform bending – load depression graph
10. Determination of Young's modulus by non-uniform bending – scale and telescope
11. Determination of Young's modulus by cantilever – load depression graph
12. Determination of Young's modulus by cantilever – oscillation method
13. Determination of Young's modulus by Koenig's method – ( or unknown load)
14. Determination of rigidity modulus by static torsion
15. Determination of Y, n and K by Searle's double bar method
16. Determination of surface tension and interfacial surface tension by drop weight method
17. Determination of co-efficient of viscosity by Stokes' method – terminal velocity
18. Determination of critical pressure for streamline flow
19. Determination of Poisson's ratio of rubber tube
20. Determination of viscosity by Poiseuille's flow method
21. Determination radius of capillary tube by mercury pellet method
22. Determination of g using compound pendulum.

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23UPH14FC01	Foundation Course: Introductory Physics	2	2

COURSE OBJECTIVES
To help students get an overview of Physics before learning their core courses
To serve as a bridge between the school curriculum and the degree programme
To know the basics of vectors and types of forces
To understand the concepts of momentum, energy conservation and the dynamics of various systems
To know the foundations of properties of matter

### **UNIT I: Introduction to Vectors (6 Hours)**

Vectors, scalars –examples for scalars and vectors from physical quantities – addition, subtraction of vectors – resolution and resultant of vectors – units and dimensions– standard physics constants

### **UNIT II: Types of Forces (6 Hours)**

Types of forces–gravitational, electrostatic, magnetic, electromagnetic, nuclear –mechanical forces like, centripetal, centrifugal, friction, tension, cohesive, adhesive forces

### **UNIT III: Momentum and Energy Conservation (6 Hours)**

Different forms of energy– conservation laws of momentum, energy – types of collisions – angular momentum– alternate energy sources–real life examples

### **UNIT IV: Dynamics (6 Hours)**

Types of motion– linear, projectile, circular, angular, simple harmonic motions – satellite motion – banking of a curved roads – stream line and turbulent motions – wave motion – comparison of light and sound waves – free, forced, damped oscillations

### **UNIT V: Properties of Matter (6 Hours)**

Surface tension – shape of liquid drop – angle of contact – viscosity –lubricants – capillary flow – diffusion – real life examples– properties and types of materials in daily use- conductors, insulators – thermal and electric

### **Books for Study**

1. Verma, H. C. (2021). *Concepts of physics*. Vol 1 and 1st Edition, Bharati Bhawan (Publishers & Distributors).
2. Mathur, D. S. (2007). *Elements of properties of matter* (1st ed.). S. Chand & Company.
3. Brij, L. & Subrahmanyam, N. (2003). *Properties of matter* (1st ed.). S. Chand & Company.

### Books for Reference

1. Gulati, H. R. (1977). *Fundamental of general properties of matter* (5th ed.). S. Chand & Company.
2. Young, H. D., Freedman, R. A. & Ford, A. L. (2021). *University physics with modern physics* (15th ed.). Pearsons Education.
3. Halliday, D., Resnick, R. & Walker, J. (2010). *Fundamentals of physics* (9th ed.). Wiley.

### Web Resources

1. <http://hyperphysics.phy-astr.gsu.edu/hbase/permot2.html>
2. <https://science.nasa.gov/ems/>
3. [https://eesc.columbia.edu/courses/ees/climate/lectures/radiation\\_hays/](https://eesc.columbia.edu/courses/ees/climate/lectures/radiation_hays/)

<b>Teaching Methodology</b>	Chalk and talk, PPT, Pictorial models, Experimental and Graphical representation using software, simulation.
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Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On the successful completion of the course, student will be able to	
CO1	recall and relate various concepts of elementary physics.	K1
CO2	summarize and translate statics and dynamics phenomena in physics and bridge the introduction from school physics to a graduate level.	K2
CO3	apply the concept of all the above mentioned and develop various other concept of physics in matter and nature. Also, interpret the mathematical theory behind various physics.	K3
CO4	on the successful completion of the course, student will be able to	K4
CO5	recall and relate various concepts of elementary physics.	K5

			Relationship Matrix									
Semester	Course code		Title of the Course								Hours	Credits
1	23UPH14FC01		Foundation Course: Introductory Physics								2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	3	2	2	1	3	3	3	2	2	2.4	
CO2	3	3	3	2	2	3	3	3	2	2	2.5	
CO3	3	3	3	2	2	3	3	3	2	2	2.5	
CO4	3	3	2	2	1	3	3	3	2	2	2.4	
CO5	3	3	3	2	2	3	3	3	2	2	2.5	
Mean overall Score											2.46 (High)	

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23UPH14SE01A	<b>Skill Enhancement Course – 1 (Non Major Elective): Physics for Everyday Life</b>	2	2

Course Objectives
To understand the basic laws of classical mechanics that apply to mechanical objects
To examine the underlying scientific principles and functioning of optical instruments and their applications in various everyday situations
To explore the physics of home appliances which enables to appreciate the scientific principles that govern their functionality
To grasp the principles behind solar cells and the efficient conversion of sunlight into electricity and to appreciate the benefits of harnessing solar power and its potential to reduce the reliance on non-renewable energy sources
To Familiarize the notable achievements of Indian physicists and their contributions to the global scientific community

#### **UNIT I: Mechanical Objects (6 Hours)**

Laws of motion- Hook's law-conservation of energy-conservation of momentum-force-friction- Spring scales – Bouncing balls –Roller coasters – Bicycles –Rockets and space travel.

#### **UNIT II: Optical Instruments and Laser (6 Hours)**

Vision corrective lenses – Polaroid glasses – UV protective glass – Polaroid camera – Colour photography – Holography and Laser

#### **UNIT III: Physics of Home Appliances (6 Hours)**

Bulb – structure- types- Fluorescent Electric Bulb- LED- Halogen Bulb-Fan – Hair drier – Television – Air conditioners – Microwave oven – Vacuum cleaners

#### **UNIT IV: Solar Energy (6 Hours)**

Solar constant – General applications of solar energy – Solar water heaters – Solar Photo – voltaic cells – General applications of solar cells

#### **UNIT V: Indian Physicists and their Contributions (6 Hours)**

C.V. Raman, Homi Jehangir Bhabha, Vikram Sarabhai, Subrahmanyam Chandrasekhar, Venkatraman Ramakrishnan, Dr. APJ Abdul Kalam and their contribution to science and technology.

<b>Teaching Methodology</b>	Videos, PPT and Demonstration
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### Books for Study

1. Ammara, U & Gugucol. (2019). *The physics in our daily lives*.
2. Lawin, W. (2011). *For the love of physics*. Free Press.
3. Roy, G. D. (2014). *Solar energy utilisation* (5<sup>th</sup>ed.). Khanna Publishers.

### Books for Reference

1. Mathur, D. S. (2010), *Elements of properties of matter*. S. Chand & Company.
2. Ghatak, A. (2017). *Optics*. Tata McGraw-Hill publishing Company Ltd.
3. Tiwari, G. N. (2002). *Solar energy fundamentals- Design, modelling and applications*, Alpha Science.
4. Cauldwell, R. (2014). *Wiring a house*. Taunton Press.
5. Cengaga. (2017). *The great indian scientists*. Indian Pvt., Ltd.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	connect the concepts learnt to daily life by recognizing the physics of mechanical objects, home appliances, solar energy, and their influence in modern world	K3
CO2	On successful completion of this course, students will be able to	K4
CO3	acquire knowledge on fundamental laws of Physics.	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UPH14SE01A		Skill Enhancement Course – 1 (Non Major Elective): Physics for Everyday Life							2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	3	2	2	3	2	2	2	1	2.3
CO2	3	3	2	2	2	3	2	3	2	1	2.3
CO3	3	3	3	2	1	3	3	1	2	1	2.3
Mean overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23UPH14SE01B	Skill Enhancement Course - 1 (Non Major Elective): Home Electrical Installation	2	2

Course Objectives
To know the fundamental principles behind of electrical circuits
To understand the process of production and transmission of electricity
To know the basics of electrical instruments and measurements
To understand the calculation of electricity bill
To know the safety and servicing measures during electrical installations

### **UNIT I: Simple Electrical Circuits (6 Hours)**

Charge, current, potential difference, resistance – simple electrical circuits – DC ammeter, voltmeter, ohmmeter – Ohm’s law – difference between DC and AC – advantages of AC over DC – electromagnetic induction - transformers – inductors/chokes – capacitors/condensers – impedance – AC ammeter, voltmeter –symbols and nomenclature

### **UNIT II: Transmission of Electricity (6 Hours)**

Production and transmission of electricity – concept of power grid – Series and parallel connections – technicalities of junctions and loops in circuits –transmission losses (qualitative) – roles of step-up and step-down transformers – quality of connecting wires – characteristics of single and multicore wires

### **UNIT III: Electrical Wiring (6 Hours)**

Different types of switches – installation of two way switch – role of sockets, plugs, sockets - installation of meters – basic switch board – electrical bell – indicator – fixing of tube lights and fans – heavy equipment like AC, fridge, washing machine, oven, geyser, jet pumps – provisions for inverter – gauge specifications of wires for various needs

### **UNIT IV: Power Rating and Power Delivered (6 Hours)**

Conversion of electrical energy in to different forms – work done by electrical energy – power rating of electrical appliances – energy consumption – electrical energy unit in kWh – calculation of EB bill – Joule’s heating – useful energy and energy loss – single and three phase connections – Measures to save electrical energy – energy audit

### **UNIT V: Safety Measures (6 Hours)**

Insulation for wires – colour specification for mains, return and earth – Understanding of fuse and circuit breakers – types of fuse: kit-kat, HRC, cartridge, MCB, ELCB – purpose of earth line – lighting arrestors – short circuiting and over loading – electrical safety – tips to avoid electrical shock – first aid for electrical shock – fire safety for electric current



<b>Teaching Methodology</b>	Lectures, Demonstrations, Presentations and Videos
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### Books for Study

1. Scaddan, B. (2019). *Electrical installation Work* (9<sup>th</sup> ed.). Routledge.
2. Cauldwell, R. (2014). *Wiring a house* (5<sup>th</sup> ed.).
3. Black, & Decker. (2018). *Advanced home wiring: Backup power, panel upgrades, AFCI protection, “smart” thermostats, + more.* Cool Springs Press.
4. Ryan, K. (2022). *Complete beginners guide to rough in electrical wiring.*

### Books for Reference

1. Schaltz, M. E. (2011). *Grob’s basic electronics*, McGraw Hill (11<sup>th</sup> ed.).
2. Gussow, M. (2007). *Schaum’s outline of basic electricity*, The McGraw-Hill.

### Web Resources

1. <https://ncert.nic.in/vocational.php?kvcj1=0-5>
2. <https://ncert.nic.in/vocational.php?kvd11=0-5>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	apply the principles of electricity to install and service home electrical systems.	K3
CO2	On successful completion of this course, students will be able to	K4
CO3	know the fundamentals of domestic electrical installation with safety precautions and servicing.	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UPH14SE01 B		Skill Enhancement Course - 1 (Non Major Elective): Home Electrical Installation							2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	2	2	1	3	2	2	2	1	2.0
CO2	3	2	2	2	1	3	2	2	2	1	2.0
CO3	3	2	2	2	1	3	2	3	2	1	2.1
Mean overall Score											2.03 (High)

<b>PROGRAMME PATTERN</b>			
<b>M. Sc. PHYSICS</b>			
<b>Course Code</b>	<b>Title of the Course</b>	<b>Hours</b>	<b>Credits</b>
23PPH1CC01	<b>Core Courses -1:</b> Mathematical Physics	6	5
23PPH1CC02	<b>Core Courses - 2:</b> Classical Mechanics and Relativity	6	5
23PPH1CP01	<b>Core Practical -1:</b> Physics Practical – 1	6	4
23PPH1ES01	<b>Elective - 1:</b> Linear and Digital ICs and Applications	5	3
23PPH1ES02	<b>Elective - 2:</b> Physics of Nano Science and Technology	5	3
23PPH1AE01	<b>Ability Enhancement Course:</b> Framework for Physics Innovation and Entrepreneurship	2	1
	<b>Total</b>	<b>30</b>	<b>21</b>

Semester	Course Code	Title of the Course	Hours/ Weeks	Credits
1	23PPH1CC01	Core Courses -1: Mathematical Physics	6	5

Course Objectives
To equip students with the mathematical techniques needed for understanding theoretical treatment in different courses taught in their program
To extend their manipulative skills to apply mathematical techniques in their fields
To help students apply Mathematics in solving problems of Physics
To simplify the given complex problems on 2 <sup>nd</sup> order ODE in terms simple special function solutions
To interpret the essence of various complex mathematical forms in physics

### UNIT I: Linear Vector Spaces (15 Hours)

Basic concepts – Definitions- examples of vector space – Linear independence - Scalar product- Orthogonality – Gram-Schmidt orthogonalization procedure –linear operators – Dual space- ket and bra notation – orthogonal basis – change of basis – Isomorphism of vector space – projection operator –Eigen values and Eigen functions – Direct sum and invariant subspace – orthogonal transformations and rotation

### UNIT-II: Complex Analysis (15 Hours)

Review of Complex Numbers -de Moivre's theorem-Functions of a Complex Variable- Differentiability -Analytic functions- Harmonic Functions- Complex Integration- Contour Integration, Cauchy – Riemann conditions – Singular points – Cauchy's Integral Theorem and integral Formula -Taylor's Series-Laurent's Expansion- Zeros and poles – Residue theorem and its Application: Potential theory-(1) Electrostatic fields and complex potentials- Parallel plates, coaxial cylinders and an annular region (2) Heat problems-Parallel plates and coaxial cylinders

### UNIT III: Matrices (15 Hours)

Types of Matrices and their properties, Rank of a Matrix -Conjugate of a matrix-Adjoint of a matrix-Inverse of a matrix-Hermitian and Unitary Matrices -Trace of a matrix- Transformation of matrices-Characteristic equation-Eigen values and Eigen vectors-Cayley– Hamilton theorem –Diagonalization.

### UNIT IV: Fourier & Laplace Transforms (15 Hours)

Definitions -Fourier transform and its inverse-Transform of Gaussian function and Dirac delta function -Fourier transform of derivatives-Cosine and sine transforms-Convolution theorem. Application: Diffusion equation: Flow of heat in an infinite and in a semi-infinite medium-Wave equation: Vibration of an infinite string and of a semi-infinite string.

Laplace transform and its inverse-Transforms of derivatives and integrals – Differentiation and integration of transforms-Dirac delta functions-Application-Laplace equation: Potential problem in a semi-infinite strip

**UNIT V: Second Order Differential Equations & Special Functions****(15 Hours)**

Second order differential equation- Sturm-Liouville's theory-Series solution with simple examples-Hermite polynomials-Generating function-Orthogonality properties-Recurrence relations – Legendre polynomials-Generating function-Rodrigue formula – Orthogonality properties- Dirac delta function- One dimensional Green's function and Reciprocity theorem -Sturm-Liouville's type equation in one dimension & their Green's function.

<b>Teaching Methodology</b>	Chalk and talk, PPT, Mathematical models, Graphical representation using software, simulation
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**Books for Study**

1. Zettilé, N. (2009). *Quantum mechanics: Concepts and applications* (2<sup>nd</sup> ed.). John Wiley & Sons.
2. Arfken, G. & Weber, H. J. (2012). *Mathematical methods for physicists – A comprehensive guide* (7<sup>th</sup> ed.). Academic press.
3. Chattopadhyay, P. K. (2013). *Mathematical physics* (2<sup>nd</sup> ed.). New Age.
4. Joshi, A. W. (2017). *Matrices and tensors in physics* (4<sup>th</sup> ed.). New Age International Pvt. Ltd.
5. Gupta, B. D. (2009). *Mathematical physics*. Vikas Publishing House.
6. Dass, H. K & Verma, R. (2014). *Mathematical physics* (7<sup>th</sup> Revised ed.). S. Chand & Company Pvt. Ltd.

**Books for Reference**

1. Kreyszig, E. (1983). *Advanced engineering mathematics*. Wiley Eastern.
2. Zill, D. G & Cullen, M. R. (2006). *Advanced engineering mathematics* (3<sup>rd</sup> ed.). Narosa.
3. Lipschutz, S. (1987). *Linear algebra*. Schaum's Series, McGraw Hill.
4. Butkov, E. (1968). *Mathematical physics*. Addison - Wesley, Reading, Massachusetts.
5. Halmos, P. R. (1965). *Finite dimensional vector spaces* (2<sup>nd</sup> ed.). Affiliated East West.
6. Wylie, C. R & Barrett, L. C. (1995). *Advanced engineering mathematics* (6<sup>th</sup> ed.). International Edition, McGraw-Hill.

**Web Resources**

1. [www.khanacademy.org](http://www.khanacademy.org)
2. [https://youtu.be/LZnRIOA1\\_2I](https://youtu.be/LZnRIOA1_2I)
3. <http://hyperphysics.phy-astr.gsu.edu/hbase/hmat.html#hmath>
4. [https://www.youtube.com/watch?v=\\_2jymuM7OUU&list=PLhkiT\\_RYTEU27vS\\_SIED56gNjVJGO2qaZ](https://www.youtube.com/watch?v=_2jymuM7OUU&list=PLhkiT_RYTEU27vS_SIED56gNjVJGO2qaZ)
5. <https://archive.nptel.ac.in/courses/115/106/115106086/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, student will be able to	
CO1	understand use of bra-ket vector notation, the meaning of complete orthonormal set of basis vectors, and transformations and be able to apply them	K1
CO2	be able to understand analytic functions, do complex integration, by applying Cauchy Integral Formula. And to compute many real integrals and infinite problems via complex integration	K2
CO3	analyze characteristics of matrices and its different types, and the process of diagonalization.	K3
CO4	solve equations using Laplace transform and analyze the Fourier transformations of different function, grasp how these transformations can speed up analysis and correlate their importance in technology	K4
CO5	find the solutions for physical problems using linear differential equations and to solve boundary value problems using Green's function. Apply special functions in computation of solutions to real world problems	K5
CO6	formulate and propose the best solution for handling complex ODE problems	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PPH1CC01		Core Courses -1: Mathematical Physics							6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	2	1	3	3	3	2	2	2.4
CO2	3	3	3	2	2	3	3	3	2	2	2.5
CO3	3	3	3	2	2	3	3	3	2	2	2.5
CO4	3	3	2	2	2	3	3	3	2	2	2.5
CO5	3	3	3	3	2	3	3	3	2	2	2.7
CO6	3	3	2	3	2	3	3	3	2	2	2.6
Mean overall Score											2.53 (High)

Semester	Course Code	Title of the Course	Hours/ Weeks	Credit
1	23PPH1CC02	Core Courses - 2: Classical Mechanics and Relativity	6	5

Course Objectives
To make the students to understand fundamentals of classical mechanics
To extend the Lagrangian formulation of mechanics and help the students to apply it to solve equation of motion
To equip the students with Hamiltonian formulation of mechanics and help them to apply it to solve equation of motion
To discuss the theory of small oscillations of a system
To learn the relativistic formulation of mechanics of a system

### UNIT I: Principles of Classical Mechanics (18 Hours)

Mechanics of a single particle – mechanics of a system of particles – conservation laws for a system of particles – constraints – holonomic & non-holonomic constraints – generalized coordinates – configuration space – transformation equations – principle of virtual work.

### UNIT II: Lagrangian Formulation (18 Hours)

D'Alembert's principle – Lagrangian equations of motion for conservative systems – applications: (i) simple pendulum (ii) Atwood's machine (iii) projectile motion- iv) compound pendulum - linear harmonic oscillator Lagrange's equations in presence of non-conservative forces - generalized potential - Lagrangian of a charged particle in the presence of electromagnetic field - Hamilton's principle - Lagrange's equation of motion from Hamilton's principle - conservation theorems and symmetry properties.

### UNIT III: Hamiltonian Formulation (18 Hours)

Phase space – cyclic coordinates – conjugate momentum – Hamiltonian function – Hamilton's canonical equations of motion – applications: (i) simple pendulum (ii) one dimensional simple harmonic oscillator (iii) compound pendulum - linear harmonic oscillator iv) motion of particle in a central force field. -  $\Delta$ -variation - principle of least action- statement and its proof - other forms of the action principle (Jacobi's form).

### UNIT IV: Small Oscillations (18 Hours)

Formulation of the problem – the Eigen value equation and principle axis transformation – frequency of free vibration and normal coordinates transformation – frequencies of normal modes – linear triatomic molecule – forced vibration and effect of dissipative forces.

### UNIT V: Relativity (18 Hours)

Inertial and non-inertial frames – Lorentz transformation equations – length contraction and time dilation – relativistic addition of velocities – Einstein's mass-energy relation –

Minkowski's space – four vectors – position, velocity, momentum, acceleration and force in vector notation and their transformations

<b>Teaching Methodology</b>	Chalk and talk, PPT, Mathematical models, Graphical representation using software, simulation
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### Books for Study

1. Goldstein, H. & Poole, C. P. (2002). *Classical mechanics* (3rd ed.). Dorling Kindersley (India) Pvt. Ltd.
2. Upadhyaya, J.C. (2022). *Classical mechanics* (3rd ed.). Himalaya Publishing Company.
3. Resnick, R. (1968). *Introduction to special theory of relativity*. Wiley Eastern.
4. Takwala, R. G. & Puranik, P. S. (1980). *Introduction to classical mechanics*. Tata McGraw-Hill.
5. Rana, N. C. & Joag, P. S. (2001). *Classical mechanics*. Tata McGraw-Hill.

### Books for Reference

1. Symon, K. R. (1971). *Mechanics*. Addison Wesley..
2. Biswas, S. N. (1999). *Classical mechanics*. Books & Allied, Kolkata.
3. Gupta, B. D. & Prakash, S. (2020). *Classical mechanics*. KNRN Publications.
4. Kibble, T. W. B. (2004). *Classical mechanics*. Imperial College Press.
5. Greenwood, T. (1997). *Classical dynamics*. PHI.

### Web Sources

1. [http://poincare.matf.bg.ac.rs/~zarkom/Book\\_Mechanics\\_Goldstein\\_Classical\\_Mechanics\\_optimized.pdf](http://poincare.matf.bg.ac.rs/~zarkom/Book_Mechanics_Goldstein_Classical_Mechanics_optimized.pdf)
2. <https://pdfcoffee.com/classical-mechanics-j-c-upadhyay-2014-editionpdf-pdf-free.html>
3. <https://nptel.ac.in/courses/122/106/122106027/>
4. <https://ocw.mit.edu/courses/physics/8-09-classical-mechanics-iii-fall-2014/lecture-notes/>
5. <https://www.britannica.com/science/relativistic-mechanics>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	acquire knowledge about conservation laws, constraints and relativistic mechanics.	K1
CO2	understand relativistic mechanics, D' Alemberts concept and Lagrangian.	K2
CO3	analyse the cyclic coordinates and apply them for rigid body dynamics.	K3
CO4	apply and formulate the equation to solve problems in mechanics and relativistic mechanics.	K4
CO5	evaluate the concepts of inertial, non-inertial frames of references and rotating coordinate system in relativistic mechanics.	K5
CO6	distinguish the transformation equations in any frame.	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PPH1CC02		Core Courses - 2: Classical Mechanics and Relativity							6	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	3	2	2	2	3	3	2	1	2.3
CO2	3	3	3	2	2	2	2	2	2	2	2.3
CO3	3	2	2	2	2	2	2	3	2	2	2.2
CO4	2	2	2	2	2	3	2	2	2	2	2.1
CO5	2	3	3	2	2	3	2	2	2	2	2.3
CO6	2	2	2	3	2	3	2	2	2	2	2.2
Mean overall Score											2.23 (High)



Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23PPH1CP01	Core Practical -1: Physics Practical – 1	6	4

### ANY 12 EXPERIMENTS

1. Determination of Young's modulus and Poisson's ratio by Hyperbolic fringes – Cornu's Method
2. Measurement of Band gap energy- Thermistor
3. Determination of Specific charge of an electron – Thomson's method
4. Determination of Wavelength, Separation of wavelengths - Michelson Interferometer
5. GM counter – Characteristics and inverse square law
6. Measurement of Conductivity - Four probe method
7. Molecular spectra – AIO band.
8. Measurement of wavelength of Diode Laser / He – Ne Laser using Diffraction grating
9. Measurements of Standing wave and standing wave co-efficient, Law of Inverse square, Receiver end transmitter behavior, Radiation Pattern - Microwave test bench
10. UV-Visible spectroscopy – Verification of Beer-Lambert's law and identification of wavelength maxima – Extinction coefficient
11. Construction of relaxation oscillator using UJT
12. FET CS amplifier- Frequency response, input impedance, output impedance
13. V- I Characteristics of different colours of LED
14. Study of attenuation characteristics of Wien's bridge network and design of Wien's bridge oscillator using Op-Amp
15. Study of attenuation characteristics of Phase shift network and design of Phase shift oscillator using Op-Amp
16. Construction of Schmidt trigger circuit using IC 741 for a given hysteresis-application as squarer
17. Study of R-S, clocked R-S and D-Flip flop using NAND gates
18. Study of J-K, D and T flip flops using IC 7476/7473
19. Arithmetic operations using IC 7483- 4-bit binary addition and subtraction.
20. Study of Arithmetic logic unit using IC 74181

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23PPH1ES01	<b>Elective - 1:</b> Linear and Digital ICs and Applications	5	3

Course Objectives
To introduce the basic building blocks of linear integrated circuits
To teach the linear and non-linear applications of operational amplifiers
To introduce the theory and applications of PLL
To introduce the concepts of waveform generation and introduce one special function ICs
To Expose the digital IC's

#### **UNIT I: Integrated Circuits and Operational Amplifier (15 Hours)**

Introduction, Classification of IC 's, basic information of Op-Amp 741 and its features, the ideal Operational amplifier, Op-Amp internal circuit and Op-Amp. Characteristics.

#### **UNIT II: Applications of Op-Amp (15 Hours)**

LINEAR APPLICATIONS OF OP-AMP: Solution to simultaneous equations and differential equations, Instrumentation amplifiers, V to I and I to V converters.

NON-LINEAR APPLICATIONS OF OP-AMP: Sample and Hold circuit, Log and Antilog amplifier, multiplier and divider, Comparators, Schmitt trigger, Multivibrators, Triangular and Square waveform generators.

#### **UNIT III: Active Filters & Timer and Phase Locked Loops (15 Hours)**

ACTIVE FILTERS: Introduction, Butterworth filters – 1st order, 2nd order low pass and high pass filters, band pass, band reject and all pass filters.

TIMER AND PHASE LOCKED LOOPS: Introduction to IC 555 timer, description of functional diagram, monostable and a stable operations and applications, Schmitt trigger, PLL - introduction, basic principle, phase detector/comparator, voltage-controlled oscillator (IC 566), low pass filter, monolithic PLL and applications of PLL

#### **UNIT IV: Voltage Regulator & D to A AND A to D Converters (15 Hours)**

VOLTAGE REGULATOR: Introduction, Series Op-Amp regulator, IC Voltage Regulators, IC 723 general purpose regulators, Switching Regulator.

D to A AND A to D CONVERTERS: Introduction, basic DAC techniques -weighted resistor DAC, R-2R ladder DAC, inverted R-2R DAC, A to D converters -parallel comparator type ADC, counter type ADC, successive approximation ADC and dual slope ADC, DAC and ADC Specifications.

## **UNIT-V: CMOS Logic, Combinational Circuits using TTL 74XX ICs & Sequential Circuits using TTL 74XX ICs (15 Hours)**

CMOS LOGIC: CMOS logic levels, MOS transistors, Basic CMOS Inverter, NAND and NOR gates, CMOS AND-OR-INVERT and OR-AND-INVERT gates, implementation of any function using CMOS logic. COMBINATIONAL CIRCUITS USING TTL 74XX ICs: Study of logic gates using 74XX ICs, Four-bit parallel adder (IC 7483), Comparator (IC 7485), Decoder (IC 74138, IC 74154), BCD to 7-segment decoder (IC7447), Encoder (IC74147), Multiplexer (IC74151), Demultiplexer (IC 74154).

SEQUENTIAL CIRCUITS USING TTL 74XX ICs: Flip Flops (IC 7474, IC 7473), Shift Registers, Universal Shift Register (IC 74194), 4- bit asynchronous binary counter (IC 7493).

<b>Teaching Methodology</b>	Videos, PPT, Handouts, circuit analysis, mini projects
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### **Books for Study**

1. Choudhury, D. R. & Jain, S. B. (2012). *Linear integrated circuit* (4<sup>th</sup> ed.). New Age International Pvt. Ltd.
2. Gayakwad, R. A. (2012). *OP-AMP and linear integrated circuits* (4<sup>th</sup> ed.). Prentice Hall / Pearson Education.
3. Theraja, B. L. & Theraja, A. K. (2004). *A textbook of electrical technology*, S. Chand & Company.
4. Mehta, V. K. & Mehta, R. (2008). *Principles of electronics* (12<sup>th</sup> Edition). S. Chand & Company.
5. Vijayendran, V. (2008). *Introduction to integrated electronics (Digital & Analog)*, S. Viswanathan Printers & Publishers Private Ltd, Reprint.

### **Books for Reference**

1. Franco, S. (1997). *Design with operational amplifiers and analog integrated circuits*. Tata McGraw-Hill.
2. Gray & Meyer. (1995). *Analysis and design of analog integrated circuits*. Wiley International.
3. Malvino & Leach. (2005). *Digital principles and applications* (5<sup>th</sup> ed.). Tata McGraw-Hill.
4. Floyd & Jain. (2009). *Digital fundamentals* (8<sup>th</sup> ed.). Pearson Education.
5. Millman & Halkias. (2000). *Integrated electronics*. Tata McGraw Hill, 17<sup>th</sup> Reprint.

## Web Sources

1. [https://nptel.ac.in/course.html/digital circuits/](https://nptel.ac.in/course.html/digital%20circuits/)
2. [https://nptel.ac.in/course.html/electronics/operational amplifier/](https://nptel.ac.in/course.html/electronics/operational%20amplifier/)
3. <https://www.allaboutcircuits.com/textbook/semiconductors/chpt-7/field-effect-controlled-thyristors/>
4. <https://www.electrical4u.com/applications-of-op-amp/>
5. <https://www.geeksforgeeks.org/digital-electronics-logic-design-tutorials/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	spell out the basic concepts for the circuit configuration and for the design of linear integrated circuits	K1
CO2	illustrate various techniques to develop A/D and D/A converters.	K2
CO3	explain the design of linear and non-linear applications circuits using Op-Amp.	K3
CO4	analyze the CMOS logic, combinational and sequential circuits	K4
CO5	evaluate solutions to the problems and compare the active filters circuits	K5
CO6	design and create analog and digital circuits for various applications	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PPH1ES01		Elective - 1: Linear and Digital ICs and Applications							5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	3	2	2	3	3	3	2	3	2.7
CO2	3	2	2	3	2	3	2	2	3	2	2.4
CO3	2	2	2	3	3	2	2	3	3	3	2.5
CO4	3	2	3	3	2	2	2	2	2	3	2.4
CO5	2	2	2	2	3	2	2	2	2	2	2.1
CO6	3	3	2	3	2	2	2	3	3	2	2.5
Mean overall Score											2.43 (High)

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	23PPH1ES02	<b>Elective - 2:</b> Physics of Nano Science and Technology	5	3

Course Objectives
Physics of Nanoscience and Technology is concerned with the study, creation, manipulation and applications at nanometer scale
To provide the basic knowledge about nanoscience and technology
To learn the structures and properties of nanomaterials
To acquire the knowledge about synthesis methods and characterization techniques and its applications
To make the students aware of the application of nanomaterials and nanotechnology in different field

#### **UNIT I: Fundamentals of Nanoscience and Technology (15 Hours)**

Fundamentals of NANO – Historical Perspective on Nanomaterial and Nanotechnology – Classification of Nanomaterials – Metal and Semiconductor Nanomaterials - 2D, 1D, 0D nanostructured materials - Quantum dots – Quantum wires – Quantum wells - Surface effects of nanomaterials.

#### **UNIT II: Properties of Nanomaterials (15 Hours)**

Physical properties of Nanomaterials: Melting points, specific heat capacity, and lattice constant - Mechanical behavior: Elastic properties – strength - ductility - superplastic behavior - Optical properties: - Surface Plasmon Resonance – Quantum size effects - Electrical properties - Conductivity, Ferroelectrics and dielectrics - Magnetic properties – super para magnetism – Diluted magnetic semiconductor (DMS).

#### **UNIT III: Synthesis and Fabrication (15 Hours)**

Physical vapour deposition - Chemical vapour deposition - sol-gel – Wet deposition techniques - electrochemical deposition method – Plasma arching - Electrospinning method - ball milling technique - pulsed laser deposition - Nanolithography: photolithography – Nanomanipulator.

#### **UNIT IV: Characterization Techniques (15 Hours)**

Powder X-ray diffraction – X-ray photoelectron spectroscopy (XPS) - UV-visible spectroscopy – Photoluminescence - Scanning electron microscopy (SEM) - Transmission electron microscopy (TEM) - Scanning probe microscopy (SPM) - Scanning tunneling microscopy (STM) – Vibrating sample Magnetometer.

#### **UNIT V: Applications of Nanomaterials (15 Hours)**

Sensors: Nano sensors based on optical and physical properties - Electrochemical sensors – Nano-biosensors. Nano Electronics: Nanobots - display screens - GMR read/write heads -

Carbon Nanotube Emitters – Photocatalytic application: Air purification, water purification - Medicine: Imaging of cancer cells – biological tags - drug delivery - photodynamic therapy - Energy: fuel cells - rechargeable batteries - supercapacitors - photovoltaics.

<b>Teaching Methodology</b>	Chalk and talk, PPT, Mathematical models, Graphical representation using software, simulation
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### Books for Study

1. Pradeep, T. (2012). *A textbook of nanoscience and nanotechnology*. Tata McGraw-Hill Publishing Company.
2. Shah, M. A. & Ahmad, T. (2010). *Principles of nanoscience and nanotechnology*. Narosa Publishing House Pvt Ltd.
3. Chattopadhyay, K. K. & Banerjee, A. N. (2012). *Introduction to nanoscience and nanotechnology*, PHI Learning Pvt. Ltd.
4. Nalwa, H. S. (2002). *Nanostructured materials and nanotechnology*, Academic Press.
5. Kothari, D. P., Velmurugan, V. & Singh, R. R. (2018). *Nanotechnology and nanoelectronics*. Narosa Publishing House Pvt. Ltd.

### Books for Reference

1. Rao, M. S. R. & Singh, S. (2017). *Nanoscience and nanotechnology: Fundamentals to frontiers*. Wiley Publishing.
2. Gao, H. (2004). *Nanostructures and nanomaterials*, Imperial College Press.
3. Booker, R. & Boysen, E. (2005). *Nanotechnology*. Wiley Publishing Inc.
4. Fendler, J. H. (2007). *Nano particles and nanostructured films: Preparation, Characterization and Applications*. John Wiley and Sons.
5. Murty, B. S. et al. (2012). *Textbook of Nanoscience and Nanotechnology*. Universities Press.
6. Diwan, P. & Bharadwaj, A. (2005). *The Nanoscope (Encyclopedia of nanoscience and nanotechnology)*. Vol. IV – Nanoelectronics. Pentagon Press.

### Web Sources

1. [www.its.caltec.edu/feyman/plenty.html](http://www.its.caltec.edu/feyman/plenty.html)
2. <http://www.library.ualberta.ca/subject/nanoscience/guide/index.cfm>
3. <http://www.understandingnano.com>
4. <http://www.nano.gov>
5. <http://www.nanotechnology.com>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	acquire the basic of nanoscience and explore the different types of nanomaterials and should comprehend the surface effects of the nanomaterials.	K1
CO2	understand various physical, mechanical, optical, electrical and magnetic properties nanomaterials.	K2
CO3	utilize the process and mechanism of synthesis and fabrication of nanomaterials.	K3
CO4	analyze the various characterization of Nano-products through diffraction, spectroscopic, microscopic and other techniques.	K4
CO5	evaluate the synthesis and fabrication methods suitable for the application of nanomaterials.	K5
CO6	develop the nanomaterials integrated devices in the field of sensors, robotics, purification of air and water and in the energy devices.	K6

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PPH1ES02		Elective - 2: Physics of Nano Science and Technology							5	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	3	2	1	3	3	3	2	1	2.4
CO2	3	3	3	2	1	3	3	3	2	1	2.2
CO3	3	3	2	2	1	3	3	2	2	1	2.4
CO4	3	3	3	2	1	3	3	3	2	1	2.2
CO5	3	3	2	2	1	3	3	2	2	1	2.4
CO6	3	3	3	2	1	3	3	3	2	1	2.2
Mean overall Score											2.3 (High)

Semester	Course code	Title of the Course	Hours	Credit
1	23PPH1AE01	<b>Ability Enhancement Course:</b> Framework for Physics Innovation and Entrepreneurship	2	1

Course Objectives
To know the fundamentals of research methodologies
To train the students to write research articles and scientific reports
To introduce the innovation and incubator concepts
To create awareness about intellectual properties and their protection
To know the process involved in copy rights and patent registration

### **UNIT I: Research Methodology (6 Hours)**

Meaning and objectives of research- motivation in research- Types of research- Research Approaches-Significance of Research-Research Methods versus Methodology-Research and Scientific Method- research process-Criteria of Good Research

### **UNIT II: Research Writing (6 Hours)**

Significance of report writing -Different steps in writing report- Layout of the research report - Types of reports - Oral presentation -mechanics of writing a research report-precautions for writing research reports - Search engines & research papers – free digital library– Plagiarism

### **UNIT III: Innovation & Incubators (6 Hours)**

**Innovation** -Managerial Innovation -Open Innovation- **Incubators:** Definitions- Start-ups – Types and characteristics of various incubators of start-ups - The entrepreneurial policy of large groups

### **UNIT IV: Intellectual Properties (6 Hours)**

Intellectual Property: Definition, Types: trademarks, Copyright, Patents, and Trade Secrets-Importance- International Organizations, Agencies, and Treaties - **Types of Marks:** Trademarks, Service Marks, Certification Marks, and Collective Marks - Trade Names and Business Names

### **UNIT V: Copy Rights & Patents (6 Hours)**

**Copy Rights:** Introduction – Originality of Material, Fixation of Material, Works of Authorship - Exclusions from Copyright Protection - **Patents:** Patentability, searching patents-The Indian patent act 1970.

<b>Teaching Methodology</b>	Chalk and talk, PPT, Mathematical models, Graphical representation using software, simulation
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### **Books for Study**

1. Kothari, C.R. (2004). *Research methodology*, (2<sup>nd</sup> ed.). New Age International (P) Ltd.



2. Latouche, P. (2019). *Open innovation: Corporate incubator*. ISTE Ltd.
3. Bouchoux, D. E. (2013). *Intellectual Property* (4<sup>th</sup> ed.). Cengage Learning.

#### Book for Reference

1. Bansal, K. & Bansal, P. (2020). *Fundamentals of Intellectual Property for Engineers*. BS Publication.

#### Web Resources

1. <https://ipindia.gov.in/>
2. [https://mic.gov.in/assets/doc/startup\\_policy\\_2019.pdf](https://mic.gov.in/assets/doc/startup_policy_2019.pdf)

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	classify various types of reports, intellectual properties, agencies, treaties and public policies.	K4
CO2	evaluate situation in research, intellectual property and innovation-incubator system in India.	K5
CO3	create a pre-incubation process that involves a technology-based business idea and executing the business model through startup.	K6

3.

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23PPH1AE01		Ability Enhancement Course: Framework for Physics Innovation and Entrepreneurship							2	1
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	3	2	2	1	3	3	3	3	2.6
CO2	3	3	3	2	2	1	3	3	3	3	2.6
CO3	3	3	3	2	2	2	3	3	2	3	2.6
Mean overall Score											2.6 (High)

School of

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**MEDIA STUDIES**

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## Department of Visual Communication Technology

### Minutes of the BoS Meeting(B. Sc. Visual Communication) – 21.07.2023

#### List of Members Present

- |  |   |
|--|---|
| 1. Dr.S.T.Shankar<br>Assistant Professor, Dept of Visual Communication<br>A.V.C. College, Mannampandal,<br>Mailaduthurai – 609 305 | - University Nominee  |
| 2. Dr. S. Tamilarasi   | - Head of the Department,<br>Asst. Professor, Dept of Vis. Com. Tech, SJC |
| 3. Mr.G.Sathish  | - Asst. Professor, Dept of Vis. Com. Tech, SJC                            |
| 4. Ms. K.Ramya   | - Asst. Professor, Dept of Vis. Com. Tech, SJC                            |
| 5. Dr.E.V.Prabha   | - Asst. Professor, Dept of Vis. Com. Tech, SJC                            |
| 6. Ms. N. SriMohanaPriya   | - Asst. Professor, Dept of Vis. Com. Tech, SJC                            |
| 7. Mr. C. Murugavel  | - Asst. Professor, Dept of Vis. Com. Tech, SJC                            |
| 8. Mr. Daniyal D' Sousa  | - Asst. Professor, Dept. of Vis. Com. Tech., SJC                          |
| 9. Ms. P. Harini   | - Asst. Professor, Dept. of Vis. Com. Tech, SJC                           |

#### Minutes of the Meeting

The meeting of the Board of Studies on Visual Communication was held at Department of Visual Communication on 21.07.2023 at 11.30a.m.to revise the Semester-I Undergraduate syllabi2023 and the Evaluation Pattern. The members present in the meeting are:

Experts Present were:

- |  |                      |           |
|--|----------------------|-----------|
| 1. Dr.S.T.Shankar  | - University Nominee | - Present |
| 2. Rev. Dr. A. Irudayaraj SJ<br>Head, Dept. of Visual Communication,<br>Loyola College (Autonomous),<br>Chennai - 600 034. | - Subject Expert     | - Absent  |

Dr.S.Tamilarasi, Head in charge, Department of Visual Communication Technology formally welcomed the gathering and presented the Revised B.Sc Syllabus pattern to the Board Members.


The B.Sc Visual Communication syllabus was presented and accepted by the expert and a few suggestions and revisions were given as follows:

1. Non-Major Elective Paper "Digital Storytelling and Script Writing" is suggested to be as theory paper.
2. The Board has suggested to keep Value Education as purely an Internal Course.
3. Evaluation pattern for Examination from Controller of Examination was presented to the board and the board members suggested to follow the K-5 level question paper pattern, since the level of all the courses was till K-5.

**Action taken on the suggestions:**

The department after getting the suggestions and valid views from the board members, it has decided to accept the NME Course as theory paper and conduct Value Education Course as an Internal Course. The board also accepted the evaluation pattern to follow the K-5 level question paper pattern.

*Tamilarasi*  
**CO-ORDINATOR**  
**B. Voc. PROGRAMME**  
**DEPT. OF VISUAL COMMUNICATION TECHNOLOGY**  
**ST. JOSEPH'S COLLEGE (AUTONOMOUS)**  
**TIRUCHIRAPPALLI - 620 002**

BOARD OF STUDIES MEETING HELD ON 21.07.2023		
DEPARTMENT OF VISCOM TECHNOLOGY		
St. JOSEPH'S COLLEGE(AUTONOMOUS)		
TIRUCHIRAPPALLI -620002		
S. No.	Name and address	Signature
1.	Dr. S. T. Shankar, Assistant Professor, Dept. of Visual Communication, A.V.C. College, Mannampandal, Malladuthurai – 609 305 (University Representative)	
2.	Dr. Fr. A. Irudhayaraj, SJ, Head, Dept of Visual Communication, Loyola College, Chennai. E-mail: iraraj2020@gmail.com Mobile: 9443864471 (Subject Expert)	AAA
3.	Dr. S. Tamilarasi	Tamilarasi
4.	Mr. G. Sathish	G.S.
5.	Ms. K. Ranya	Ranya
6.	Dr. E. V. Prabha	E.V. Prabha
7.	Ms. N. Sri Hohana Ranga	N. Sri Hohana Ranga
8.	Mr. C. Manugavel	C. Manugavel
9.	Mr. Doniyal D' souza	Doniyal D' souza
10.	Ms. P. Harini	P. Harini

PROGRAMME PATTERN				
B.Sc. VISCOM				
Part	Course Code	Title of the Course	Hours	Credits
I	23UTA11GL01A	General Tamil- 1 தமிழ் இலக்கிய வரலாறு - 1	5	3
	23UFR11GL01	French-1		
	23UHI11GL01	Hindi-1		
	23USA11GL01	Sanskrit-1		
II	23UEN12GE01	General English-1	5	3
III	23UVC13CC01	<b>Core Course -1:</b> Introduction to Human Communication	5	5
	23UVC13CP01	<b>Core Practical - 1:</b> Graphic Design and Typography	5	5
	23UVC13AC01	<b>Allied Course -1:</b> Visual Arts and Aesthetics	4	3
IV	23UVC14FC01	<b>Foundation Course:</b> Digital Drawing and Painting	2	2
	23UVC14SE01	<b>Skill Enhancement Course - 1(Non Major Elective):</b> Digital Storytelling and Scriptwriting	2	2
	23UHE14VE01	<b>Value Education:</b> Essentials of Humanity	2	1
		<b>Total</b>	<b>30</b>	<b>24</b>

Semester	Course Code	Title of the Course	Hours/Week	Credit
1	23UVC13CC01	Core Course -1: Introduction to Human Communication	5	5

Course Objectives
To understand and categorize various types of communication
To explain communication as a skill, expression, and process
To identify barriers to communication and develop strategies to improve listening skills
To apply the principles of effective interpersonal communication in relationship building and deliver effective public speeches and presentations
To evaluate the western models of Communication

#### **UNIT I: Foundations of Communication (15 Hours)**

Communication: Definition - Types of Communication - Need and Importance of Communication - Elements of communication – 7 C's of Communication - Understanding Communication: SMCR Model

#### **UNIT II: Communication Processes and Language (15 Hours)**

Communication as a process - sign and meanings- Denotations and connotations- - Signs and Codes - Barriers to Communication - Levels of communication: Technical, Semantic, and Pragmatic - language and visual communication - narrative representation

#### **UNIT III: Nonverbal Communication and Listening Skills (15 Hours)**

Introduction to nonverbal communication: types and functions - Understanding body language: Facial expression, Body movements and posture, Gestures, Eye contact, Touch, Space, Voice - The importance of active listening - Barriers to effective listening - strategies to improve listening skills

#### **UNIT IV: Interpersonal Communication, Relationship Building and Public Speaking (15 Hours)**

Principles of effective interpersonal communication – Four styles of Communication - Conflict resolution and negotiation skills - Building and maintaining professional relationships through communication; Public Speaking – An overview – Developing effective Verbal and Visual Presentation Skills.

#### **UNIT V: Models of Communication (15 Hours)**

Western models of communication – Linear Model: Aristotle's Model. Shannon-Weaver Model, Lass well's model - Interactive Model: Osgood and Schramm's model – Transactional Model: Dance Helical Model, Becker's Mosaic Model, Magic Bullet Theory

### **Books for Study**

1. Berger, A. A. (2016). *Messages: An Introduction to Communication*. Routledge.
2. McLean, S. (2005). *The Basics of Interpersonal Communication*. Pearson/A and B.
3. Kumar, J. K. (2003). *Mass communication in India*, Himalaya publishers.

### **Books for References**

1. Bar-Am, N. (2016). *In Search of a Simple Introduction to Communication*, Springer.
2. Berger, A. A. (2016). *Messages: An Introduction to Communication*, Routledge.
3. Dickhaus, J. & Netzley, S. (2017). *Introduction to Communication* (1<sup>st</sup> ed.). Cognella, Incorporated.
4. Turner, L. H. & West, R. (2017). *An Introduction to Communication*. Cambridge University Press.
5. Roden, M. S. (2017). *Introduction to Communication Theory*. Elsevier.

### **Web Sources**

1. Communication Research - <https://journals.sagepub.com/home/crx>
2. Journal of Communication - <https://onlinelibrary.wiley.com/journal/14602466>
3. Communication Monographs - <https://www.tandfonline.com/toc/rcmm20/current>
4. Journal of Computer-Mediated Communication - <https://academic.oup.com/jcmc>
5. Human Communication Research - <https://onlinelibrary.wiley.com/journal/14682805>
6. International Association of Business Communicators - <https://www.iabc.com/>

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Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	Define and categorize various types of communication	K1
CO2	Interpret communication as a skill, expression, and process	K2
CO3	Identify barriers to communication and construct strategies to improve listening skills	K3
CO4	Inspect the principles of effective interpersonal communication in relationship building and deliver effective public speeches and presentations	K4
CO5	Compare the different communication models and examine its applicability in real life	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UVC13CC01		Core Course -1: Introduction to Human Communication							5	5
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	1	2	1	3	2	2	3	1	2.0
CO2	3	3	1	2	2	3	3	3	3	2	2.8
CO3	2	2	1	3	2	3	3	2	3	2	2.3
CO4	2	3	2	3	3	2	3	2	3	2	2.5
CO5	3	3	2	2	3	3	2	2	2	3	2.5
Mean overall Score											2.4 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credit
1	23UVC13CP01	<b>Core Practical - 1:</b> Graphic Design and Typography	5	5

Course Objectives
To understand the principles and practices of graphic design
To develop skills in typographical design
To learn how to communicate effectively through graphic design
To acquire knowledge of different design elements and principles
To be able to apply design principles and skills to real-world graphic design projects

### **UNIT I: Understanding Graphic Design (12 Hours)**

Elements of Design – Scale – Space – Closure – Expression – Abstraction – Tone – Frame – Proportion – Image - Pattern Shape and space - Form and space - space and tension - Design using Gestalt perception

### **UNIT II: Design Process (12 Hours)**

The creative process: creative brief, research, Ideation, Production - Depth of Meaning: perception, sensation, emotion, intellect, identification, reverberation, spirituality - Importance of Research in the Design Process, Size and format.

### **UNIT III: Typography (12 Hours)**

Typography- Structure- Design and Functions - Design Style: Grouping of Typefaces- Type Families - Functions of Type Composition- Readabilities Legibility- Type for text- Display type - Size and measurement of type – Kerning – Leading – Hyphenations – Indents – outdents - hanging punctuations – Paragraphs - Drop caps - Contrast and Scale.

### **UNIT IV: Grid and Layout (12 Hours)**

Elements of a Grid - Types of Grids - Layout: Pacing and Sequencing, Pattern and Form, Rhythm and Flow, Space, Alignment, Emphasis, Hierarchy and Scale

### **UNIT V: Composition and Colour (12 Hours)**

Principles of Composition - Significance of Colours: Hue, Saturation, Brightness, Contrast - Colour Schemes - Colour Psychology

### **List of Practicals**

1. Create a visual composition using basic elements of design (lines, shapes, and forms).
2. Design a balanced layout incorporating proximity and alignment principles.
3. Develop a color palette based on color theory and color associations.
4. Analyze an existing design and critique its use of design elements and principles.
5. Redesign a poorly balanced composition by applying design principles.

6. Draw a complex pattern using multiple shapes and forms.
7. Design a unique, hand-lettered alphabet.
8. Demonstrate ability to create different shapes and forms, and explore how to manipulate them to achieve different effects.

<b>Teaching Methodology</b>	Live demonstration using the Photoshop software
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### **Books for Study**

1. White, A. W. (2011). *The Elements of Graphic Design*. Allworth Press.
2. Samara, T. (2012). *Drawing for Graphic Design: Understanding Conceptual Principles and Practical Techniques to Create Unique, Effective Design Solutions*. Rockport Publishers.
3. Stewart, S., Dabner, D. & Vickress, A. (2020). *Graphic Design School: A Foundation Course for Graphic Designers Working in Print, Moving Image and Digital Media*. Thames & Hudson.
4. Vienne, V. & Heller, S. (2015). *Becoming a Graphic and Digital Designer: A Guide to Careers in Design*. Wiley.

### **Books for References**

1. Phillips, J. C. & Lupton, E. (2015). *Graphic Design: The New Basics: 2<sup>nd</sup> ed. Revised and Expanded*. Princeton Architectural Press.
2. Casey, A., Calvert, S. & Dabner, D. (2010). *The New Graphic Design School: A Foundation Course in Principles and Practice*. Wiley.
3. Dabner, D., Stewart, S. & Zempel, E. (2013). *Graphic Design School: The Principles and Practice of Graphic Design*. Wiley.
4. Frasier, R. (2018). *Graphic Design Handbook*, Independently Published, United States.
5. *Best Practices for Graphic Designers, Packaging: An Essential Guide for Implementing Effective Package Design Solutions*, Rockport Publishers.

### **Web Sources**

1. Journal of Graphic Design - <https://www.journalofgraphicdesign.com/>
2. Communication Arts - <https://www.commarts.com/>
3. Eye Magazine - <https://www.eyemagazine.com/>
4. Print Magazine - <https://www.printmag.com/>
5. How Design - <https://www.howdesign.com/>

Semester	Course Code	Title of the Course	Hours	Credit
<b>1</b>	<b>23UVC13AC01</b>	<b>Allied Course -1:</b> Visual Arts and Aesthetics	<b>4</b>	<b>3</b>

<b>Course Objectives</b>
To understand the concepts of aesthetics and the philosophy of beauty.
To study the evolution of art and the various styles and movements in Western and Eastern art.
To analyze the role of art in society and the artist as an agent of change.
To develop an understanding of the elements of art and principles of composition.
To explore the connection between art and everyday life, including the role of aesthetics in enhancing the human experience.

### **UNIT I: Visual Art and Aesthetics (15 Hours)**

Art: Definition – Functions & Elements of Visual Art – Role of Creativity and Expression in Art - Symbolism and Iconography - Form and Function Form (Content and Composition Form) – Role of Aesthetics in Art - Emerging Visual Trends: Virtual Reality and Digital Culture

### **UNIT II: Indian Art (15 Hours)**

Prehistoric cave paintings: Indus Valley Civilisation and Buddhist Art - Murals: North Indian, South Indian - Miniatures: Mughal paintings, Rajput painting, Rajasthan, Pahari paintings - Art Movements (Bengal School, Madras Art Movement)

### **UNIT III: Western Art (15 Hours)**

Pre-historic art: Egypt, Ancient Greece and Roman art – Medieval: Romanesque, Byzantine, Gothic, Renaissance, Baroque, Realism, Impressionism, Pointillism, Symbolism, Cubism, Expressionism, Futurism, Dadaism, Surrealism, Pop and Conceptual Art

### **UNIT IV: Contemporary Movements and Artists (15 Hours)**

Street Art - Digital Art - Neo Pop Art - Installation Art - Afrofuturism - Internet Art - Posthuman Art, - Net.Art - Superflat Art - Contemporary Figurative Art – Renowned Artist: Anish Kapoor, Sudarshan shetty, Nalini malani, RB Bhaskaran, KM Adimoolam, AP Santhanaraj, G Raman, Golan levin, David Mccandless, Lynn hershman leeson, Isaac julien, Hito steyerl, Arthur jafa

### **Unit V: Visual Art Analysis and Appreciation (15 Hours)**

Visual Analysis: Definition, Interpretation, - Heinrich Wölfflin's Principles of Art History - Clive Bell's Significant Form - Iconography - Erwin Panofsky's Three levels of Iconography - Roland Barthes' Rhetoric of the Image

**Books for Study**

1. Kleiner, F. S. & Gardner, H. (2009). *Gardner's Art through the Ages: A Global History*. Thomson/Wadsworth.
2. Mitter, P. (1994). *Indian Art*. Oxford University Press.
3. Huntington, J. C. & Huntington, S. L. (2014). *The Art of Ancient India: Buddhist, Hindu, Jain*. Motilal Banarsidass.
4. Reichle, I. (2009). *Art in the Age of Technoscience: Genetic Engineering, Robotics, and Artificial Life in Contemporary Art*. Springer.
5. Tomory, E. (1989). *History of Fine Arts in India and the West*. Orient Longman Limited.

**Books for Reference**

1. Pande, A. (2013). *Masterpieces of Indian Art*. Lustre Press, India.
2. Bahl, S. (2012). *5000 Years of Indian Art*. Lustre Press, India.
3. Adams, L. (2005). *A History of Western Art*. McGraw-Hill, Boston.
4. Berleant, A. (2019). *Aesthetics and Environment: Variations on a Theme*. Routledge.
5. Barthes, R. (1977). *Image-Music-Text*, Farrar, Straus and Giroux.
6. Panofsky, E. (2018). *Studies in Iconology: Humanistic Themes in the Art Of The Renaissance*. Taylor & Francis. United Kingdom.

**Web Sources**

1. Title: The Art Story, URL: <https://www.theartstory.org/>
2. <https://philosophy.lander.edu/intro/articles/bell-a.pdf>
3. <https://williamwolff.org/wp-content/uploads/2014/08/Barthes-Rhetoric-of-the-image-ex.pdf>
4. [http://tems.umn.edu/pdf/Panofsky\\_iconology2.pdf](http://tems.umn.edu/pdf/Panofsky_iconology2.pdf)
5. Title: Tate Kids, URL: <https://www.tate.org.uk/kids>
6. Title: Khan Academy, Art History, URL: <https://www.khanacademy.org/humanities/art-history>
7. The Met, URL: <https://www.metmuseum.org/learn/educators/curriculum-resources/art-and-activities>.

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	Define and list the different styles and movements in art history	K1
CO2	Develop critical thinking skills in interpreting artworks	K2
CO3	Demonstrate the ability to communicate ideas and emotions through art	K3
CO4	Engage in constructive critique and feedback of one's own and others' artwork	K4
CO5	Justify the significance of art in contemporary society and its impact on cultural and social issues	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UVC13AC01		Allied Course -1: Visual Arts and Aesthetics							4	3
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	1	3	2	2	3	2	2	1	2.0
CO2	1	3	2	3	2	2	3	2	2	3	2.4
CO3	2	2	3	3	3	2	3	3	3	2	2.6
CO4	1	3	2	3	2	3	2	2	2	3	2.3
CO5	1	2	3	2	3	2	2	2	2	3	2.2
Mean overall Score											2.3 (High)

Semester	Course Code	Title of the Course	Hours	Credit
<b>1</b>	<b>23UVC14FC01</b>	<b>Foundation Course:</b> Digital Drawing and Painting Practical	<b>2</b>	<b>2</b>

<b>Course Objectives</b>
To develop an understanding of Digital Painting and Drawing as an art form and as a visual effects technique.
To acquire practical skills in digital painting and drawing tools and techniques, including using a digitizing tablet, customizing brushes, and creating patterns and textures.
Learn to apply fundamental principles of perspective, color, and lighting
To gain proficiency in compositing and integrating paintings with live action.
To develop advanced skills in Digital Painting and Drawing.

#### **UNIT I: Basics Tools and in-works Photoshop (6 Hours)**

Basic geometrical shapes – Creation of dark and light tones – Light and shadow – Drawing using different brush stroke - The Basic Tools for Painting in Photoshop – Understanding between basic art and Contemporary - working with image-based brushes

#### **UNIT II: Perspectives, Color, Texturing (6 Hours)**

Perspective basics (one point, two points and three points) - Perspective Drawing (Vanishing point, shapes in perspective, drawing buildings and environment – Colours: colour composition, effects of colour on perspective, colour shades by atmosphere lighting, highlight, mid tone, shadow, hue and saturation - texturing and colour correction,

#### **UNIT III: Camera, Lighting and Composition (6 Hours)**

Camera projection: Preparing Your Photoshop/GIMP File for Camera Projection in Blender - setting up for camera projection - Lighting techniques and Image Composition - background making - understanding the depth of field - 3D objects - finding the light and dark sides - cast shadows - adding the line drawing using light.

#### **UNIT IV: Genres of Digital Painting (6 Hours)**

Charcoal Drawings in Photoshop/GIMP: Charcoal Techniques, Bridal Portrait with Tiny Charcoal Marks, Landscape Rendering with Smudgy Charcoal Look - Pastel Drawing in Photoshop/GIMP: Pastel Techniques, Making a Pastel Brush, Printing Considerations - Painting with Watercolors in Photoshop: Watercolor Technique, Watercolor Brushes, Pattern Stamp Watercolor Technique, Brush Watercolor Technique.

#### **UNIT V: Advanced Techniques (6 Hours)**

Drawing and painting using mobile applications – Introduction to Sketch book and Infinite painter - Applying different brush strokes - Creating and editing of artworks - colour wheel - creating type face - type styles.

### List of Practical

- Exercise 1: Create a concept environment using only 2 reference images.
- Exercise 2: Create a stylized painting of a sci-fi city using only basic shapes and custom brushes.
- Exercise 3: Create a transition from day to night of a landscape using color correction and lighting techniques.
- Exercise 4: Create a multi-plane parallax set up for a busy marketplace scene using 2D images.
- Exercise 5: Create a photo realistic castle environment for camera projection.
- Exercise 6: Create a stop motion effect using still frames of a character walking through different environments.
- Exercise 7: Create 3 paintings of changing seasons using matte layers.
- Exercise 8: Create charcoal and pastel style matte paintings using custom brushes.
- Exercise 9: Create water color and oil painting style matte paintings using custom brushes and layer styles.
- Exercise 10: Create three different illustration styles like pen & ink, stylized and soft focus using filters and effects.
- Exercise 11: Create visual effects like smoke, fire, clouds using third party plug-ins and compositing.
- Exercise 16: Create a sci-fi vehicle in a futuristic city environment.
- Exercise 17: Create a neon sign for a building at night in a cyberpunk city environment.

<b>Teaching Methodology</b>	Hands-on Training and Live Demonstration
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### Books for Study

1. Mattingly, D. B. (2011). *The Digital Matte Painting Handbook*. John Wiley & Sons.
2. 3dtotal Publishing. (2020). *Beginner's Guide to Digital Painting in Photoshop 2<sup>nd</sup> ed.* 3DTotal Publishing.
3. Dinur, E. (2021). *The Complete Guide to Photorealism for Visual Effects, Visualization and Games*. Routledge.

### Books for References

1. Bloom, S. R. (2012). *Digital Painting in Photoshop*. CRC Press.
2. Dinur, E. (2021). *The Complete Guide to Photorealism for Visual Effects, Visualization and Games*. Routledge.
3. Mattingly, D. B. (2011). *The Digital Matte Painting Handbook*. John Wiley & Sons.
4. Whitt, P. (2011). *Practical Glimpse: Learn to Edit and Create Digital Photos and Art with This Powerful Open-Source Image Editor*. Apress.
5. Kuhlman, G. (2019). *GIMP for Beginners: First 12 Skills*. Independently Published.

### Web Sources

1. Journal of Digital Painting: <https://www.tandfonline.com/loi/tjdp20>
2. Digital Art Online: <https://www.digitalartsonline.co.uk/>



3. Leonardo: Journal of the International Society for the Arts, Sciences and Technology:  
<https://www.mitpressjournals.org/loi/leon>
4. Journal of Applied Digital Art: <https://www.jada-art.org/>
5. The Journal of Computer Animation and Virtual Worlds:  
<https://onlinelibrary.wiley.com/journal/15464284>
6. The Art Directors Club: <https://www.adcglobal.org/>
7. Society of Illustrators: <https://www.societyillustrators.org/>
8. The Animation Guild: <https://animationguild.org/>
9. Creative Industries Federation: <https://www.creativeindustriesfederation.com/>
10. National Association of Independent Artists: <http://naia-artists.org/>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	Select various painting techniques, software tools, and custom brushes to create digital paintings and drawings	K1
CO2	Compare and Contrast digital paintings and drawings and identify the elements of perspective, color, texture, and lighting used in the artwork.	K2
CO3	Develop advanced skills in compositing, camera projection, and special effects using third-party software and compositing techniques.	K3

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UVC14FC01		Foundation Course: Digital Drawing and Painting Practical							2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	1	2	2	3	3	2	3	3	3	2	2.5
CO2	1	3	2	3	3	1	3	3	3	2	2.5
CO3	1	3	2	3	3	1	3	3	3	2	2.4
Mean overall Score											3 (High)

Semester	Course Code	Title of the Course	Hours	Credit
1	23UVC14SE01	<b>Skill Enhancement Course - 1(Non Major Elective):</b> Digital Storytelling and Scriptwriting	2	2

Course Objectives
To understand the process involved in writing script and story development
To demonstrate understanding of techniques, principles, genres of story, and scriptwriting
To analyse the process of research concepts and elements of the script
Develop a story, characters, and dialogues for the script
Communicating clear ideas in the script, Review, Revision, and Edit scripts

#### **UNIT I: Introduction to Story (6 Hours)**

Terminology of story design, Principles of story design - Story structure – Freytag’s pyramid - Hero journey structure – Dan Harmon’s story circle

#### **UNIT II: Elements of Script (6 Hours)**

Definition, Meaning of the script - Script preparation - Basics of scriptwriting – script and story ideas - Screenplay formatting

#### **UNIT III: Development of Script (6 Hours)**

Process of script development - Strategies for script development - Structure of scripts - Storytelling techniques

#### **UNIT IV: Types of Script (6 Hours)**

Writing for fiction and non-fiction - Documentary script format - Commercial, PSA, News, and Radio scripts - Script for videogame - Standalone and Spec Script

#### **UNIT V: Analysis of Story and Script (6 Hours)**

Elements of story analysis - Culture and practices in the story – McKee’s Story Analysis Approach - Narrative Paradigm

<b>Teaching Methodology</b>	PPTs, and Lecture
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#### **Books for Study**

1. Aronson, L. (2010). *Scriptwriting Updated*. Allen & Unwin.
2. Hauge, M. (2013). *Writing Screenplays That Sell*. Harper Resource
3. Dancyger., Ken & Rush, J. (2012). *Alternative Scriptwriting: Successfully Breaking the Rules*. CRC Press.
4. Gitner, S. (2015). *Multimedia Storytelling for Digital Communicators in a Multiplatform World*. Routledge.
5. Gutierrez, P. (2014). *The Power of Script writing: Teaching Essential Writing Skills through Podcasts, Graphic Novels, Movies, and More*. Teachers College Press.

#### **Books for Reference**

1. Condy, J. (2015). *Telling Stories Differently: Engaging 21st Century Students through Digital Storytelling*. AFRICAN SUN MeDIA.

- Dunford., Mark & Jenkins, T. (2017). *Digital Storytelling: Form and Content*. Springer.
- Lambert, J. (2013). *Digital Storytelling: Capturing Lives, Creating Community*. Routledge.
- Miller, C. H. (2014). *Digital Storytelling: A Creator's Guide to Interactive Entertainment*. CRC Press.
- McKee, R. (1997). *Story: Style, Structure, Substance, and the Principles of Screenwriting*. HarperCollins.
- McKee, R. & Gerace, T. (2018). *Storynomics: Story-Driven Marketing in the Post-Advertising World*. Grand Central Publishing.
- McClean, S. T. (2008). *Digital Storytelling: The Narrative Power of Visual Effects in Film*. MIT Press.

## Web Resources

- Journal of Screenwriting - <https://www.intellectbooks.com/journal-of-screenwriting>
- Storytelling, Self, Society - <https://www.berghahnjournals.com/view/journals/storytelling-self-society/storytelling-self-society-overview.xml>
- Journal of Digital Storytelling - <http://journals.sfu.ca/jds/index.php/jds/index>
- The Journal of Popular Film and Television - <https://www.tandfonline.com/loi/vjpf20>
- New Review of Film and Television Studies - <https://www.tandfonline.com/loi/rfts20>
- International Documentary Association - <https://www.documentary.org>

Course Outcomes		
CO No.	CO-Statements	Cognitive Levels (K - Level)
	On successful completion of this course, students will be able to	
CO1	Choose standard screenwriting formats to present their ideas	K3
CO2	Outline characters – based stories with clear conflicts	K4
CO3	Identify film and television structure	K5

Relationship Matrix											
Semester	Course code		Title of the Course							Hours	Credits
1	23UVC14SE01		Skill Enhancement Course - 1(Non Major Elective): Digital Storytelling and Scriptwriting							2	2
Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	1	2	1	3	2	1	3	3	3	3	2.2
CO2	1	3	3	3	2	2	2	3	3	3	2.5
CO3	1	3	1	3	3	1	1	3	3	2	2.1
Mean overall Score											3 (High)

School of

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**BUSINESS MANAGEMENT**

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## Minutes of the Board of Studies Meeting

St. Joseph's Institute of Management (JIM)  
08 July 2023 | 10:45 am | Board Room


After a prayer song, the meeting started with Dr. Albin D Robert Lawrence, Dean – Academics, welcoming the board members and introduced the external experts Dr. M. Babu, Associate Professor and Director (i/c), Bharathidasan School of Management, Bharathidasan University and Mr. C. R. Shriram, Independent Legal Practitioner, formerly teaching at Tamil Nadu National Law University, Tiruchirappalli. The main objective of the meeting was to review the 'MBA – General' syllabus prescribed by the Tamil Nadu State Council for Higher Education for the MBA batch of 2023 – 2025. The following courses of semester – I were discussed in detail by the members:


Course Code	Courses	Credits
23PBA1101	Management Principles and Business Ethics	4
23PBA1102	Quantitative Techniques and Research Methods in Business	4
23PBA1103	Managing Organizational Behaviour	4
23PBA1104	Accounting for Managers	4
23PBA1105	Managerial Economics	4
23PBA1106	Legal Systems in Business	4
23PBA1107	Entrepreneurship Development	3
23PBA1108	Soft Skills I – Executive Communication	2

After a thorough deliberation on the courses, by the external experts and the members, it was unanimously resolved that:

1. The syllabus prescribed by the Tamil Nadu State Council for Higher Education will be followed for the semester – I of the MBA batch 2023 – 2025.
2. The course professors can recommend text books in addition to the reference books and materials suggested.
3. The existing pattern of formative and summative assessments shall be followed.

Dr. J. Michael Sammanasu, Dean - Students, thanked all the board members who were present for voicing their ideas and opinion.

  
**Rev. Dr. P. Paulraj SJ**  
Director

  
**Dr. Albin D Robert Lawrence**  
Dean - Academics



# ST. JOSEPH'S INSTITUTE OF MANAGEMENT (JIM)

*A Jesuit Business School*

*St. Joseph's College (Autonomous), Tiruchirappalli 620 002*

## COURSE STRUCTURE FOR TWO - YEAR MBA PROGRAMME

2023 – 2025

I Semester		Title	Credits	Inst. Hrs.
		Personal Growth Lab (To be offered before the start of the Programme)		15
	23PBA1101	Management Principles and Business Ethics	4	60
	23PBA1102	Quantitative Techniques and Research Methods in Business	4	60
	23PBA1103	Managing Organizational Behaviour	4	60
	23PBA1104	Accounting for Managers	4	60
	23PBA1105	Managerial Economics	4	60
	23PBA1106	Legal Systems in Business	4	60
	23PBA1107	Entrepreneurship Development	3	45
	23PBA1108	Soft Skills I – Executive Communication	2	30
		Shepherd		
		Total	29	435

### Choice Based Credit System

#### Program Educational Outcomes;

**PEO 1 – Employability:** To develop students with industry specific knowledge & skills to meet the industry requirements and also join Public sector undertaking through competitive examinations.

**PEO 2 - Entrepreneur:** To create effective business service owners, with a growth mindset by enhancing their critical thinking, problem solving and decision-making skills.

**PEO3 – Research and Development:** To instill and grow a mindset that focusses efforts towards inculcating and encouraging the students in the field research and development.

**PEO 4 – Contribution to Business World:** To produce ethical and innovative business professionals to enhance growth of the business world.

**PEO 5 – Contribution to the Society:** To work and contribute towards holistic development of society by producing competent MBA professionals.

#### Program Outcomes:

**PO1: Problem Solving Skill:** Application of tools & techniques relevant to management theories and practices in analyzing & solving business problems.

**PO2: Decision Making Skill:** Fostering analytical and critical thinking abilities for data-based decision making.

**PO3: Ethical Value:** Ability to develop value based leadership attributes

**PO4: Communication Skill:** Ability to understand, analyze and effectively communicate global, economic, legal and ethical aspects of business.

**PO5: Individual and Team Leadership Skill:** Ability to be self-motivated in leading & driving a team towards achievement of organizational goals and contributing effectively to establish industrial harmony.

**PO6: Employability Skill:** Foster and enhance employability skills through relevant industry subject knowledge.

**PO7: Entrepreneurial Skill:** Equipped with skills and competencies to become a global entrepreneur.

**PO8: Contribution to Society:** Strive towards becoming a global influencer and motivating future generation towards building a legacy that contributes to overall growth of humankind.

#### PEO – PO MAPPING

	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
PEO 1	Y	Y	Y	Y	Y	Y	Y	Y
PEO 2	Y	Y	Y	Y	Y		Y	Y
PEO3	Y	Y	Y	Y	Y	Y		y
PEO 4	Y	Y	Y	Y	Y	Y	Y	Y
PEO 5	Y	Y	Y	Y	Y	Y	Y	Y

# CORE COURSES

Semester I





## Core Course

**Course Code: 23PBA1101 | Title: Management Principles and Business Ethics**

**Lecture : 4 | Tutorial : - | Practical : - | Project : - | Credits: 4**

### I. Course Objectives

- C1** To familiarize the students to the basic concepts of management in order to aid in understanding how an organization functions.
- C2** To provide insights on Planning & Decision Making
- C3** To throw light on Organizing, Managing Change and Innovation
- C4** To elucidate on Leadership, Communication and Controlling.
- C5** To create awareness and importance of Business Ethics and Social Responsibility.

### II. Course Outcome

Course Outcomes	On completion of this course, students will;	Program Outcomes
<b>CO1</b>	Possess the knowledge on the basic concepts of management and understand how an organization functions.	PO4, PO6, PO8
<b>CO2</b>	Possess knowledge on planning & decision making.	PO1, PO2
<b>CO3</b>	Have insights on organizing, managing change and Innovation	PO5, PO6, PO7
<b>CO4</b>	Learn leadership, communication and controlling skills.	PO4, PO5
<b>CO5</b>	Have better understanding on business ethics and social responsibility.	PO3, PO8

### III. Course Content

#### 1. Introduction

- a. Nature of Management
- b. Concepts and Foundations of Management
- c. Managerial Functions
- d. Management Skills
- e. The Evolution of Management Thought
- f. Tasks of a Professional Manager
- g. Organizational Culture
- h. Environment
- i. Systems Approach to Management
- j. Levels in Management
- k. Disaster Management

#### 2. Planning & Decision Making

- a. Steps in Planning Process
- b. Scope and Limitations

- c. Short Term and Long Term Planning
- d. Flexibility in Planning
- e. Characteristics of a Sound Plan
- f. Management By Objectives (MBO). Strategic Management Process Decision Making Process and Techniques. Business Models

### **3. Nature of Organizing**

- a. Organization Structure and Design
- b. Authority Relationships
- c. Delegation of Authority and Decentralization
- d. Interdepartmental Coordinator
- e. emerging Trends in corporate Structure, Strategy and Culture
- f. Impact of Technology on Organizational design
- g. Mechanistic vs. Adoptive Structures
- h. Formal and Informal Organization. Span of control
- i. Pros and Cons of Narrow and Wide Spans of Control
- j. Optimum Span
- k. Managing Change and Innovation.

### **4. Leadership and Control**

- a. Leadership: Approaches to Leadership and Communication.
- b. Control: Concept of Control  
Application of the Process of Control at Different Levels of Management (top, middle and first line).
- c. Performance Standards
- d. Measurements of Performance
- e. Remedial Action
- f. An Integrated Control system in an Organization
- g. Management by Exception (MBE)

### **5. Business Ethics**

- a. Importance of Business Ethics
- b. Ethical Issues and Dilemmas in Business
- c. Ethical Decision Making and Ethical Leadership
- d. Ethics Audit
- e. Business Ethics
- f. CSR Models.

## **IV. Course Materials**

### **1. Mandatory**

Koontz, H. and Weihrich, H., Essentials of Management: An International Perspective, 11th Edition, Tata McGraw Hill Education Private Ltd., July 2020

### **2. Additional**

Certo, S C. and Certo, T, Modern Management, 13th Edition, Prentice Hall, January 2014.  
Robbins, S and Coulter, M, 11th Edition, Management, Prentice Hall, 11th edition, January 2012

Shaikh Ubaid, Disaster Management, Technical publications, 1st edition, 2020

Mukherjee, K., Principles of Management, 2nd Edition, Tata McGraw Hill Education Pvt. Ltd., 2009

S. K. Mandal., Management Principles and practice, 3rd Edition, Jaico Publishing House, Jan.2011.

Griffin, R. W., Management, 11th Edition, South-Western College Publication, January 2018.

### 3. Reading List

1. [https://deb.ugc.ac. In](https://deb.ugc.ac.in)
2. [http://www.managementconcepts. Com](http://www.managementconcepts.Com)
3. International journal of Management Concepts and Philosophy
4. Journal of Management, Sage Publications

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1				2		2		2
CO 2	2	3						
CO 3					2	2	2	
CO 4				3	3			
CO 5			3					3
3-Strong			2-Medium		1-Low			



## Core Course

**Course Code: 23PBA1102 | Title: Quantitative Techniques and Research Methods in Business |**  
**Lecture : 3 | Tutorial : 1 | Practical : - | Project : - | Credits: 4**

### I. Course Objectives

- C1** To provide the students with an introduction to probability theory and discuss how probability calculations may facilitate their decision making.
- C2** To construct a coherent research proposal that includes an abstract, literature review, research questions, ethical considerations and methodology.
- C3** To understand the basic statistical tools for analysis & interpretation of qualitative and quantitative data.
- C4** To recognize the principles and characteristics of the multivariate data analysis techniques.
- C5** To become familiar with the process of drafting a report that poses a significant problem

### II. Course Outcome

Course Outcomes	On completion of this course, students will;	Program Outcomes
<b>CO1</b>	Be able to develop problem-solving techniques needed to accurately calculate probabilities.	PO1, PO2, PO6, PO7
<b>CO2</b>	Be able to devise research methods, techniques and strategies in the appropriate manner for managerial decision making and conduct research for the industry.	PO4, PO6
<b>CO3</b>	Be able to apply and interpret the different types of quantitative and qualitative methods of data analysis.	PO4, PO6
<b>CO4</b>	Be able to use multivariate techniques appropriately, undertake multivariate hypothesis tests, and draw appropriate conclusions.	PO4, PO6
<b>CO5</b>	Be able to present orally their research or a summary of another's research in an organized, coherent, and compelling fashion.	PO4, PO6

### III. Course Content

#### 1. Introduction

- a. Probability
- b. Rules of probability
- c. Probability distribution; Binomial, Poisson and Normal Distributions, their applications in Business and Industrial Problem

- d. Baye's Theorem and its applications
- e. Decision Making under risk and uncertainty; Maximax, Maximin, Regret Hurwitz and Laplace Criteria in Business and Decision Making
- f. Decision tree.

## **2. Research Methods**

- a. Research - Definition - Research Process
- b. Research Design – Definition-
- c. Types Of Research Design - Role of Theory in Research
- d. Variables in Research – Objectives – Hypothesis
- e. Types of Data; Preliminary Vs Secondary
- f. Methods of Primary Data Collection; Survey, Observation, Experiments
- g. Construction Of Questionnaire - Questionnaire Schedule
- h. Validity and Reliability of Instruments
- i. Types of Scales; Nominal, Ordinal, Interval
- j. Types of Attitude Measurement Scales
- k. Sampling Techniques; Probability And Non probability Techniques
- l. Optimal Sample Size determination.

## **3. Data Preparation and Analysis**

- a. Data Preparation - Editing
- b. Coding- Data Entry- Data Analysis
- c. Testing Of Hypothesis Univariate and Bivariate Analysis
- d. Parametric And Nonparametric Tests and Interpretation of Test Results
- e. Chi-Square Test
- f. Correlation; Karl Pearson's Vs Correlation Coefficient and Spearman's Rank Correlation
- g. Regression Analysis
- h. One Way and Two Way Analysis of Variance.

## **4. Multivariate Statistical Analysis**

- a. Exploratory and Confirmatory Factor Analysis
- b. Discriminant Analysis- Cluster Analysis -Conjoint Analysis -Multiple Regression- Multidimensional Scaling- Their Application In Marketing Problems -Application of Statistical Software For Data Analysis- SEM Analysis

## **5. Report Writing and Ethics in Business Research**

- a. Research Reports- Different Types -Report Writing Format- Content of Report
- b. Need for Executive Summary
- c. Chapterization
- d. Framing the Title of the Report
- e. Different Styles of Referencing
- f. Academic Vs Business Research Reports
- g. Ethics in Research.

#### IV. Course Materials

##### 1. Mandatory

Mariappan, P., Statistics for Business, Francis and Taylor Series – CRC Press, USA & UK, 1st Edition, 2019. ISBN-978-1-138-33617-9

Kumar, R., Research Methodology: A Step-by-Step guide for Beginners, Sage, South Asia, 4th Edition, 2014.

##### 2. Additional

Cooper, D.R., Schindler, P. and Sharma, J.K., Business Research Methods, 11th Edition, Tata-McGraw Hill, 12th Edition, 2018.

Johnson, R.A., and Wichern, D.W., Applied Multivariate Statistical Analysis, PHI Learning Pvt. Ltd., 6th Edition, 2012.

Anderson, Sweeny, Williams, Camm and Cochran, Statistics for business and Economics, Cengage Learning, New Delhi, 13th Edition, 2017

##### 3. Reading List

[https://www.dartmouth.edu/~chance/teaching\\_aids/books\\_articles/probability\\_book/amsbook.mac.pdf](https://www.dartmouth.edu/~chance/teaching_aids/books_articles/probability_book/amsbook.mac.pdf)

<https://study.com/academy/topic/probability.html>

[https://onlinecourses.nptel.ac.in/noc18\\_ma07/preview](https://onlinecourses.nptel.ac.in/noc18_ma07/preview)

<https://hbr.org/1964/07/decision-trees-for-decision-making>

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1	3	3				3	3	
CO 2				3		3		
CO 3				2		2		
CO 4				2		2		
CO 5				2		3		

3-Strong

2-Medium

1-Low



## Core Course

**Course Code: 23PBA1103 | Title: Managing Organizational Behaviour**

**Lecture : 4 | Tutorial : - | Practical : - | Project : - | Credits: 4**

### I. Course Objectives

- C1** To familiarize the students to the basic concepts of managing Organizational Behaviour in order to aid in understanding how an men behave in an organization.
- C2** To provide insights on Individual Differences, perception, learning, Attitudes values and motivation
- C3** To throw light on Group Dynamics and Interpersonal Communication
- C4** To elucidate on Leadership, Politics, Conflicts and Negotiation.
- C5** To create awareness and importance of work stress and Emotional Intelligence and its influence on employees in an organization.

### II. Course Outcome

Course Outcomes	On completion of this course, students will;	Program Outcomes
<b>CO1</b>	Possess the knowledge on the basic concepts of managing Organizational Behaviour in order to aid in understanding how an men behave in an organization	PO4
<b>CO2</b>	Possess knowledge on Individual Differences, perception, learning, Attitudes values and motivation	PO3, PO6
<b>CO3</b>	Have insights on Group Dynamics and Interpersonal Communication	PO2, PO4, PO5
<b>CO4</b>	Learn Leadership, Politics, Conflicts and Negotiation.	PO5
<b>CO5</b>	Have better understanding on work stress and Emotional Intelligence and its influence on employees in an organization.	PO6, PO8

### III. Course Content

#### 1. Introduction to Organizational Behaviour

- a. Historical background of OB
- b. Concept Relevance of OB
- c. Contributing Disciplines to the field of OB
- d. Challenges and opportunities for OB
- e. Foundations of Individual Behaviour.
- f. Theory - Social theory
- g. Organizational Citizenship Behaviour

#### 2. Individual Difference

- a. Personality-concept and determinants of personality
- b. Theories of personality

- c. Type of theories
- d. Trait theory
- e. Psycho analytic theory
- f. Social learning theory
- g. Erikson's stages of Personality Development
- h. Chris Argyris Immaturity to Maturity Continuum.
- i. Personality -Job fit

#### **Perception**

- a. Factors influencing perception
- b. Attribution theory

#### **Learning**

- a. Classical, Operant and Social Cognitive Approaches
- b. Managerial implications.

#### **Attitudes and Values**

- a. Components
- b. Behaviour relationship, formation, values.

### **3. Group Dynamics**

- a. Foundations of Group Behaviour
- b. Group and Team
- c. Stages of Group Development
- d. Factors affecting Group and Team Performance
- e. Group Decision making

#### **Interpersonal Communication**

- a. Communication Process
- b. Barriers to Communication
- c. Guidelines for Effective Communication

### **4. Leadership**

- a. Trait, Behavioural and Contingency theories
- b. Leaders vs Managers

#### **Power and Politics**

- a. Sources of Power
- b. Political Behaviour in Organizations
- c. Managing Politics.

#### **Conflict and Negotiation**

- a. Sources and Types of Conflict
- b. Negotiation Strategies
- c. Negotiation Process

### **5. Work Stress**

- a. Stressors in the Workplace
- b. Individual Differences on Experiencing Stress
- c. Managing Workplace Stress
- d. Organizational Culture and Climate: Concept and Importance
- e. Creating and Sustaining Culture.

#### **Emotional Intelligence**

- a. Work Life Integration Practices.
- b. Knowledge based enterprise- systems and Processes;
- c. Networked and virtual organizations.



#### IV. Course Materials

##### 1. Mandatory

Stephen P. Robins, Timothy A. Judge and Neharika Vohra, Essentials of Organisational Behaviour, 18th Edition, Pearson Education, 2019.

##### 2. Additional

Luthans, F. Organizational Behaviour, 12th Edition, Tata McGraw Hill Education, 2017.  
McShane, S.L., Von Glinow, M.A., and Sharma, R.R., Organizational Behaviour, 5th Edition, Tata McGraw-Hill Education Pvt. Ltd., 2011.

Prasad .L.M., Organisational Behaviour ,Sultan Chand and Sons, 2019

C.B.Guptha, A Textbook Of Organisational Behaviours ,S.Chand & Company,2019

K. Aswattappa, Organisational Behaviour, Himalaya Publishing House, 12th Edition, 2016.

##### 3. Reading List

1. Journal of Organizational Behaviour – wiley Online Library
2. <https://hbr.org/2016/06/the-secrets-of-great-teamwork>
3. <https://hbr.org/2022/06/stressed-sad-and-anxious-a-snapshot-of-the-global-workforce>
4. <https://online.hbs.edu/blog/post/decision-making-techniques>
5. <https://hbsp.harvard.edu/product/H05VFP-PDF-ENG>
6. Ricardo Semler: A Revolutionary Model of Leadership
7. <https://hbsp.harvard.edu/product/INS517-PDF-ENG?Ntt=motivation>
8. <https://www.igi-global.com/chapter/conflict-management-models/241819>
9. <https://store.hbr.org/product/giving-peace-a-chance-the-2006-2008-negotiations-to-end-the-conflict-in-northern-uganda/ks1319?sku=KS1319-PDF-ENG>
10. <https://hbr.org/2022/06/stressed-sad-and-anxious-a-snapshot-of-the-global-workforce>
11. <https://hbr.org/2008/02/creating-and-sustaining-a-winn-1>
12. <https://www.igi-global.com/gateway/chapter/306410>
13. <https://ieeexplore.ieee.org/document/8389320>
14. <https://journals.innovareacademics.in/index.php/ajpcr/article/view/19372>
15. <http://hdl.handle.net/10603/362388>
16. <https://hbr.org/2021/01/work-life-balance-is-a-cycle-not-an-achievement>
17. <https://towardsdatascience.com/industry-4-0-evolution-to-knowledge-based-enterprises-a0bda1b9a5f6>

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1				2				
CO 2			3			3		
CO 3		3		3	3			
CO 4					3			
CO 5						3		2
3-Strong			2-Medium		1-Low			



## Core Course

**Course Code: 23PBA1104 | Title: Accounting for Managers**

**Lecture : 3 | Tutorial : 1 | Practical : - | Project : - | Credits: 4**

### I. Course Objectives

- C1 To acquaint the students with the fundamentals of principles of financial, cost and management accounting
- C2 To enable the students to prepare, analyses and interpret financial statements
- C3 To acquaint the students with the tools and techniques of financial analysis
- C4 To enable the students to take decisions using management accounting tools.
- C5 To enable the students to prepare the reports with the accounting tools and facilitate managerial decision making.

### II. Course Outcome

Course Outcomes	On completion of this course, students will;	Program Outcomes
CO1	Be able to understand the fundamentals of principles of financial, cost and management accounting	PO6
CO2	Be able to prepare, analyze and interpret financial statements	PO1, PO2, PO4, PO6, PO7
CO3	Be able to use the tools and techniques of financial analysis.	PO1, PO2, PO3, PO6, PO7
CO4	Be able to take decisions using management accounting tools.	PO1, PO2, PO6, PO7
CO5	Be able to prepare the reports with the accounting tools and facilitate and take managerial decisions.	PO2, PO3, PO4, PO6, PO7, PO8

### III. Course Content

#### 1. Financial Accounting

- a. Meaning - Objectives - functions.
- b. Branches of Accounting: Financial, Cost and Management Accounting
- c. Accounting Concepts and conventions.
- d. Journal – Ledger – Trial Balance
- e. Preparation of Final Accounts: Trading, Profit and Loss Account and Balance Sheet (problems); International Accounting Standards – IFRS

#### 2. Financial Statement Analysis

- a. Objectives
- b. Techniques of Financial Statement Analysis: Common Size and Comparative Financial Statements, Trend analysis, Ratio Analysis.
- c. Fund Flow Statement
- d. Statement of Changes in Working Capital

- e. Preparation of Fund Flow Statement
- f. Cash Flow Statement Analysis
- g. Distinction between Fund Flow and Cash Flow Statement

### 3. Marginal Costing

- a. Definition - Distinction between marginal costing and absorption costing
- b. Break-even point Analysis
- c. Contribution, P/V Ratio, margin of safety
- d. Decision making under marginal costing system - Key factor analysis, make or buy decisions, export decision, sales mix decision

### 4. Budget, Budgeting, and Budgeting Control

- a. Types of Budgets
- b. Preparation of Flexible and fixed Budgets, master budget and Cash Budget
- c. Zero Base Budgeting

### 5. Cost Accounting

- a. Meaning- Objectives
- b. Elements of Cost – Cost Sheet (Problems) – classification of cost - Cost Unit and Cost Centre
- c. Methods of Costing - Techniques of Costing
- d. Standard costing and variance analysis Reporting to Management
- e. Uses of Accounting information in Managerial decision-making.
- f. Reporting-Accounting Standards and Accounting Disclosure practices in India; Exposure to Practical Knowledge of using Accounting software- Open Source.

## IV. Course Materials

### 1. Mandatory

N, M. S., Maheshwari, S. K., & Maheshwari, S. K. (2022). *Accounting for Management* (5th ed.). Noida: Vikas Publishing house limited.

### 2. Additional

Narasimhan, M. S. (2016). *Financial Statements and Analysis*. Delhi: Cengage Learning.  
Drury, C. (2018). *Management and Cost Accounting* (10th ed.). Cengage.

### 3. Reading List

<https://www.icsi.edu/media/website/CostAndManagementAccounting.pdf>  
<https://icmai.in/upload/CASB/2015/Glossary.pdf>

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1						2		2
CO 2	3	3		3		3	2	
CO 3	3	3	3			3	2	
CO 4	3	3				3	3	
CO 5		3	3	3		3	2	2

**3-Strong**

**2-Medium**

**1-Low**



## Core Course

**Course Code: 23PBA1105 | Title: Managerial Economics**

**Lecture : 4 | Tutorial : - | Practical : - | Project : - | Credits: 4**

### I. Course Objectives

- C1 To familiarize the students about managerial economics and to know the fundamental concepts affecting business decisions.
- C2 To understand the concept of utility and demand analysis and demand forecasting
- C3 To know about production function and market structure
- C4 To have an idea and understanding about Macroeconomics like National Income, savings and investment, Indian economic policy and Planning.
- C5 To Provide insights on Money Market, Inflation and Deflation, Monetary and Fiscal policies, FDI and cashless economy.

### II. Course Outcome

Course Outcomes	On completion of this course, students will;	Program Outcomes
<b>CO1</b>	Be able to understand the basic concepts of managerial economics that helps the firm in decision making process.	PO2, PO4
<b>CO2</b>	Be familiar about the Basic concepts of Demand, Supply and Equilibrium and their determinants	PO4, PO6, PO7
<b>CO3</b>	Have better idea and understanding about production function and market structure	PO6, PO7
<b>CO4</b>	Have better insights about macroeconomics concepts like National income, Savings and Investment, Indian Economic Policy and planning	PO8
<b>CO5</b>	Possess better knowledge about Money market, Monetary and Fiscal policy, inflation and deflation, FDI and globalization and Cashless economy and digitalized cash transfers.	PO7

### III. Course Content

#### 1. Introduction

- a. Definition of Managerial Economics.
- b. Decision Making and the Fundamental Concepts Affecting Business Decisions
- c. The Incremental Concept, Marginalism, Equi-marginal Concept, the Time Perspective, Discounting Principle, Opportunity Cost Principle
- d. Micro and Macro Economics.

## **2. Utility Analysis and the Demand Curve**

- a. Elasticity of Demand, Demand Analysis: Basic Concepts, and tools of analysis for demand forecasting.
- b. Use of Business Indicators: Demand forecasting for consumer, Consumer Durable and Capital Goods.
- c. Input-Output Analysis
- d. Consumer Behavior-Consumer Equilibrium

## **3. The Production Function**

- a. Production with One Variable Input
- b. Law of Variable Proportions
- c. Production with Two Variable Inputs
- d. Production Isoquants - Isocost Lines Estimating Production Functions
- e. Returns to Scale -Economies Vs Diseconomies of Scale
- f. Cost Concepts – Analysis of cost – Short and long run costs.
- g. Market Structure: Perfect and Imperfect Competition
- h. Monopoly, Duopoly, Monopolistic Competition – Pricing Methods.

## **4. Macro Economic Variables**

- a. National Income- Concepts
- b. Gross Domestic Product, Gross National Product, Net National Product
- c. Measurement of National Income, Savings, Investment
- d. Business Cycles and Contracyclical Policies
- e. Role of Economic Policy
- f. Indian Economic Planning

## **5. Commodity and Money Market**

- a. Demand and Supply of Money – Money Market Equilibrium
- b. Monetary Policy – Inflation – Deflation
- c. Stagflation
- d. Role of Fiscal Policies- Indian Fiscal Policies
- e. Government Policy towards Foreign Capital and Foreign Collaborations
- f. Globalization and its Impact. Cashless economy and digitalized cash transfers; Economic models and its steps;
- g. FEMA-GST-Industrial Policy in India and its effects on growth.

## **IV. Course Materials**

### **1. Mandatory**

Dominick Salvatore, Managerial Economics: Principles and worldwide applications, 9E Adaptation, Oxford university press, 9th Edition, 2020.

### **2. Additional**

William F. Samuelson, Stephen G. Marks, Jay L., Zagorsky., Managerial Economics, Wiley Publishers, 9th Edition (2021)

H. L. Ahuja., Managerial Economics., Atlantic Publishers and distributors(P) Ltd., 2017.

Damodaran, S., Managerial Economics, 2nd Edition, Oxford University Press, 2011.

Dwivedi, D.N., Managerial Economics, Vikas Publishing House, 2011.

R. L. Varshney , K.L. Maheshwari., Managerial Economics, Sultan Chand & Sons, 2014.

### 3. Reading List

<http://pearsoned.co.in/prc/book/paul-g-keat-managerial-economics-economic-tools-todays-decision-makers6e-6/9788131733530>

<http://www.onlinevideolecture.com/mba-programs/kmpetrov/managerial-economics/?courseid=4207>

<https://www.slideshare.net/dvy92010/nature-and-scope-of-managerial-economics-76225857>

The Indian Economic Journal - SAGE Journals

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1		2		3				
CO 2				3		2	2	
CO 3						3	3	
CO 4								2
CO 5							2	

**3-Strong**

**2-Medium**

**1-Low**



## Core Course

**Course Code: 23PBA1106 | Title: Legal Systems in Business**

**Lecture : 4 | Tutorial : - | Practical : - | Project : - | Credits: 4**

### I. Course Objectives

- C1 To create knowledge and understanding on law of contracts
- C2 To describe about sale of goods and Negotiable instrument act
- C3 To have an overall understanding about partnership act and company law.
- C4 To familiarize various labor laws for effective administration of Human Resource of an organization.
- C5 To provide insights and awareness about consumer protection act, Cyber-crimes, Intellectual property Rights.

### II. Course Outcome

Course Outcomes	On completion of this course, students will;	Program Outcomes
CO1	Have knowledge on understandings on law of contract.	PO4, PO6, PO7
CO2	Know the sale of Goods & Negotiable instrument act.	PO6
CO3	Have understandings on partnership and company law	PO6, PO7
CO4	Have familiarize with various labour laws.	PO5, PO6, PO7
CO5	Possess insights & awareness about consumer protection Act Cyber Crimes, Intellectual Property Rights.	PO8

### III. Course Content

#### 1. The Law of Contracts

- a. Definition of Contract Offer and Acceptance
- b. Essential Elements of a Valid Contract: Free Consent
- c. Competency of Parties – Lawful Consideration
- d. Legality of Object. Void, Voidable, Unenforceable and Illegal Contracts
- e. Performance of Contracts – Privity of Contracts – Assignment of Contracts
- f. By Whom Contract must be Performed – Time and Place of Performance
- g. Performance of Reciprocal Promises – Contracts which need not be performed
- h. Discharge of Contracts : By Performance, By Agreement, By Impossibility, By Lapse of Time, By Operation of Law and By Breach of Contracts
- i. Remedies for Breach of Contracts.

#### 2. Sale of Goods Act

- a. Definition of a Sale and a Contract of Sale
- b. Difference between (1) Sale and an Agreement to Sell (2) Sale and a Contract Form (3) Sale and Bailment (4) Sale and Mortgage of Goods (5) Sale and Time Purchase
- c. Conditions and Warranties – Passing of Property of Goods
- d. Rights of an Unpaid Seller.
- e. Negotiable Instruments Act: Negotiable Instruments in General: Cheques, Bills of Exchange and Promissory Notes
- f. Definition and Characteristics

### **3. Partnership Act**

- a. Evolution – Definition of Partnership
- b. Difference between Partnership and Joint Family Business
- c. Kinds of Partnerships – Registration
- d. Rights and Liabilities of Partners – Dissolution.

### **4. Company Law**

- a. Evolution of Company Form of Organisation
- b. Companies Separate Legal Entity
- c. Comparison of Company with Partnership and Joint Hindu Family Business
- d. Kinds of Companies – Comparison of Private and Public Companies
- e. Formation of Companies
- f. General Idea About Memorandum and Articles of Association, Prospectus, Statement in lieu of Prospectus
- g. Management of Companies – General Idea of Management of Companies
- h. Officers, Meetings – Resolutions
- i. Account and Audit – Winding up of Companies
- j. General Idea of the Different Modes of Winding Up.

### **5. Labour Law**

- a. Factories Act, Minimum Wages Act, Industrial Disputes Act, Employees Compensation Act, Payment of Bonus Act 1965.
- b. Payment of Gratuity Act 1972. ESI Act, Employees Provident Fund and Miscellaneous Provisions Act 1952,
- c. Maternity Benefits Act, Child Labour Abolition & Regulation Act, 1986- Inter-state Migrant Workmen (Regulation of Employment & Conditions of services) Act 1979
- d. Bonded Labour system (Abolition) Act 1976
- e. Sexual Harassment of women at Workplace (Prevention, Prohibition & Redressal) Act 2013- Contract Labour (Regulation and Abolition) Act- Four Labour Codes and Rules- RTI Act 2005

### **6. Consumer Protection Act,**

- a. Competition Act 2002, Cyber Crimes, IT Act 2008
- b. Intellectual Property Rights: Types of Intellectual Property
- c. Trademarks Act 1999 – The Copyright Act 1957 – International Copyright Order, 1999 – Design Act, 2000;
- d. UNICTRAL – United Nations Commission on International Trade Law

## **IV. Course Materials**

### **1. Mandatory**

Kapoor ND., Elements of Mercantile Law, 38<sup>th</sup> Edition (2020), Sultan Chand & Sons.

### **2. Additional**

Majumdar, A. K. and Kapoor, G.K., Company Law and Practice, 17th Edition, Taxmann Publications Pvt. Ltd., 2012.

Intellectual Property Laws, Universal Law Publishing, 2012.

Daniel Albuquerque, Legal systems in Business, Oxford University Press India, 2nd Edition, 2015.

### **3. Reading List**

[https://www.icaai.org/post.html?post\\_id=17791](https://www.icaai.org/post.html?post_id=17791)



	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1				2		2	2	
CO 2						2		
CO 3						2	2	
CO 4					2	2	2	
CO 5								2

**3-Strong**

**2-Medium**

**1-Low**



## Core Course

**Course Code: 23PBA1107 | Title: Entrepreneurship Development**

**Lecture : 3 | Tutorial : - | Practical : - | Project : - | Credits: 3**

### I. Course Objectives

- C1 To introduce students to entrepreneurship and its growth in India.
- C2 To impart knowledge on innovation, its types, role of technology in innovation, patents and licensing.
- C3 To orient the students on new venture creation
- C4 To enable students to prepare a feasible business plan
- C5 To give inputs on various types of financing available for new ventures.

### II. Course Outcome

Course Outcomes	On completion of this course, students will;	Program Outcomes
CO1	Be able to know about growth of entrepreneurship in India	PO4, PO7
CO2	Gain knowledge on innovation, its types, role of technology in innovation, patents and licensing	PO7, PO8
CO3	Obtain knowledge on new venture creation	PO6, PO7
CO4	Be able to prepare a business plan	PO7, PO8
CO5	Gain knowledge on various types of financing available for new ventures.	PO7, PO8

### III. Course Content

#### 1. Introduction

- a. The Entrepreneur – Definition
- b. Characteristics of Successful entrepreneur.
- c. Entrepreneurial scene in India; MSME;
- d. Analysis of entrepreneurial growth in different communities
- e. Case histories of successful entrepreneurs. Similarities and Distinguish between Entrepreneur and Intrapreneur.

#### 2. Innovation in Business

- a. Types of Innovation
- b. Creating and Identifying Opportunities for Innovation
- c. Design Thinking - The Technological Innovation Process – Creating New Technological Innovation and Intrapreneurship – Licensing – Patent Rights – Innovation in Indian Firms

#### 3. New Venture Creation

- a. Identifying Opportunities for New Venture Creation: Environment Scanning
- b. Generation of New Ideas for Products and Services. Creating, Shaping, Recognition, Seizing and Screening of Opportunities.
- c. Feasibility Analysis: Technical Feasibility of Products and Services
- d. Marketing Feasibility: Marketing Methods – Pricing Policy and Distribution Channels

#### 4. Business Plan Preparation

- a. Benefits of a Business Plan – Elements of the Business Plan
- b. Developing a Business Plan – Guidelines for preparing a Business Plan
- c. Format and Presentation; Start-ups and e-commerce Start-ups.
- d. Business Model Canvas

#### 5. Financing the New Venture

- a. Capital structure and working capital Management: Financial appraisal of new project, Role of Banks
- b. Credit appraisal by banks. Institutional Finance to Small Industries
- c. Incentives – Institutional Arrangement and Encouragement of Entrepreneurship.

### IV. Course Materials

#### 1. Mandatory

Reddy, N., Entrepreneurship: Text and Cases, Cengage Learning, 2010.

#### 2. Additional

Roy, R., Entrepreneurship, 2nd Edition, Oxford University Press, 2011.

Barringer, B., Entrepreneurship: Successfully Launching New Ventures, 3rd Edition, Pearson, 2011.

Bessant, J., and Tidd, J., Innovation and Entrepreneurship, 2nd Edition, John Wiley & Sons, 2011.

Desai, V., Small Scale Industries and Entrepreneurship, Himalaya Publishing House, 2011.

Entrepreneurship: Successfully Launching New Ventures, Global Edition, 6th Edition Bruce R. Barringer, Texas A & M University, R. Duane Ireland, ©2018 | Pearson.

#### 3. Reading List

<http://www.jimssouthdelhi.com/sm/BBA6/ED.pdf>

<https://www.cengage.com/highered>

<https://roadmapresearch.com/entrepreneurship-beyond-curriculum>

The International Journal of Entrepreneurship and Innovation

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1				3			3	
CO 2							3	2
CO 3						2	3	
CO 4							3	2
CO 5							3	3

3-Strong

2-Medium

1-Low



## Core Course

**Course Code: 23PBA1108 | Title: Soft Skills I – Executive Communication**

**Lecture: - | Tutorial: - | Practical: 2 | Project: - | Credits: 2**

### I. Course Objectives

- C1 To acquire communication awareness they are going to get for the industry.
- C2 To make the customer realize that you can provide them with information and other essential things
- C3 To explore the skill of writing business proposals
- C4 To develop a plan for the meetings and interviews
- C5 To analyze the skills required for non-verbal communication

### II. Course Outcome

Course Outcomes	On completion of this course, students will:	Program Outcomes
<b>CO1</b>	Understanding of theories and concepts, types and various modes of communication in organizations	PO4, PO6
<b>CO2</b>	Development of skills on developing Business Correspondence	PO4, PO6
<b>CO3</b>	Development of skills on preparing Business Reports and Proposals	PO4, PO6
<b>CO4</b>	To draft effective business correspondence with brevity, and clarity in designing and developing clean and lucid organizing skills.	PO4, PO6
<b>CO5</b>	To demonstrate his/her verbal and non-verbal communication ability through presentations.	PO4, PO6

### III. Course Content

#### 1. Communication

- a. Meaning and Significance of Communication for Management
- b. Types of Communication Factors Affecting Effectiveness of Communication
- c. Barriers to Communication
- d. Principles of Effective Communication Dyadic Communication
- e. Face-to-face Communication, Other Modes of Communication.

#### 2. Business Correspondence

- a. Planning Business Messages: Analyzing the Task, Anticipating the Audience.
- b. Adapting the Message Organizing and Writing Business Messages: Patterns of organization, Use of Tools such as Mind Maps, Composing the Message
- c. Norms for Business Letters, Letters for Different Kinds of Situation: Personalized Standard Letters, Enquiries, Inviting Quotations, Sending Quotations, Placing Orders, Inviting tenders, Claim letters, Customers Complaints, Collection Letters, Sales Promotion Letters

- d. Revising Business Messages: Revising for Clarity, Conciseness and Readability, Proof Reading and Evaluating
- e. Letters of application and resume.

### 3. Business Reports and Proposals

- a. Structure of Reports - Long and Short Reports: Formal and Informal Reports
- b. Writing Research Reports- Technical Reports
- c. Norms for Including Exhibits and Appendices
- d. Writing Business Proposals.

### 4. Conducting Meetings and Interviews

- a. Procedure for Conducting Meetings
- b. Preparing Agenda, Minutes and Resolutions
- c. Conducting Seminars and Conferences
- d. Procedure of Regulating Speech- Evaluating Oral Presentations Drafting Speech
- e. Participating in Debates and Group Discussions- Presentation Skills
- f. Fluency Development Strategies- Attending and Conducting Interviews- Listening.

### 5. Non-verbal Communication

- a. Personal Appearance- Posture- Body Language
- b. Reading Nonverbal Messages
- c. Use of Charts. Diagrams and Tables
- d. Visual and Audio-visual Aids for Communication

## IV. Course Materials

### 1. Mandatory

Chaturvedi, P. D. (2020). Business Communication - Skills, concepts and Applications. Noida U.P: Pearson India Education Services Pvt. Ltd.

### 2. Additional

Singh, M. R. (2022). Business Communication. New Delhi: Oxford University Press.  
Bovec L. Courtland and John V. Thill. (2022) Business Communication Today, 10 ed., Pearson Education, New Delhi

### 3. Reading List

<https://www.skillsyouneed.com/ips/communication-skills.html>  
<http://skillopedia.com>  
<https://www.habitsforwellbeing.com/9-effective-communication-skills>  
<https://www.nextiva.com/blog/what-is-business-communication.html>  
<https://edu.gcfglobal.org/en/business-communication/how-to-write-a-formal-business-letter/1/#>

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1				3		3		
CO 2				3		3		
CO 3				3		3		
CO 4				3		3		
CO 5				3		3		

3-Strong

2-Medium

1-Low

## MATTERS RELATED TO THE CONTROLLER OF EXAMINATIONS

Based on the recommendation of the Examination Reforms committee, the following question patterns are followed from the academic 2023- 2024, and it is presented for the approval of the Academic Council.

Knowledge levels for assessment of Outcomes based on Blooms Taxonomy

S. No.	Level	Parameter	Description
1	K1	Knowledge/Remembering	It is the ability to remember the previously learned
2	K2	Comprehension/ Understanding	The learner explains ideas or concepts
3	K3	Application/Applying	The learner uses information in a new way
4	K4	Analysis/Analysing	The learner distinguishes among different parts
5	K5	Evaluation/Evaluating	The learner justifies a stand or decision
6	K6	Synthesis /Creating	The learner creates a new product or point of view

### WEIGHTAGE of K – LEVELS IN QUESTION PAPER

(Cognitive Level) K- LEVELS →	Lower Order Thinking			Higher Order Thinking			Total %
	K1	K2	K3	K4	K5	K6	
SEMESTER EXAMINATIONS	10	30	30	30			100
MID / END Semester TESTS	7	15	18	20			60
CIA Components	7	8	10	15			40

### QUESTION PATTERN FOR SEMESTER EXAMINATION

SECTION	MARKS
SECTION–A (No choice, OneMark) Two questions from each unit (10x1 =10)	10
SECTION-B (No choice ,3-Marks) TWO questions from each unit (10x3 =30)	30
SECTION-C (Either/or type) (6- Marks) ONE question from each unit (5x6 =30)	30
SECTION-D (3 out of 5) (10 Marks) ONE question from each unit (3x10 =30)	30
Total	100

<b>BLUE PRINT OF QUESTION PAPER FOR SEMESTER EXAMINATION</b>							
DURATION: 3. 00 Hours.				Max Mark : 100			
K- LEVELS	K1	K2	K3	K4	K5	K6	Total Marks
SECTIONS							
SECTION-A (One Mark, No choice) (10x1 =10)	10						10
SECTION-B (3-Marks, No choice) (10x3=30)		10					30
SECTION-C (6- Marks) (Either/or type) (5x6=30)			5				30
SECTION-D (10 Marks) (3 out of 5) (3x10=30) Courses having only K4 levels				3			30
Courses having K4 and K5 levels One K5 level question is compulsory				2	1		
(Courses having all the 6 cognitive levels One K5 and K6 level questions can be compulsory				1	1	1	
Total	10	30	30	30			100

### Continuous Internal Assessment

<b>QUESTION PATTERN FOR MID/END TEST</b>	
SECTION	MARKS
SECTION-A (No choice, One Mark) (7x1 =7)	7
SECTION-B (No choice , 3-Marks) (5x3 =15)	15
SECTION-C (Either/or type) (6- Marks) (3x6 =18)	18
SECTION-D (2 out of 3) (10 Marks) (2x10=20)	20
Total	60

<b>BLUE PRINT OF QUESTION PAPER FOR MID/END TEST</b>							
DURATION: 2. 00 Hours.				Max Mark: 60.			
K- LEVELS→	K1	K2	K3	K4	K5	K6	Total Marks
SECTIONS↓							
SECTION-A (One Mark, No choice) (7x1=7)	7						7
SECTION-B (3-Marks, No choice) (5x3=15)		5					15
SECTION-C (Either/or type) (6- Marks ) (3x6=18)			3				18
SECTION-D (2 out of 3) (10 Marks) (2x10=20) Courses having only K4 levels				1			20
Courses having K4 and K5 levels One K5 level question is compulsory				1	1		
Courses having all the 6 cognitive levels One K6 level question is compulsory					1	1	
Total Marks	07	15	18	20			60
Weightage for 100 %	12	25	30	33			100

<b>QUESTION PATTERN FOR SEMESTER EXAMINATION for Quantitative Papers only</b>	
SECTION	MARKS
SECTION–A No choice, One Mark TWO questions from each unit. (10x1=10)	10
SECTION–B Either/or type, 6-Marks ONE questions from each unit. Three questions at K2 Level and two questions at K3 Level. (5x6=30)	30
SECTION–C (4 out of 5) (15- Marks) ONE question from each unit One question at K3 Level and Three questions at K4,K5 &K6 Levels. (4x15=60)	60
Total	100

<b>SEMESTER EXAMINATION - for Quantitative Papers only</b>							
DURATION: 3. 00 Hours				Max Mark: 100			
K- LEVELS	K1	K2	K3	K4	K5	K6	Total Marks
SECTIONS							
SECTION –A (One Mark, No choice) Two questions from each unit (10x1=10)	10						10
SECTION–B (Either/or type) (6 Marks) One question from each unit (5x6=30)		3	2				30
SECTION–C ( 4 out of 5) (15 Marks) One question from each unit (4x15=60)			1	2	1		60
Total	10	18	27	30	15		100

MID/END TEST ( For Quantitative Papers)								
DURATION: 2.00 Hours.				Max Mark : 60				
K- LEVELS		K1	K2	K3	K4	K5	K6	Total Marks
SECTION								
SECTION –A One Mark, No choice (9x 1=9)		9						9
SECTION–B Either/or type (5 - Marks) (3x5=15)			2	1				15
SECTION–C (3 out of 4) (12 Marks) (3x12=36)				1	2			36
Total		9	10	17	24			60



Assessment pattern for two/one credit courses.

S. No.	Course Title	CIA	Semester Examination	Total Marks
1	Self -Paced Learning Course	5 x 10 = 50	50 Marks (MCQ) ( COE)	100
2	Comprehensive Examinations	25 +25 = 50	50 Marks (MCQ) ( COE)	100
3	Internship	100	--	100
4	Field Visit	100	--	100
5	<b>UG</b> Non Major Elective(NME)/Foundation Course(FC-Major)/Skill Enhancement Course(SEC-WD) <b>PG</b> Ability Enhancement Course (AEC)	20+10+20	50 Marks ( by an External member from the Department)	100
Assessment Pattern for Courses in Part - IV				
6	Value Education Courses and Environmental Studies	50	50 Marks (For 2.00 hours)(COE)	100
7	Skill Enhancement Courses(SECs)	50 marks (by Course in-charge) 50 Marks ( by an External member from the Department)		100
8	SEC: SOFT SKILLS (For UG and PG)	100	(Fully Internal)	100

## CERTIFICATE COURSES

The academic interest and needs of the students are aplenty and are becoming increasingly dynamic. Owing to this, a meeting was convened by the Principal on September 02, 2022. The Deans and the Heads of the Departments suggested that a list of courses be identified and the syllabi discussed and passed in the respective departments. A total of 17 courses which had the potential to fill in the gap between institutions and industries had been approved by the committee.

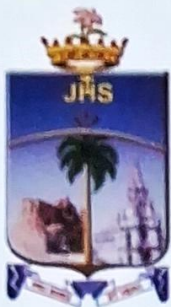
The college offered courses ranging from Artificial Intelligence to Environmental Sciences. The duration of the course was fixed at 45 hours including theory and practice classes. The courses were designed and taught by the teacher after the regular class hours to ensure the application of professional knowledge, understanding and practical skills required for today's job market. The courses were offered either offline or blended mode. On successful completion of the course, a Certificate of Completion was issued to all the participants signed by the Chairman of the Committee.



Model Certificate

## COURSE DETAILS

Department	Course Title	In-charge
Business Administration	Digital Marketing	Prof. D. Rinaldo De David
Chemistry	Environmental Science & Management	Dr. Leostandly Dr. Antony Sakthi
Chemistry	Memory Techniques	Dr. A. N. Paul Angelo
Commerce	Mass Media and Business Development	Dr. V. Bastin Jerome Dr. S. Aruldass
Economics	General Studies For Competitive Examinations	Dr. J. Vasantha Arockiaselvi Dr. P. Prarthana
English	English for Competitive Examinations	Dr. V.L. Jayapaul
English	Spoken English	Dr. V.L. Jayapaul
English	Literature of the Artificial Intelligence	Dr. D. Prasanth Arokia Samy
English	Content Writing	Dr. D. Loyola Innaci Prof. K. M. Vargeesh
English	English for Business Memes	Dr. V.L. Jayapaul Dr. J. John Love Joy Mr. Mark Nicholas Glasford
Human Resource Management	Interpersonal Communication Skills	Dr. J. Michael Raj
Information Technology	Digital Resilience Cyber Security for All	Dr. George Gabriel Richard Roy
Information Technology	Data Analysis and Processing	Dr. S. Hendry Leo Kanickam Dr. P. Bastin Thiagaraj
Mathematics	LaTeX for Technical Writing	Dr. S. Arul Gnanaprgasam Dr. S. Aseervatham
Physics	SCI-LAB for Computation and Analysis	Dr. B. Kanickairaj Dr. S. Lourduraj
Statistics	Application of Statistics	Dr. A. Phlip Arokiadoss
Tamil	Creative Communication	Dr. J. Saleth Dr. S. Srinivasan



# DEPARTMENT OF BUSINESS ADMINISTRATION

## St. JOSEPH'S COLLEGE (Autonomous)

Accredited at A++ Grade (Cycle IV) by NAAC Special Heritage Status awarded by UGC  
College with Potential for Excellence by UGC DBT-STAR & DST-FIST sponsored College

TIRUCHIRAPPALLI - 620 002.

Phone : 0431 - 4226423, 4226386, Fax : 0431 - 2701501

Website : [www.sjctni.edu](http://www.sjctni.edu)

### Minutes of the Staff Meeting for the Academic Year 2022-23 on 16<sup>th</sup> July 2022

The department staff meeting was held on 16<sup>th</sup> July 2022 at 11.30 am in the department. Dr. J. Vincent Xavier & Mr. S. Arputharaj were on Medical Leave. All the other Members were present.

#### Members present:

- 1) Mrs. C.F. Octovia Antony Sessammal (Head of the Department) *Octavia Antony Sessammal*
- 2) Dr. S. Clemence Jenifer *S. Clemence Jenifer*
- 3) Mrs. C. Annie Jane *Annie Jane*
- 4) Mr. D. Rinaldo De David *D. Rinaldo De David*
- 5) Mr. J. Inigo Papu Vinodhan *J. Inigo Papu Vinodhan*

#### Agenda:

1. Action plan for the academic year 2022-2023
2. Staff Involvement for various activities
3. Cross cutting Issues with UG & PG syllabus
4. Model Question Paper based on OBE
5. Certificate Course.

The meeting started with a welcome note by the Head of the Department followed by a silent prayer for the Invocation of the Lord's Blessings for the new Academic year. The members discussed on the matters given on the Agenda and came up with the following inputs:

1. Action Plan for the Academic year:
  - (i) National Seminar
  - (ii) FDP
  - (iii) Trade fair
2. The Staff involvement for various domains from the department was discussed by all the members present and appropriate responsibilities were allocated.
3. The faculty members were instructed to identify the Cross-cutting issues of the courses with the syllabus which was already framed by them.
4. Furthermore the faculty members were asked to prepare the Model question Papers on OBE and submit to the HOD before the due date.
5. After a brainstorming and healthy discussion, the department has decided to offer a certificate course on Digital and social media marketing for all the departments.

Thus the meeting came to an end with the cap of matters discussed today and a framework for related activities for the new academic year.

*Octavia Antony Sessammal*

Prof. C.F. Octovia Antony Sessammal, MBA, M.Phil, NET  
Head & Assistant Professor  
Department of Business Administration  
St. Joseph's College (Autonomous)  
Tiruchirappalli-620 002.

## DIGITAL MARKETING

Department	Business Administration associates with Inymart Institute of Digital Learning's, Trichy
Course Coordinator	Mr. D. Rinaldo De David
Offered to	Open to all
Target group	Intercollegiate
Course duration	45 hours
Total Credits	3
Teaching Mode	Hybrid
Course Fee	₹ 4000/-

### COURSE BENEFITS

- 6 International accredited certificates
- Campus interview
- Real time project practice
- 100% placement assistance
- Entrepreneurship opportunities
- Internship availability
- Final year project guidance
- Freelance job opportunities

### Unit I: Fundamentals of Digital Marketing

Benefit of Digital Marketing - Career opportunities in digital marketing - Comparison of Traditional and Digital Marketing - Digital Marketing platforms - Latest Digital Marketing trends.

### Unit II: Search Engine Optimisation (SEO)

Introduction to SEO: How do Search Engines Work? - Organic Search vs. Paid Search Results - Keyword Research. On-page & Off-page SEO: HTML basics - On-page SEO elements - Technical SEO - Link Building. SEO Audit, Tools, Measurement: SEO Audit - Algorithm updates - Measurement with Google Analytics. Search Engine Marketing: Introduction to Paid Marketing - Ad Formats & Ad Extensions - Ad Groups and Keywords setup/Ad Rank, Quality Score Optimisation - Bidding strategies & Conversion Tracking - Dynamic search campaigns; Re-marketing campaigns - Shopping campaigns; Types of Campaigns - Video Marketing.

### **Unit III: Social Media Marketing & Social Media Optimisation (SMO)**

Introduction to SMO: What is SMO? - Reasons for using social media - Benefits of SMO - Various social media platforms - Impact of using social media. Social Media Platforms: Facebook - Facebook fan page setup introduction- Facebook profile & cover photo creation - Edit information about page - Types of posts - Increase post engagements - Facebook Paid Advertisement - Post Boosting & Paid Facebook Campaign - Facebook to Instagram Campaign. Twitter: Benefits of Twitter - Twitter profile creation & customisation - Content & image using on Twitter - Increase followers - Using # (Hash) tag - Audience targeting - Bid strategies & Ad format. Instagram: Best Practices for setting up your Instagram Profile - Hashtags & Content strategy - How to gain more followers? - How to increase engagement on Instagram - Instagram features overview - Influencer Marketing. YouTube: Creating a channel - creating & uploading videos - Live streaming - adding links - Advertising & Ad types - Insights. LinkedIn: LinkedIn for business - Creating company profile - Following people - LinkedIn Ads.

### **Unit IV: Email Marketing**

What is Email Marketing? - Benefits of Email marketing - Types of campaigns - Effective Email contents - Choosing an Automation platform. Google Ad sense & Affiliate Marketing: Making money using Affiliate Marketing - Popular affiliate networks - Types of Affiliate Marketing - What is AdSense? Google My Business (GMB): How to setup GMB listing? - How to optimise SMB listing? - Got to boost the visibility of your GMB listing? - How to generate reviews for your listing?

### **Unit V: Internet of Things (IoT)**

What is IoT? - How IoT works? - How IoT change our daily life? - Role of an IoT in Digital Marketing. Artificial Intelligence (AI): What is AI? How AI is changing the future of Digital Marketing? - AI tools that will change the future of marketing. Block Chain: What is Block Chain? - Benefits of Block Chain - What does Block Chain mean for Digital Marketing? - What is Block Chain marketing? Digital Currencies: What is Digital Currency? - Types of Digital Currencies - Role of Crypto currencies in future. Digital Payments: How mobile payments shape Digital Marketing strategies? - How Payment Gateways works?

### **REFERENCES**

1. Seema, G. (2017). *Digital Marketing*. McGraw Hill.
2. Singh, B. (2017). *Fundamental of Digital Marketing*. Pearson Education.
3. Dodson, I. (2016). *The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted, and Measurable Online Campaigns*. Wiley.

4. Gary, V. (2018). *Crushing it! How Great Entrepreneurs Build their Business and Influence and How You Can Too*. Harper Business.

#### **METHOD OF EVALUATION**

Internal	Maximum Marks: 100	Passing Minimum: 40
External	Maximum Marks: 100	Passing Minimum: 40





# DEPARTMENT OF CHEMISTRY

## St. JOSEPH'S COLLEGE (Autonomous)

Accredited at A<sup>++</sup> Grade (Cycle IV) by NAAC Special Heritage Status awarded by UGC  
College with Potential for Excellence by UGC DBT-STAR & DST-FIST sponsored College

TIRUCHIRAPPALLI - 620 002.

Phone : 0431 - 4226390, 2700320, Fax : 0431 - 2701501

Website : [www.sjctni.edu](http://www.sjctni.edu)

### Minutes of the Board of Studies held on 25.04.2023

- ❖ The meeting started with a silent prayer.
- ❖ Dr. S. Joseph Selvaraj, Head of the Department, welcomed the External Experts,
  1. Dr. D. Saravanan, Associate Professor of Chemistry & Director of Instrumentation Centre, National College, Trichy,
  2. Dr. S. Thyagarajan, Product Manager, Metrohm India Private Limited, Chennai-67,and the faculty members of chemistry Department to the Board of studies meeting.

Dr. S. Joseph Selvaraj, briefed the agenda of the meeting

1. Approval of the two certificate courses (to get extra Credits)
2. Approval of the value-Added course
3. Revision of UG & PG Chemistry Syllabus

Dr. A.N. Paul Angelo Course Coordinator, presented the details of the Certificate course namely, **Memory Techniques**, syllabus, Evaluation pattern, Students enrollment and Course completion.

Dr. A. Leo Standly, Course Coordinator, presented the details of the Certificate course namely, **Environmental Science and Management**, Duration, Syllabus, Evaluation pattern, Students enrollment and Course completion.

Both the courses are approved by the external experts for **extra credits**.

Mr A. Ceril Jeoffrey, presented the course details of Value Added Course "Food Standards and Quality Control and it was approved by the forum.

Dr. S. Thyagarajan, suggested to include the Environmental Analysis unit based on Food, Soil and Water analysis in the certificate course, **Environmental Science and Management**.

Dr. D. Saravanan, Associate Professor of Chemistry, suggested to offer this course specially for science students by incorporating the unit the environmental analysis.





# DEPARTMENT OF CHEMISTRY

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Dr. S. Joseph Selvaraj, HoD, explained the internal components as follows

- ❖ C1- K1 & K2 (15 M)
- ❖ C2- K3 (10 M)
- ❖ C3-K4, K5, K6 (15 M)

Dr. S. Britto, presented the changes in organic chemistry -II in UG Chemistry and Organic Chemistry IV in PG chemistry and the changes are approved by the forum.



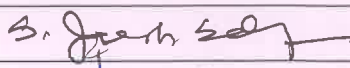

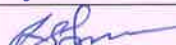



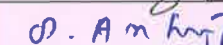

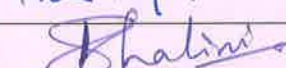
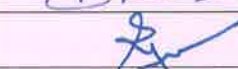

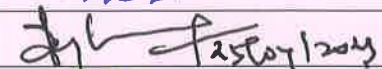

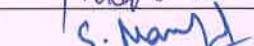


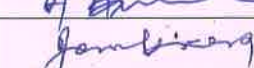
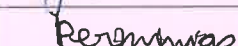
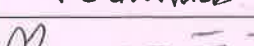


Dr. A.N. Paul Angelo thanked the external experts for their valuable presence and suggestions. With this meeting came to an end.

**Dr. S. Joseph Selvaraj**  
Head of the Department

### External Experts

1. Dr. D. Saravanan, Associate Professor of Chemistry &  
Director of Instrumentation Centre, National College, Trichy.

2. Dr. S. Thyagarajan, Product Manager,  
Metrohm India Private Limited, Chennai-67.

BOARD OF STUDIES MEETING HELD ON 25.04.2023		
DEPARTMENT OF CHEMISTRY		
St. JOSEPH'S COLLEGE(AUTONOMOUS) TIRUCHIRAPPALLI -620002		
S. No.	Name and address	Signature
1.	Dr. D.Saravanan, Associate Professor (S.S.), Department of Chemistry, National College (Autonomous), Tiruchirappalli – 620 001 (University Representative)	
2.	Dr. Karvembu, Professor, Dept. of Chemistry National Institute of Technology Tiruchirappalli. (Subject Expert)	
3.	Mr. Thyagarajan, Regional Manager, Metrohm India Pvt. Ltd, Metrohm – S.I Towers 31 & 3 Fourtis Avenue, Annai Indira Nagar, Thoraipakkam, Chennai 600 097.	
4.	Dr. S. Joseph Selvaraj	
5.	Dr. A. Paulraj	
6.	Dr. S. Dennis Arockiaraj	
7.	Dr. A.N. Paul Angelo	
8.	Dr. A. Rose Venis	
9.	Dr. A. Irudaya Jothi	 25/04/2023
10.	Dr. S. Antony Sakthi	
11.	Dr. A. Edwin Vasu	
12.	Dr. A.S. Stella Shalini	
13.	Dr. A. Simi	
14.	Dr. S. Britto	
15.	Mr. A. Ceril Jeoffrey	 25/04/2023
16.	<del>Mr. C. Rajarathinam</del>	
17.	Dr. S. Mangalaraj	
18.	Dr. A. Leo Standly	
19.	Dr. A. Arun Viveke	
20.	Dr. I. Arockiaraj	
21.	Rev. Dr. A. Sebastin Thangadurai SJ	
22.	Dr. A. Arun Joseph Rosario	
23.	Mr. P. Arockiadoss	
24.	Dr. A. Josephine Kanimozhi	

## ENVIRONMENTAL SCIENCE AND MANAGEMENT

Department	Chemistry
Course Coordinators	Dr. A. Leo Standly Dr. D. Antony Sakthi
Offered to	Students of both Undergraduate and Postgraduate
Target group	Students of St. Joseph's College
Course duration	45 hours
Total Credits	3
Teaching Mode	Hybrid
Course Fee	₹ 100/-

### COURSE OVERVIEW

- To ensure understanding the significance of environment in which we live
- To ensure imparting knowledge on the recent issues associated with environment
- To ensure educating the youth the causes and consequences of various types of pollution
- To ensure sensitising the youth the increasing threats to nature and the miseries mankind faces
- To ensure the limitation of the available natural resources and the need to sustain them

#### Unit I: Fundamentals of Environmental Sciences

Multidisciplinary nature of environmental studies - scope and importance, need for public awareness.

#### Unit II: Ecosystems

Concept of ecosystem - structure and function, food chain, food web and ecological pyramids - Energy flow in the ecosystem - ecological succession.

#### Unit III: Energy and Environment

Introduction to energy - Energy and power - forms of energy - primary energy sources.

#### Unit IV: Environmental Pollution and Control

Definition, cause, effects and control measure pollution - air, water, soil, marine, noise, thermal and nuclear - Environmental pollution and diseases - role of individual in prevention of pollution.

#### Unit V: Solid Waste Management

Definition, sources, classification, collection and segregation - causes and effects.

## REFERENCES

1. Rao, M. N., Razia, S., and Kota, S. H. (2016). *Solid and Hazardous Waste Management*. Butterworth-Heinemann.
2. Rao, M. N., and Rao, H. V. N. (2007). *Air Pollution*. Tata McGraw-Hill.
3. Robert, A. R., Jack, J. K., and Jeffrey, T. B. (2016). *Energy and the Environment* (3rd Ed.). John Wiley & Sons.
4. Sprio, T. G., and Stigliani, W. M. (1996). *Chemistry of Environment*. Prentice Hall, NJ.

## METHOD OF EVALUATION

Internal	Maximum Marks: 100	Passing Minimum: 40
Field visit: 15 marks	Assignment: 15 marks	MCQ: 70 marks

## MEMORY TECHNIQUES

Department	Chemistry
Course Coordinators	Dr. A. N. Paul Angelo
Offered to	Students of both Undergraduate and Postgraduate
Target group	Intercollegiate
Course duration	45 hours (Theory: 30/Practical: 15)
Total Credits	3
Teaching Mode	Hybrid

### COURSE OVERVIEW

- Helps students to memorise lists, numbers, dates, foreign languages, people's names etc.
- Acquire trained memory, sharpened IQ, and enhanced confidence

#### Unit I: Memory Assessment

Brain, functioning of left and right hemispheres of brain - Good and bad memory - factors affecting the retention of memory - Removing the fear of numbers - Self-assessment test to assess the entry level of one's memory.

#### Unit II: Concentration

Factors affecting concentration: Distractions - improving concentration skills.

#### Unit III: Memory Techniques -1

The link system and method of LOCI - How to memorise and recall short and long list of items?

#### Unit IV: Memory Techniques - 2

TEG system and major system of memory - How to memorise anything and everything.

#### Unit V: Application of Memory Techniques

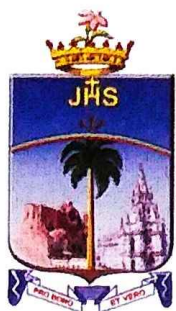
Creating Acronym, creating Acrostics, remembering people, historical dates, countries and capitals - Recalling long numbers.

### REFERENCES

1. Harry, L. (2000). *How to Develop a Super Power Memory*. Frederick Fell Publishers. Inc.
2. Kevin, T. (1995). *How to Release Your Super Power Memory in 30 Minutes or Less a Day*. Quill William Marrow.
3. Kristy, C. (2015). *Memory Techniques*. Kristy Clark.

## **METHOD OF EVALUATION**

Internal	Maximum Marks: 100	Passing Minimum: 50
Short answers: 50	Descriptive answers: 50	Total: 100



# DEPARTMENT OF COMMERCE

## St. JOSEPH'S COLLEGE (Autonomous)

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TIRUCHIRAPPALLI - 620 002

Phone : 0431 - 4226391, 2700320, Fax : 0431 - 2701501

Website : www.sjctni.edu

### MINUTES OF THE BOARD OF STUDIES MEETING HELD ON 21.07.2023

#### **Agenda:**

1. Approval of Course Contents of B.Com and M.Com Programmes pertaining to the First Semester
2. Approval of Certificate Courses and Value Added Course offered by the Commerce Department
3. Any other matters

#### **The following are the discussions made during the Board of Studies Meeting:**

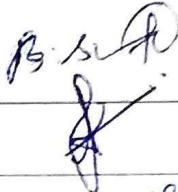

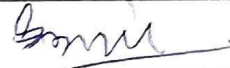


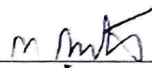


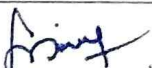

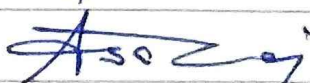
1. The Board of Studies Meeting began with a silent prayer followed by Dr. F.R. Alexander Pravin Durai, Head, Department of Commerce and Commerce Honours welcoming the members of the Board. The HoD also shared his views about the reforms in the curriculum of Higher Education focusing the actions essential to supplement the existing fluid situation.
2. Then the Course Pattern and Course Contents pertaining to Semester I of B.Com, M.com B.Com Honours were presented which were eventually approved unanimously by the Board after discussions.
3. The Board suggested a few changes in Text Books and its year of editions which will be incorporated in the final draft of the Syllabus
4. The Board also gave approval to continue with the Value Added Courses entitled "Financial Modelling through Excel" and "Basics of GST, TCS and TDS approved in the previous Board of studies.
5. It was also decided in the BoS to approve the Certificate Course entitled "Mass Media and Business Development"
6. The board decided to follow the existing pattern for quantitative courses and the new pattern prescribed by the College for all theory courses
7. Following all the deliberations, the HoD thanked the members for actively taking part in the discussions and then the meeting came to an end.

Head of the Department  
**Dr. F. R. ALEXANDER PRAVIN DURAI**  
M.Com., MBA., M.Phil., Ph.D.,  
Head & Associate Professor  
Department of Commerce  
St. Joseph's College (Autonomous)  
Tiruchirappalli - 620 002.



**BOARD OF STUDIES MEETING HELD ON 21.07.2023**

**DEPARTMENT OF COMMERCE  
St. JOSEPH'S COLLEGE(AUTONOMOUS)  
TIRUCHIRAPPALLI -620002**

S. No.	Name and address	Signature
1.	Dr.V.Pugazhenthii, Associate Professor, Department of Commerce, Rajah Serfoji Government College (Autonomous), Thanjavur (University Representative)	
2.	Dr. D. Raja Jebasingh Associate Professor & Vice Principal (S-II), St. Joseph's College of Commerce (Autonomous), 163, Brigade Road, Bengaluru – 560 025, Karnataka. (Subject Expert)	
3.	Mr. Sharanath Balaji, Managing Director, BG Naidu Sweets, Trichy.	
4.	Dr. F.R. Alexander Pravin Durai	
5.	Dr. K. Alex	
6.	Dr. G. John	
7.	Mr. D. Maria Antony	
8.	Dr. V. Bastin Jerome	
9.	Dr. M. Antony Jesuraja	
10.	Dr. A. Francis Vijayakumar	
11.	Rev.Fr. M. Berchmans, SJ	
12.	Dr. M. Julias Ceasar	
13.	Dr. Arockia Rajasekar	
14.	Dr. S. Aruldass	
15.	Dr. A. Sahayaraj Alexander	



16.	Dr. L. Georgia	L. Georgia
17.	Mr. S. Kirubakaran	S. Kirubakaran
18.	Dr. B. Augustine Arockiaraj	B. Augustine Arockiaraj
19.	Dr. Dennis Edward Fernando	Dennis Edward Fernando
20.	Dr. S. Jerome	S. Jerome
21.	Dr. J. Vinoth Kumar	J. Vinoth Kumar
22.	Ms. B. Nalini	B. Nalini
23.	Ms. C. Soundarya	C. Soundarya
24.	Dr. A. Igantius	A. Igantius
25.	Dr. J. Berkman	J. Berkman
26.	Dr. A. Mariya Selvi	A. Mariya Selvi
27.	Mr. V. Perumal	V. Perumal
28.	MS. A. SARLIN VENOTHA	A. Sarlin Venotha
29.	MARY MAGDALENE	Mary Magdalene
30.	Ms. CAMILTON J	Camilton J
31.	Mr. G. PRABHAKARAN	G. Prabhakaran

## MASS MEDIA AND BUSINESS DEVELOPMENT

Department	Commerce
Course Coordinators	Dr. V. Bastin Jerome Dr. S. Aruldass
Offered to	Students of both Undergraduate and Postgraduate
Target group	Interdepartmental
Course duration	45 hours (Theory: 25/Practical: 20)
Total Credits	3
Teaching Mode	Hybrid
Course Fee	₹ 900/-

### COURSE OVERVIEW

- Exposure to basics of photography, shots, framing and compositing
- Provides students with an extensive understanding of the visual and technical skills required to question and reflect on visual languages
- Helps the students to develop an individual photographic attitude and helps them gain in-depth information on film and motion design, illustration, game design, communications design and photography
- Helps learn the nuances of using photoshop to enhance the photos, create designs and use the tools in the software to actualise the creative ideas into reality
- Prepares the students with the basic knowledge of visual medium for their careers in advertising agencies, press and media, print publications, TV channels, E-magazines, production houses, etc.

#### Unit I: The Evolution of Photography

This module covers the history of photography, where it began, how it started and gained popularity, its impact on the World etc. Basics of Digital Photography: This course covers a range of topics, including how the camera works, shutter speed, understanding histograms, depth of field, white balance, long/short exposure, soft focus and time-lapse photography. It also provides extensive knowledge about all types of camera lenses.

#### Unit II: Applications of Portrait Photography

This module aims at perfecting student's individual or group portrait photography, using adequate lighting, effective backdrops and perfect poses. Conceptual Photography: This subject deals with

contemporary art in which images are primarily conceptual. In this type of photography, the subject matter is secondary to the idea behind the photo.

### **Unit III: On-location Photography**

On-location photography is an on-location photo shot that could be anywhere but outside the studio. It teaches how to make the most of photos, be it any location such as a house, hospital, party venue, etc.

### **Unit IV: Sports Photography**

This module educates students on taking perfect pictures of a sportsperson in action. It also briefs on how to click detailed shots, and story-telling images of the game or event. Vision Inspired Photography: How to capture the true essence of what is right in front of us? This is what the subject informs on. While living in a fast-paced world, it is essential to know the tactics of capturing the mood and ambience in images, to tell a story.

### **Unit V: Natural Light Portraits**

This subject briefs on simple ideas that facilitate image composition and posing and allow the conversion of an ordinary image into a remarkable one. Application Areas of Photography: Students are taught the true essence of application areas of photography. Once they start this module, this enables students to familiarise themselves.

## **REFERENCES**

1. Ian Farrell. (2015). *The Complete Guide to Digital Photography*. Quercus.
2. Michael Langford. (1995). *Complete Encyclopaedia of Photography*. Ebury Press.
3. Jack Taylor. (1985). *Colour Printing in Practice*. David & Charles.
4. Tom Ang. (2012). *Digital Photographer's Handbook*. (5th Ed.). Dorling Kindersley.

## **METHOD OF EVALUATION**

Internal	Maximum Marks: 100	Passing Minimum: 40
Theory: 40 marks	Practical: 60 marks	
Two tests: 20 marks each	Three tests: 20 marks each	Total: 100
External	Maximum Marks: 100	Passing Minimum: 40
Theory: 40 marks	Practical: 60 marks	
Two tests: 20 marks each	Three tests: 20 marks each	Total: 100

## **DEPARTMENT OF ECONOMICS**

### **BOARD OF STUDIES MEETING HELD ON 25.04.2023**

The Board of Studies Meeting was held on 25<sup>th</sup> April 2023, Tuesday at 11.30 am in the Department of Economics with the following agenda:

1. Any corrections in the content of the courses of 2021 UG & PG syllabus.
2. Introduce and get the approval of at least one Value added / Certificate / Extra credit course, that can be offered in the year 2023 – 2024.
3. Mark distribution of three components for 40 marks in CIA. (K-Levels)
4. Provide names of two subject experts (external experts) for BoS for the period 2024 – 27 from other University Jurisdiction.

The following are the members of the Board of Studies in Economics:

1. Dr. N. Prasanna, Associate Professor, Department of Economics, Bharathidasan University, Tiruchirappalli - 620024. (University Representative)
2. Dr. S. Theenathayalan, Associate Professor & Head, Department of Economics, The Madura College (Autonomous), Madurai – 625011. (Subject Expert)
3. Mr. Niranchan, Proprietor, Gramiyam Super Market, Foods & Silks, Venkatachalapuram, Thuraiyur, Trichy – 621011. (Industrial Expert)
4. Dr. G. Iruthayaraj, Head, Department of Economics, St. Joseph's College (Autonomous), Trichy.
5. Faculty members, Department of Economics, St. Joseph's College (Autonomous), Trichy

The Meeting started with a silent prayer and Dr. G. Iruthayaraj, Head of the Department, addressed the staff members regarding the main agenda of this meeting.

The meeting started with the discussions on corrections in the revised syllabi of 2021 for both UG and PG. Certain corrections were carried out in UG papers such as Microeconomics-I (21UEC13CC01) and Self Paced Learning: Principles of Political Economy (21UEC53SP01) course after detailed discussion among the staff members.

Corrections were made in the following courses.

1. Semester I, Microeconomics-I (21UEC13CC01). In the Unit – V, Average Revenue and Marginal Revenue curves under different Market Structures it is decided to remove “under different Market Structures”.
2. Semester V, Self Paced Learning: Principles of Political Economy (21UEC53SP01). In the Unit-III, The Buyers Side of the Marketm, ‘m’ should be removed in the Marketm.

Regarding the second agenda, the syllabus for Value added course and Certificate course were displayed and it was decided by the Board to continue the same courses for the academic year 2023 –2024.

- Value added course title: Indian Economy and Polity for Competitive Exams
- Certificate course title: General Studies for Competitive Examinations (22ECEC01)

The certificate course was also ratified and approved by the BoS members.

Regarding mark distribution of three components for 40 marks in CIA, it was discussed and all the staff members decided to accept the pattern provided by the College which is as follows:


Component	Component – 1	Component – 2	Component – 3
K – levels	K1, K2	K3	K4, K5, K6 (Depends on K-level of the course)
Mark allotment	15	10	15

The Head of the Department Dr. G. Iruthayaraj requested the staff members to suggest names of subject experts and after due deliberations, the following names were suggested:

1. **Dr. K. Jayaraman**, Associate Professor and Head, Dept. of Economics, Periyar University, Salem – 636 011.
2. **Dr. TharcisAlbin**, Associate Professor, Dept. of Economics, St. Xavier’s College (Autonomous), Palayamkottai, Tirunelveli 627 002.



All the faculty members of the Department of Economics attended the meeting except the external members due to last signing day and BoS meeting in their respective College and University. The meeting came to an end at 1.00 pm.

  
**Dr. G. IRUTHAYARAJ**  
ASSOCIATE PROFESSOR & HEAD  
DEPARTMENT OF ECONOMICS  
ST. JOSEPH'S COLLEGE (AUTONOMOUS)  
TIRUCHIRAPPALLI - 620 002.

BOARD OF STUDIES MEETING HELD ON 25.04.2023		
DEPARTMENT OF ECONOMICS St. JOSEPH'S COLLEGE(AUTONOMOUS) TIRUCHIRAPPALLI -620002		
S. No.	Name and address	Signature
1.	Dr. N. Prasanna Associate Professor Department of Economics Bharathidasan University, Tiruchirappalli – 620 024. (University Representative)	ABSENT
2.	Dr. S. Thennathayalan Associate Professor & Head Dept. of Economics The Madura College (Autonomous), Madurai – 625 011. (Subject Expert)	ABSENT
3.	Mr. Niranchan Proprietor, Gramiyam Super Market, Foods & Silks, Venkatachalapuram, Thuraiyur, Trichy – 621 011.	ABSENT
4.	Dr. G. Iruthayaraj	L. Venth
5.	Dr. M. Suvakkin	M. Suvakkin
6.	Dr. A. Justin Thiraviam	A. J. Thiraviam
7.	Dr. K.A. Michael	K. A. Michael
8.	Dr. S.P. Robert	S. P. Robert
9.	Dr. J. Vasantha Arockiaselvi	J. Vasantha Arockiaselvi
10.	Ms. P. Prarthna	P. Prarthna
11.	Dr. R. Ganesasubramanian	R. Ganesasubramanian
12.	Dr. P. Jayakumar	P. Jayakumar
13.	Ms. J. Jayashree Naiken	J. Jayashree Naiken

## GENERAL STUDIES FOR COMPETITIVE EXAMINATIONS

Department	Economics
Course Coordinator	Dr. J. Vasantha Arockiaselvi Ms. P. Prarthna
Offered to	Students of both undergraduate and postgraduate
Target group	Interdepartmental
Course duration	45 hours (Theory)
Total Credits	3
Teaching Mode	Hybrid
Course Fee	₹ 300/-

### COURSE OVERVIEW

- Introduces the students to basic concepts of social sciences and provides skills required for quantitative aptitude
- Helps in preparation of competitive examinations
- Focuses on current affairs and Indian economy

#### Unit I: Current Events

History - Latest diary of events - Nation's symbols - profile of states - eminent personalities and places in news - sports - books and authors. Polity - political parties and political system in India - public awareness and general administration - welfare oriented Government schemes and their utility, problems in public delivery system. Geography - Geographical landmarks. Economics - current socio-economic issues. Science - latest inventions in Science and Technology. Prominent personalities in various spheres - Arts, Science, Literature and Philosophy.

#### Unit II: Indian History, Culture and National Movement

Indus Valley Civilisation - Guptas, Delhi Sultans, Mughals and Marathas - Age of Vijayanagaram and Bahmani Kingdom - South Indian History. Change and continuity in the Socio-cultural History of India. Characteristics of Indian culture, Unity in diversity - Race, Language, Custom. India as a secular state, social harmony. National Renaissance - Early uprising against British rule - Indian National Congress - Emergence of Leaders - B.R. Ambedkar, Bhagat Singh, Bharathiar, V.O. Chidambaranar, Periyar, Rajaji, Subash Chandra Bose, Rabindranath Tagore and others. Different modes of Agitation - Growth of Satyagraha and Militant Movements. Communalism and Partition.



### Unit III: Indian Economy

Nature of Indian Economy - Five-year plan models - an assessment - Planning Commission and Niti Ayog. Sources of Revenue - Reserve Bank of India - fiscal Policy and Monetary Policy - Finance Commission - Resource sharing between Union and State Governments - Goods and Services Tax. Structure of Indian Economy and Employment Generation, Land Reforms and Agriculture - Application of Science and Technology in Agriculture - Industrial growth - Rural Welfare Oriented Programmes - Social Problems - Population, Education, Health, Employment, and poverty.

### Unit IV: Indian Polity

Constitution of India - Preamble to the constitution - Salient features of the Constitution Union, State and Union Territory. Citizenship, Fundamental Rights, Fundamental Duties, Directive Principles of State Policy. Union Executive, Union Legislature - State Executive, Local governments, Panchayat Raj. Spirit of Federalism: Centre - State Relationships. Election - Judiciary in India - Rule of Law. Corruption in Public Life - Anti-corruption measures - Lokpal and Lok Ayukta - Right to Information - Empowerment of Women - Consumer Protection Forums, Human Rights Charter.

### Unit V: Aptitude and Mental Ability

Simplification - Percentage - Highest Common Factor - Lowest Common Multiple - Ratio and Proportion - Simple interest - Compound interest - Area - Volume - Time and Work. Logical Reasoning - puzzles - dice - visual reasoning - Alpha numeric reasoning - number series.

### REFERENCES

1. Agarwal, R. S. (2017). *Quantitative Aptitude for Competitive Examinations*. S. Chand Publication.
2. Rakish, D. (2018). *General Studies in 60 Days*. McGraw Hill Publications.
3. Economic Survey - Recent Edition
4. Newspapers
5. Economics and Political Weekly
6. Books on Ancient History and Modern History

NCERT books

### METHOD OF EVALUATION

Internal	Maximum Marks: 50	Passing Minimum: 40%
Assignment: 10 marks	Group discussion: 15 marks	MCQ: 25 marks
External	Maximum Marks: 50	Passing Minimum: 40%
MCQ: 30 marks	Test: 20 marks	Total: 50 marks



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### Minutes of the Board of Studies Meeting

Venue: Fr. Sequeira Hall

Date: 25-04-2023

The meeting began with a short silent prayer at 11.30 am. Dr. V. L. Jayapaul, Head of the Department, department of English welcomed all the professors of both shift I and II for the Board of Studies meeting.

- Agenda:**
1. Discussion and corrections on 2021 UG & PG syllabus
  2. Approval of 3 credits for all the certificate courses offered by the department
  3. Discussion on the syllabus of the TANSCHCE Certificate Courses

First, the 2021 UG & PG syllabus was displayed on the screen and suggestions were asked for ratification. Following are the details:

Course Title and Course Code	Suggestions
Jacobean and Restoration Literature (21UEN23CC03)	<b>Unit 3</b> – Instead of the whole book <i>The Anatomy of Melancholy</i> , Section-II: Causes of Melancholy is prescribed. <b>Unit 3</b> – Mention specific chapters in <i>An Essay Concerning Human Understanding</i> was the suggestion. Therefore Book II: Chapter II (Of Simple Ideas) & Chapter III (Of Simple Ideas of Sense) are included.
Victorian Literature (21UEN43CC07)	<b>Unit 5</b> - Thomas Hardy's <i>A Pair of Blue Eyes</i> can be removed.
Twentieth Century Literature (21UEN43CC08)	George Orwell "Politics and the English Language" can be removed.
Children's Literature (21UEN43AO4B)	Arthur Ryder: Panchatantra (First 10 tales) instead of 40 tales.
English Language Teaching Theory And Practice (21UEN63ES4A)	<b>Unit 1</b> – Instead of The Reform Movement, Language Centered Methodologies could be replaced.
British Literature - II (1660-1798) (21PEN2CC04)	<b>Unit 3 &amp; 4</b> – Serial numbers to be corrected. <b>Unit 3</b> – "Letter XXV" can be removed.
American Literature (21PEN2CC05)	<b>Unit 1</b> - Replace "When Lilacs Last in the Dooryard Bloom'd" with some other Walt Whitman's short poem. <b>Unit 5</b> – Remove Alice Walker's <i>The Color Purple</i> and

	Paul Beatty's <i>The Sellout</i> .
English Language Teaching In Practice (21PEN2ES02)	<b>Unit 3</b> - Teaching reading skills from 4 <sup>th</sup> Unit replaces Teaching speaking skills and vice versa. Evaluation method for this paper: 1 <sup>st</sup> Component – 20 2 <sup>nd</sup> Component – 20 Mid Semester – 60 End Semester – 60 Semester Examination (fully Practical) - 100
British Literature -IV (1914 – to the present) (21PEN4CC10)	<b>Unit 5</b> - James Joyce's <i>Ulysses</i> & Zadie Smith's <i>NW</i> can be removed.
Contemporary World Literature (21PEN4CC12)	<b>Unit 5</b> - <i>A Thousand Splendid Suns</i> can be replaced with <i>The Kite Runner</i> .
British Literature-I (1340-1660) (21PEN1CC01)	<b>Unit 1</b> - "The Nun's Priest' Tale" (From <i>The Canterbury Tales</i> ) can be replaced with lines 1-78 from <i>Prologue to Canterbury Tales</i> . <b>Unit 4</b> – "Of Love" and "Of Envy" can be removed.
Gender Studies (21PEN3CC09)	<b>Unit 2</b> - Dale Spender's <i>Man Made Language</i> can be removed. <b>Unit 3</b> – Specific topics should be given for "We Real Cool: Black Men and Masculinity". <b>Unit 5</b> – Shyam Selvadurai's <i>Funny Boy</i> can be removed.

Secondly, After the 2021 syllabus discussion, the certificate courses offered by the Department were displayed and the house approved all the 5 certificates courses and 3 credits for each certificate course were also approved. The Certificate Courses are:

1. Spoken English
2. English Literature for Competitive Examinations (NET/SET)
3. English for Business Memes
4. Content Writing
5. Literature of the Artificial Intelligence

Thirdly, The Head of the Department read the TANSCHS syllabus. The house decided that later if needed, the department can take up the TANSCHS Syllabus.

Finally, The Head of the department thanked all the faculty members for attending the meeting. He also thanked Dr. D. E. Benet, Assistant Professor, Department of English, National College, Trichy, Dr. Johnsekar, Associate Professor & Head, Department of English, American College, Madurai, and Mr. W. Jesuraj, Proprietor, American Pharma and Science, Trichy in their absentia.

The meeting was over by 12.30 pm.

  
**Dr. V.L. JAYAPPAUL**, M.A., B.Ed., M.Phil., Ph.D., MPA,  
 Head & Assistant Professor  
 PG & Research Department of English  
 St. Joseph's College (Autonomous)  
 Tiruchirappalli-620 002.



## ENGLISH FOR COMPETITIVE EXAMINATIONS

Department	English
Course Coordinator	Dr. V. L. Jayapaul
Offered to	Students of postgraduate
Target group	Interdepartmental
Course duration	45 hours (Theory: 40; Practical: 5)
Total Credits	3
Teaching Mode	Hybrid
Course Fee	₹ 500/-

### COURSE OVERVIEW

- This is an essential course to English Literature students which everyone ought to complete
- The students will understand the origin of History of English Literature and various writers in different ages
- The students will be able to comprehend the different genres and value of each period in detail
- This course will be helpful to understand the Socio, Cultural and Political background of English Literature
- This course is to define the History of English Literature and characteristics of each age

#### Unit I: Age of Chaucer

Chaucer, William Langland, Gower, Scottish Chaucerian, English Chaucerian, Translators of the Bible. Literary Devices: Heroic Couplet, Rhyme Royal, Ottava Rima, Terza Rima, Alliterative verse.

#### Unit II: Age of Spenser

Edmund Spenser, Sir Philip Sydney, Thomas Wyatt, Earl of Surrey, William Caxton, Sir Thomas Malory and Thomas More. Literary Devices: Italian Sonnet, English Sonnet, Mystery Play, Morality play, Miracle play, Interlude, Epic, Spenserian Stanza.

#### Unit III: Age of Shakespeare

University Wits, Shakespeare, Ben Jonson, Thomas Dekker, Thomas Middleton, John Webster, Philip Massinger, John Ford. Beaumont & Fletcher, Sons of Ben, Tribes of Ben and Bacon & his essays. Literary Devices: Tragedy, Comedy, Tragic-Comedy, Comedy of Humours and Terms associated with Tragedy.

#### **Unit IV: Age of Milton**

Metaphysical Poets, Cavalier Poets, John Milton, Thomas Browne, Thomas Hobbes, Thomas Fuller and Jeremy Taylor. Literary Devices: Conceit, Simile, Metaphor, Paradox, Wit, Pun, Irony, Metonymy and Synecdoche.

#### **Unit V: Age of Dryden**

Dryden, Samuel Butler, John Bunyan, John Evelyn, Samuel Pepys, John Locke and David Hume. Literary Devices: Heroic drama, Allegory, Allusion, Satire and Comedy of Manners.

#### **REFERENCES**

1. Hudson, William Henry. (1961). *An outline history of English Literature*. New, vol. London.
2. Carter, Ronald and John McRae. (2017). *The Routledge History of English Literature*. 4th ed. London.
3. Albert, Edward. (1979). *History of English Literature*. 5th ed. London. Oxford, University press.
4. Daiches, David. (1994). *A Critical History of English literature*. 2nd ed. Mandrian. 1994.
5. Prasad, Birjardish. *A Background to the study of English Literature*. 3rd ed. Trinity.
6. Abrams. M.H. and Harpham. Geoffrey Galt. (2015). *A Glossary of Literary Terms* (11th ed.).

#### **METHOD OF EVALUATION**

Internal	Maximum Marks: 250	Passing Minimum: 125
Theory	5 tests (50 x 5 = 250 marks)	
External	Maximum Marks: 100	Passing Minimum: 50
Theory	100 marks	

## SPOKEN ENGLISH

Department	English
Course Coordinator	Dr. V. L. Jayapaul
Offered to	Students of undergraduate
Target group	Interdepartmental
Course duration	45 hours (Theory: 30; Practical: 15)
Total Credits	3
Teaching Mode	Hybrid
Course Fee	₹ 300/-

### COURSE OVERVIEW

- This course will provide space to the students to speak in English fluently without fear and hesitation
- This course will make the learners to pronounce the words in English correctly
- This course will helpful to the students to learn the English grammar
- Use of new vocabularies will be focused
- This course provides speaking opportunities to the students

#### Unit I

Listening to self introduction - Self introduction - Habitual Action - My role model - Speaking practice.

#### Unit II

Listening to the description of Indian festivals - Describing objects or people - Describing an image or a picture or a photo - Indian festivals - Speaking practice.

#### Unit III

Listening to a story & movie review - Developing a story from hints & images - My past experience - Reviewing a movie - Speaking Practice

#### Unit IV

Listening to conversations and interviews - Conversations between friends in various situations - Group Discussion - Interviews - Speaking Practice

#### Unit V

Listening to TED Talks - My ambition in life - Role play on Moral stories - Speaking Practice.

## METHOD OF EVALUATION

Internal	Maximum Marks: 50	Passing Minimum: 20
Practical	$15 + 10 + 15 + 10 = 50$	
External	Maximum Marks: 50	Passing Minimum: 20
Practical	$15 + 10 + 15 + 10 = 50$	

## LITERATURE OF THE ARTIFICIAL INTELLIGENCE

Department	English
Course Coordinator	Mr. D. Prasanth Arokia Samy
Offered to	Students of undergraduate and postgraduate
Target group	Intercollegiate
Course duration	45 hours (Theory: 40; Practical: 5)
Total Credits	3
Teaching Mode	Hybrid
Course Fee	₹ 300/-

### COURSE OVERVIEW

- In this course, the students will be given basic introduction to the long history of literature compose with, for, and by machines
- Attempts to provide the interactions between Artificial Intelligence and Literature, noting the ways machine intelligence participates in the generation and comprehension of narrative
- The course will conclude at the present moment, with an exploration of machine learning techniques of the sort used by Siri, Alexa and other contemporary chat bots/Apps
- To accept the value of blended learning in contemporary times
- The course opens ways for futuristic Research oriented ideas to the students in Higher Studies

#### Unit I: Artificial Intelligence

History of Artificial Intelligence - the foundation of Artificial Intelligence - Evolution of Artificial Intelligence devices - Big Data and Algorithm.

#### Unit II: Literature

The state of Literature in contemporary time - Science fiction - Cybernetics and Robotics - *Frankenstein* - *Mary Shelley*.

#### Unit III: Novel, Film script and Short Film

*Dinner Depression* - Julia Raffel - *Sunspring* - *The Crow*.

#### Unit IV: Philosophical and Literary Foundation

The Death of the Author - Synthetic Text - Sentient Analysis - The Ethics and Risks of Developing Artificial Intelligence.

#### Unit V: Natural Language Processing

The theory of Learning - Machine Learning - Artificial Neural Networks.



## REFERENCES

1. Mahone, Hudy. *Bitches of the point*. ISBN-13: 9781791530433. In Print.
2. Rich, Elaine. (2017) *Artificial Intelligence*. 3rd Ed. McGraw Hill Education.
3. <https://www.youtube.com/watch?v=LY7x2Ihqjmc>
4. <https://www.youtube.com/watch?v=5dvsY6vXHsA>

## METHOD OF EVALUATION

Internal	Maximum Marks: 50	Passing Minimum: 20
Theory	Assignment - 15 marks	MCQ: 15 marks
Practical	20 marks	
External	Maximum Marks: 50	Passing Minimum: 20
Theory	Online written test for 50 marks (no practical)	

## CONTENT WRITING

Department	English
Course Coordinator	Dr. D. Loyola Innaci Mr. K. M. Vargeesh
Offered to	Students of undergraduate and postgraduate
Target group	Interdepartmental
Course duration	45 hours (Theory: 30; Practical: 15)
Total Credits	3
Teaching Mode	Hybrid
Course Fee	₹ 300/-

## COURSE OVERVIEW

- Students will be able to equip with the demands of the digital World
- Skill to translate thought into words
- Gain advanced Research skills that enable to write any topic
- Skill to identify the target audience

### Unit I: Basics of Content writing

The Concept of Content Writing and its relevance - Role and Functions of Content Writers - Scope and Types of Content Writing - Creative vs Technical Writing - Readability vs Searchability.

### Unit II: Writing Process

Advanced Online Research - Internet through Google - Editing and Proof Reading - Online Editing Tools - Google Keyword Planner.

### Unit III: Creative Writing

Understanding the basics of social media - Plagiarism - Copy Writing - Content Strategy - Challenges.

### Unit IV: Print and Web Content Writing

SEO Writing - Blog - Social Media - E- Book Writing - Resume Writing.

### Unit-V Practical

Hands-on Training and Practice.

## REFERENCES

1. Feldar, Lynda. Writing for the Web: Creating Compelling Web Content Using Words, Pictures, and Sound. New Riders, CA, USA. ISBN-13: 978-0321794437, ISBN-10: 9780321794437

2. Redish, J. (2021). *Letting Go of The Words: Writing Web Content That Works*. Morgan Kaufmann. ISBN: 0123859301.
3. Robinson, J. (2020). *Content Writing Step-by-step*. Amazon digital services LLC--KDP print US, 2020. ISBN: 9798603871929
4. Web Resources:
5. <https://www.entrepreneur.com/article/247908>
6. <https://www.locationrebel.com/b2b-writing/>
7. <https://wordpress.com/support/prevent-content-theft/>
8. [https://blog.unisquareconcepts.com/content-writing/what-is-plagiarism-why-is-itimportant-](https://blog.unisquareconcepts.com/content-writing/what-is-plagiarism-why-is-it-important-for-blog-writing/)
9. [for-blog-writing/](https://blog.unisquareconcepts.com/content-writing/what-is-plagiarism-why-is-itimportant-for-blog-writing/)
10. <https://www.mindler.com/blog/how-to-become-a-content-writer-in-india/>
11. <https://www.clearvoice.com/blog/10-types-content-writers-use/>
12. [https://study.com/articles/What\\_is\\_a\\_Content\\_Writer.html](https://study.com/articles/What_is_a_Content_Writer.html)

#### **METHOD OF EVALUATION**

Internal	Maximum Marks: 50	Passing Minimum: 25
Practical	50 marks	
External	Maximum Marks: 50	Passing Minimum: 25
Practical	50 marks	

## ENGLISH FOR BUSINESS MEMES

Department	English
Course Coordinator	Dr. V. L. Jayapaul Dr. J. John Love Joy
Offered to	Students of undergraduate and postgraduate
Target group	Intercollegiate
Course duration	45 hours (Theory: 20; Practical: 25)
Total Credits	3
Teaching Mode	Hybrid
Course Fee	₹ 100/-

### COURSE OVERVIEW

- To appraise the potential of memes
- To understand content writing and copywriting
- To create memes for business contexts

#### Unit I: Understanding Memes

A brief History of Memes - The Life Cycle of a Meme - the Structure of Memes - Types of Memes - Humour in Memes.

#### Unit II: What's in a Meme?

Meme Contexts - Meme layouts - The Discourse of Memes - Figurative Language in Memes - Meme and Language Sensitivity.

#### Unit III: Social Media Platforms for Memes

Hashtags - Do's and Don'ts - Meme Platforms on Social Media - Meme Strategies for Social Media Platforms - Writing Varieties for Social Media Platforms - Copywriting techniques for Social Media.

#### Unit IV: Meme Market Analysis

Unique Selling Proposition - Social Media Market - Demographic Study: The Millennial Generation - Themes and Seasons on the Social Media Market - Meme Stock Characters and Brand Endorsements.

#### Unit V: Meme Creation

Websites for Meme Creation - Designing Meme Campaigns - Techniques for Drafting Business Memes - Meme Scrutiny: Checklist and Criteria - Field-testing the Meme.

## REFERENCES:

1. Brodie, Richard. (2009). *Virus of the Mind: The New Science of the Meme*. Hay House.
2. Shifman, L. (2013). *Memes in digital culture*. MIT Press.
3. Sugarman, J. (2007). *The Adweek copywriting handbook: The ultimate guide to writing powerful advertising and marketing copy from one of America's top copywriters*. J. Wiley.
4. Wiggins, B. (2020). *Discursive posers of memes in digital culture: Ideology, semiotics, and intertextuality*. Routledge.
5. Zappavigna, Michele. (2012). *Discourse of Twitter and social media: How we use language to create affiliation on the web*. Continuum International.

### Web Resources:

1. Blatchford, E. (2020, October 9). *There are nine different types of humour. Which one are you?* HuffPost. Retrieved January 18, 2023 from [https://www.huffpost.com/there\\_are\\_nine\\_different\\_types\\_of\\_humour\\_which-one-are-you\\_n\\_61087612e4b0999d2084fbd7](https://www.huffpost.com/there_are_nine_different_types_of_humour_which-one-are-you_n_61087612e4b0999d2084fbd7)
2. *A comprehensive guide to social media copywriting*. Pepper Content. (n.d.). Retrieved January 18, 2023, from <https://www.peppercontent.io/blog/a-comprehensive-guide-to-social-media-copywriting/>
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4. *How to copy edit: A guide to copy editing everything - 2023*. MasterClass. (n.d.). Retrieved January 18, 2023, from <https://www.masterclass.com/articles/a-guide-to-copy-editing-everything>
5. *Know your meme*. Know Your Meme. (n.d.). Retrieved January 18, 2023, from <https://knowyourmeme.com/>

## METHOD OF EVALUATION

Internal	Maximum Marks: 50	Passing Minimum: 30
Theory	10 + 5 + 5 = 20 marks	
Practical	10 + 10 + 10 = 30 marks	
External	Maximum Marks: 50	Passing Minimum: 25
Theory	10 + 5 + 5 = 20 marks	
Practical	10 + 10 + 10 = 30 marks	



## PG & RESEARCH DEPARTMENT OF HUMAN RESOURCES MANAGEMENT St. JOSEPH'S COLLEGE (Autonomous)

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### Minutes of the Board of Studies in Human Resource Management

The Board of Studies Meeting for discussing and approving the minor corrections in the revised 2021 PG syllabus of HRM was held on 25<sup>th</sup> April 2023 at 11.30 A.M in the Department of Human Resource Management .The meeting started with a silent prayer. Later, Dr. J Wilfred Angello Gerald, Head of the Department invited Rev Dr. K Arockiam SJ, Director of SH hostel, SJC, the external member of the Board as well as the internal board members. The members of the Board of Studies comprises of the following;

#### External Members invited & participated in the Board of Studies were;

1. Dr. S.Anbazhagan, Professor , Department of Life Long Learning, Bharathidasan University, Khajamalai Campus , Tiruchirappalli-23 (University Representative)
2. Dr. K.Selvavinayagam, Principal, Department of Management Studies, Periyar University Centre for Post Graduate and Research studies, Dharmapuri ( Subject expert)
3. Mr. S.Ramesh Kumar, Manager – HR, Egston Electronics (India) Pvt Ltd, Pudukkottai Main Road, Tiruchy- 620 007 ( Industrial expert)

Meanwhile, Mr. S.Ramesh Kumar – the industrial expert failed to participate in the board of studies meeting.

#### Internal Members participated in the Board of Studies were;

1. Dr. J. Wilfred Angelo Gerald, Head of the Department, Dept. of HRM, SJC, Tri-2
2. Rev Fr. K Arockiam SJ, Director of SH hostel, Dept. of HRM, SJC, Tri-2
3. Dr J. Michael Raj, Assistant Professor, Dept. of HRM, SJC, Tri-2
4. Prof. G. Louis Victor, Assistant Professor, Dept. of HRM, SJC, Tri-2
5. Dr. Y. Vijila, Assistant Professor, Dept. of HRM, SJC, Tri-2

#### Agenda for the Board of Studies Meeting

Following are the areas discussed in the Board of Studies meeting;

- Any corrections in the revised 2021 PG syllabus
- CIA mark distribution for 3 Components (1,2,&3) in relation to knowledge levels (K1,K2,K3,K4,K5& K6)
- Ratification of the Certificate Course conducted in this academic year 2022-23
- Any other matters

A brief discussion was made after the digital presentation of the revised 2021 HRM Syllabus along with the course pattern. The table pertaining addition and deletion of the contents in the five units of each courses with corresponding percentage was well appreciated by the external

board members. The inclusion of new courses like Marketing management (23PHR1CC04), Human Resource information System (23PHR1ES01B) and Personal Financial Management (23SMS2CC01) received wide range of appreciation from Prof. S. Anbazhagan (University Representative) and Dr. K.Selvavinayagam (subject Expert).

CIA mark distribution for 3 Components (1, 2, &3) in relation to knowledge levels (K1, K2, K3, K4, K5& K6) was explained by Dr.J.Wilfred Angello Gerald, the Head of the department. Here the nature of mark allocation to the components such as component 1 (15Marks), component 2 (10Marks) and component 3 (15Marks) was highlighted in nutshell. Similarly the knowledge level association with the three components namely K1 and K2 with component 1, K3 with component 2 and K4, K5 and K6 with component 3 was taken for wide analysis. The external experts suggested Short answer questions representing K1 and K2 can be used for Component 1, while case analysis type (K3) can be applied for Component 2 and research paper writing/ presenting in seminar / industrial forums/ HR symposium (K4,K5&K6) can be practiced for component 3.


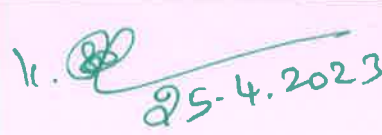
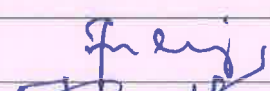
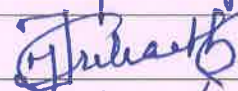
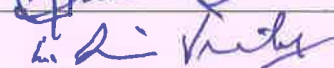

While discussing about the value added course and certificate course for the new academic year, Dr. K.Selvavinayagam shared the importance of Tamil language in the state level competitive examinations for employment. He also cited a live example of a professionally qualified graduate who lost the chance of being selected as she did not have language paper – Tamil in her certificates.

A brief discussion on the detailed syllabus of the Certificate Course in 'Interpersonal Communication Skills' with 40 hours duration conducted during this academic year 2022-23 was made, where in 19 students comprising of HRM and Commerce participated in various activities of the certificate course was well appreciated and the board of studies (internal and external) members approved / ratified the certificate course in 'Interpersonal Communication Skills'.

Dr. S.Anbazhagan (University Representative) expressed his opinion that our revised HRM PG syllabus 2021 covers more than 75 percent of the syllabus mentioned by TANSCH. The board also suggested and approved the undermentioned two subject experts from other universities for board of studies in the dept. of Human Resource Management for the forth coming academic year 2023-24.

Dr.M.Robinson Assistant Professor Department of MBA AnnaUniversityBIT Campus Trichy-620023 <a href="mailto:mahirobin@gmail.com">mahirobin@gmail.com</a> 9865608787	Dr. Anand Jerard Sebastine Associate Professor, Dept of Social Work & Director(i/c), Periyar PURA Centre for Rural Development, Periyar Maniammai Institute of Science and Technology, Vallam, Thanjavur 613403 <a href="mailto:anandjerry@gmail.com">anandjerry@gmail.com</a> 9500978128
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Finally Dr. J Michael Raj thanked all members presented in the board of studies. The Board of Studies meeting came to an end at 1.00 P.M.

BOARD OF STUDIES MEETING HELD ON 25.04.2023		
DEPARTMENT OF HUMAN RESOURCE MANAGEMENT		
St. JOSEPH'S COLLEGE(AUTONOMOUS)		
TIRUCHIRAPPALLI -620002		
S. No.	Name and address	Signature
1.	Dr S. Anbazhagan, Professor, Department of Lifelong Learning, Khajamalai Campus, Bharathidasan University, Tiruchirappalli – 620 023 (University Representative)	 25/4/23
2.	Dr. K. Selvavinayagam, Principal, Dept. of Management Studies, Periyar University Center for Post Graduate and Research Studies, Dharmapuri (Subject Expert)	 25-4-2023
3.	Mr. S. Ramesh Kumar Manager – HR, EGSTON Electronics (India) Pvt. Ltd.No.37/1 & 37/2, Pudukkottai Main Road Trichy – 7.	ABSENT
4.	Dr. J. Wilfred Angello Gerald	J. Wilfred Angello Gerald 25/4/2023
5.	Rev. Dr. K. Arockiam SJ	
6.	Dr. J. Michael Raj	
7.	Mr. G. Louis Victor	
8.	Dr. Y. Vijila	



## INTERPERSONAL COMMUNICATION SKILLS

Department	Human Resource Management
Course Coordinator	Dr. J. Michael Raj
Offered to	Students of postgraduate
Target group	Interdepartmental
Course duration	45 hours
Total Credits	3
Teaching Mode	Offline
Course Fee	₹ 1000/-

### COURSE OVERVIEW

- Provides basic foundation for communication
- Enhances the students with written communication
- Strengthens the oral communication of the students
- Develops the confidence of the students with the managerial skills
- Enriches their interpersonal skills by developing human relations approach

#### Unit I: Introduction to Written Communication

Sentence pattern, sentences - Different types of sentences: statement, interrogative, imperative and exclamatory sentences.

#### Unit II: Parts of Speech - I

Noun - different types of noun: proper, common, collective, material and abstract noun. Pronoun - subject, object, possessive, reflexive, demonstrative, distributive and relative pronoun. Verb - main verbs, auxiliary verbs, modal verbs. Tenses - active voice and passive voice.

#### Unit III: Parts of Speech - II

Adverb - different types of adverb. Adjective - different types of adjective. Prepositions - Simple prepositions and phrasal prepositions. Conjunctions - coordinative, subordinative and compound conjunctions. Interjection - exclamatory words and 'WH' words.

#### Unit IV: Business Communication at Work Place

Letter components and layouts, planning a letter, process of letter writing - Email communication - Memo and memo reports - Employment communication - notice agenda and minutes of meeting - Brochures.

## Unit V: Report Writing

Report writing - effective writing - types of business reports - structure of reports - gathering informations.

### REFERENCES

1. Wren, P. C. & Martin, H. (1998). *High School English Grammar and Composition*. (122nd Ed.). S. Chand & Company Pvt. Ltd.
2. Thill, J. V. & Bovee, G. L. (1993). *Excellence in Business Communication*. McGraw Hill.
3. Konar, K. (2013). *Communication Skills for Professionals*. (2nd. Ed.). PHI Learning Pvt. Ltd.
4. Kumar, A. ((2001). *Better Letter Writing*. (23rd Ed.). Ramesh Publishing House.

### METHOD OF EVALUATION

Internal	Maximum Marks: 100	Passing Minimum: 50
Theory	Written test for 100 marks	

# Department of Information Technology

## Minutes of the Board of Studies meeting Conducted on 25-04-2023

Time: 11:15 a.m.

The meeting commenced with a silent prayer, after which the Head of the Department introduced the Experts to the staff

### Experts

**Dr. J. G. R. Sathiyaseelan**, Vice Principal, Associate Professor and Head, Department of Computer Science, Bishop Heber College, Trichy (University Representative)

**Dr. K. Padmapriya**, Associate Professor of Computer Science, Alagappa University, Karaikudi (Subject Expert)

**Mr. Vijay Xavier**, Product Integration Analyst, Edgeverve System Ltd., Bangalore

### Meeting Discussions

The experts reviewed the syllabi for the Certificate Courses, and appreciated the department for introducing courses which are trending to the students at the appropriate level and gave the following suggestions.

- There are no changes in the previous syllabus 2021 both UG and PG

### Certificate Courses:

- Two certificate courses offered by the department were approved by the members
- 22ITECC01 – Digital Resilience – Cyber Security for All
- 22ITECC02 – Data Analysis and Processing

### Component - CIA

- The Members unanimously decided to accept the model proposed by the college as it is without any changes

### Other Discussions :

Text

- There was a discussion about the impact of TANSCHÉ Framework in the regular curriculum of our college

After the vote of thanks by the HoD, the meeting ended at 12.45 pm













  
HEAD OF THE DEPARTMENT  
INFORMATION TECHNOLOGY  
St. Joseph's College  
Trichy - 620 002.

**BOARD OF STUDIES MEETING HELD ON 25.04.2023**

**DEPARTMENT OF INFORMATION TECHNOLOGY**

**St. JOSEPH'S COLLEGE(AUTONOMOUS)**

**TIRUCHIRAPPALLI -620002**

S. No.	Name and address	Signature
1.	Dr. J.G.R. Sathiyaseelan Associate Professor & Head Department of Computer Science, Bishop Heber College (Autonomous), Tiruchirappalli – 620 017 (University Representative)	
2.	Dr. A. Padma Priya Associate Professor, Dept. of Computer Science, Alagappa University, Karaikudi – 630 003, (Subject Expert)	
3.	Mr. A. Vijay Xavier, Product Integration Analyst, Edgeverve System Ltd.,, No.44, Electronics City, Hosur Main Road, Bangalore – 560 100	AAA.
4.	Dr. P. Joseph Charles	
5.	Mr. S. Hendry Leo Kanickam	
6.	Dr. George Gabriel Richard Roy	
7.	Dr. A. Antony Prakash	
8.	Dr. V. Maria Antoniate Martin	
9.	Dr. T. Lucia Agnes Beena	
10.	Dr. P. Bastin Thiyagaraj	
11.	Dr. C. Venish Raja	C-Venish Raja
12.	Dr. R. Mangai Begum	
13.	Dr. A. Angelpreethi	AAA
14.	Dr. D. Richard	
15.	Dr. I. Carol	

  
**HEAD OF THE DEPARTMENT  
INFORMATION TECHNOLOGY  
St. Joseph's College  
Trichy - 620 002.**

## DIGITAL RESILIENCE - CYBER SECURITY FOR ALL

Department	Information Technology
Course Coordinator	Dr. George Gabriel Richard Roy
Offered to	Students of postgraduate
Target group	Interdepartmental
Course duration	45 hours
Total Credits	3
Teaching Mode	Offline
Course Fee	₹ 1000/-

### COURSE OVERVIEW

- Understand the key features of operating systems and their role in digital resilience
- Describe the basic components of networks and how they are used to improve digital resilience
- Analyse different cryptographic techniques and their effectiveness in enhancing digital resilience
- Identify common cyber threats and vulnerabilities and explain how to mitigate them
- Evaluate various security solutions and develop strategies for staying safe in the digital world

#### Unit I: Introduction to Operating Systems

Fundamentals of Computers - Parts of a Computer - Types of Operating Systems - Installation of various Operating Systems - Virtual machines. Introduction to Networking: The need for Networks - Networks before computers - Basics of Computer Networks - Classification of Networks - Topologies - OSI Model - Protocols - Ports - Devices.

#### Unit II: Cryptography

Cryptography in ancient days - Ciphers - Encryption - Decryption - Symmetric-key - Public Key - Keys - Digital Signature - Hashing - Steganography - Tools - Protocols.

#### Unit III: Threats and Vulnerabilities

Types of Hackers - Classification of Attacks - Attack Vectors - Security Breaches - Malware - Network Vulnerabilities - Types of Attacks.

#### Unit IV: Security Solutions

Protection - Detection - Reaction - CIA Triad - Tools and Techniques - IDS - Blockchain - SIEM. Penetration Testing: Linux Operating System - Metasploit - Tools - Basics of Digital Forensics - Introduction to Information Security.

## Unit V: Staying Safe in Cyber Space

Need for Digital Resilience - Information Technology Act 2000 - Browser Protection - Network Protection - Email Protection - Malware Free Techniques - Identity Protection - Protect your Phone - Achieve Digital Resilience.

### REFERENCES

1. Alexander, K., and Linkov, I. (2019). *Cyber Resilience of Systems and Networks*. Springer International Publishing AG.
2. Andrew, S. T. (2016). *Modern Operating Systems* (4th Ed.). Pearson Education.
3. Andrew, S. T. (2022). *Computer Networks*, (6th Ed.). Pearson Education.
4. Ray, R. (2018). *Digital Resilience: Is Your Company Ready for the Next Cyber Threat?* Pearson Education.

### METHOD OF EVALUATION

Internal	Maximum Marks: 50	Passing Minimum: 30
Theory	10 + 5 + 5 = 20 marks	
Practical	10 + 10 + 10 = 30 marks	
External	Maximum Marks: 50	Passing Minimum: 25
Theory	10 + 5 + 5 = 20 marks	
Practical	10 + 10 + 10 = 30 marks	

## DATA ANALYSIS AND PROCESSING

Department	Information Technology
Course Coordinator	Dr. S. Hendry Leo Kanickam Dr. P. Bastin Thiagaraj
Offered to	Students of postgraduate
Target group	Interdepartmental
Course duration	45 hours
Total Credits	3
Teaching Mode	Offline
Course Fee	₹ 1000/-

### COURSE OVERVIEW

- Understand the basic rudiments of data science concepts and data modelling
- Identify the fundamental concept of structured data and RDBMS
- Demonstrate the SQL queries for structured data
- Explain the various semi-structured data using XML
- Apply the basic queries on MongoDB for solving real time problem
- Analyse the different concept of aggregation to implement and retrieve the data using mathematical methods

#### Unit I: Data Science

Why data science - Data Science Components - Data Science process - Jobs and Roles - Tools for data science - business intelligence - application - Challenges - data science process - Data preparation - Data modelling - Data visualisation Digital Data Classification - Structured data - Semi-structured data - unstructured data.

#### Unit II: Structured Data

Structured data characteristics - sources - advantages - RDBMS - advantages and disadvantages of RDBMS - Difference between RDBMS and DBMS - SQL - DDL - DML - DCL - TCL - aggregate functions - set operations - joins.

#### Unit III: Semi-structured Data

Semi-structured data characteristics - sources - advantages - issues stored in semi-structured data - possible solutions - Email - XML - Semi-structure model - terminology - attributes - semantic tags - data types - name space - schemas - meta data.

## Unit IV: Unstructured Data

NOSQL vs. RDBMS - ACID and BASE - four types of NOSQL database. Multiple documents in collection - Basic operations on document database. Introduction to MONGODB: Documents - collections - databases - inserting and saving documents - removing documents - updating documents - introduction to find.

## Unit V: Aggregation

The aggregation framework - pipeline operations - MapReduce - Aggregation commands - normalisation versus denormalisation. Text search. Data analytics using MongoDB.

## REFERENCES

1. Vijay, K., and Bala, D. (2019). *Data Science Concepts and Practice*. (2nd Ed.). Morgan Kaufmann Publishers.
2. Abraham, S., Henry, F. K., and Sudarshan, S. (2013). *Database System Concepts*. (6th Ed.). Tata McGraw-Hill.
3. David, H., Jeff, R., Joe, F. (2015). *Beginning XML*. (4th Ed.). Wiley Publishing Inc.
4. Dan, S. (2013). *NoSQL for Mere Mortals*. Addison-Wesley.
5. Kristina, C. (2013). *MongoDB: The Definitive Guide*. O'Reilly.

## METHOD OF EVALUATION

Internal	Maximum Marks: 50	Passing Minimum: 30
Theory	10 + 5 + 5 = 20 marks	
Practical	10 + 10 + 10 = 30 marks	
External	Maximum Marks: 50	Passing Minimum: 25
Theory	10 + 5 + 5 = 20 marks	
Practical	10 + 10 + 10 = 30 marks	





# DEPARTMENT OF MATHEMATICS

## St. JOSEPH'S COLLEGE (Autonomous)

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College with Potential for Excellence by UGC DBT-STAR & DST-FIST sponsored College*

TIRUCHIRAPPALLI - 620 002.

Phone : 0431 - 4226398, 2700320, Fax : 0431 - 2701501

Website : [www.sjctni.edu](http://www.sjctni.edu)

### Minutes of the Board of Studies Meeting

The Board of Studies Meeting in Mathematics for the Academic Year 2022-2023 was held on 25.04.2023 at 11.30 AM in the Mathematics Department. Dr. M. Thiagarajan, Head and Associate Professor of Mathematics welcomed the University Representative Dr. S. Sethuraman, Head and Associate Professor of Mathematics, Periyar E.V.R College, Trichy.

The following recommendations were made in the BoS:

1. The title of the Paper "Calculus of Variations, Integral Equations and Integral Transforms (21PMA4CC13) in 2021 PG Syllabus is incorrectly printed as "Calculus of Variations, Integral Equations and Transforms" in the content page (Page No.52 ). The Board approved to change the title as "Calculus of Variations, Integral Equations and Integral Transforms" in the content page.
2. The Board approved the Syllabus of the Certificate Course on "LaTeX for Technical Writing" for the academic year 2022-2023.

*M. Thiagarajan* 25/04/23

Dr. M. Thiagarajan


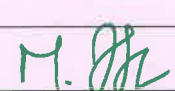
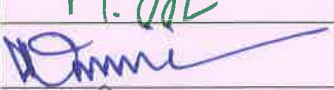
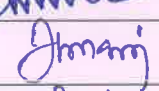


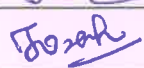
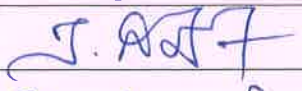
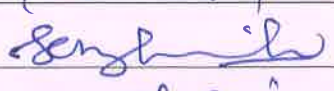
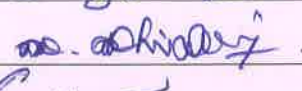
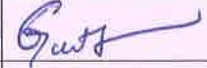
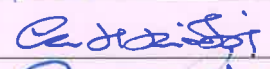

Head of the Department

Dr.M.THAGARAJAN, M.Sc.,M.Phil.,Ph.D.,  
Head and Associate Professor  
Department of Mathematics  
St. Joseph's College (Autonomous)  
Tiruchirappalli-620 002.

- Encl:** 1. Corrected title of the paper in the 2021 PG Syllabus (Page No 52.)  
2. Syllabus of the Certificate Course

**BOARD OF STUDIES MEETING HELD ON 25.04.2023**

**DEPARTMENT OF MATHEMATICS  
St. JOSEPH'S COLLEGE(AUTONOMOUS)  
TIRUCHIRAPPALLI -620002**

S. No.	Name and address	Signature
1.	Dr. S. Sethuraman Associate Professor, Department of Mathematics, Periyar E.V.R. College (Autonomous), Tiruchirappalli – 620 023 (University Representative)	
2.	Dr. S. Somasundaram Professor, Dept. of Mathematics, Manonmaniam Sundaranar University, Tirunelveli – 627 012. (Subject Expert)	-
3.	Mr. Senthil Paramasivam, SVP Technology, Nallas Software Solution Pvt. Ltd., India Land tech Park, Tower A, 3 <sup>rd</sup> Floor CHIL SEZ Area, Keeranatham, Saravanampatti, Coimbatore – 641 035	-
4.	Dr. M. Thiagarajan	
5.	Dr. Y. Dominic	
6.	Dr. J. Umamaheswari	
7.	Dr. A. Anthony Eldred	
8.	Dr. A. Praveen	-
9.	Dr. J. Christy Roja	
10.	Dr. J. Maria Joseph	
11.	Dr. J. Arockia Jeyakumar	
12.	Dr. S. Ithaya Ezhil Manna	
13.	Dr. V. Vairaperumal	
14.	Dr. Geetha Sivaraman	
15.	Dr. J. Amalorpava Jerline	
16.	Dr. R. Lenin	

17.	Mr. S. Arul Gnanapragasam	<del>SA</del> L
18.	Dr. S. Aseervatham	sft
19.	Dr. J. Carmel Pushpa Raj	Dr. J. Carmel Pushpa Raj
20.	Dr. J. Felix	J. Felix
21.	Dr. P. Lawrence Rozario Raj	P. Lawrence Rozario Raj
22.	Ms. J. Mercy Arokia Rani	J. Mercy Arokia Rani
23.	Dr. A. Jeny Jordon	A. Jeny Jordon
24.	Dr. A. Delman	A. Delman
25.	Dr. S. Jai Roselin	S. Jai Roselin
26.	Dr. L. Saral	L. Saral
27.	Dr. S. Sahaya Jernith	S. Sahaya Jernith
28.	Dr. P. Vishnukumar	P. Vishnukumar
29.	Dr. C. Dorathy	C. Dorathy
30.	Dr. A. Azul Xavier	A. Azul Xavier
31.	Mr. A. Saran Raj	A. Saran Raj

## LaTeX FOR TECHNICAL WRITING

Department	Mathematics
Course Coordinator	Dr. S. Arul Gnanaprgasam Dr. S. Aseervatham
Offered to	Students of undergraduate and postgraduate
Target group	Interdepartmental
Course duration	45 hours (Theory - 30; Practical - 15)
Total Credits	3
Teaching Mode	Hybrid
Course Fee	₹ 1000/-

### COURSE OVERVIEW

- To introduce the concepts of LaTeX software
- To enhance the LaTeX programming skills
- To learn the LaTeX commands for various page styles
- To design books and slides using LaTeX
- To draw pictures using LaTeX

#### Unit I

Introduction to LaTeX - Installation of LaTeX- Basic structure of LaTeX document - Text typing and formatting.

#### Unit II

Math equation typing - Listing items.

#### Unit III

Table creation - inserting figures.

#### Unit IV

Article preparation - Thesis preparation.

#### Unit V

Presentation Creation - Beamer Class.

### REFERENCES

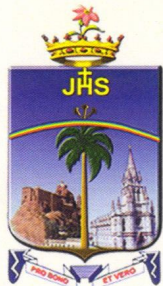
1. Leslie, L. (1994). *LaTeX: A document preparation system*. (2nd Ed), Addison-Wesley Publishing.
2. Kopka, H. and Daly, P. W. (2003). *A guide to LaTeX*, Addison-Wesley Publishing.

3. Frank, M., Michel, G., Johannes, B., David, C., and Chris, R. (2004). *The LaTeX Companion*. Addison-Wesley Professional.
4. [https://www.overleaf.com/learn/latex/Creating\\_a\\_document\\_in\\_LaTeX\\_Part\\_1\]%3A\\_Basic\\_Structure](https://www.overleaf.com/learn/latex/Creating_a_document_in_LaTeX_Part_1]%3A_Basic_Structure)
5. <https://www.youtube.com/watch?v=mZcV1wIPCBo>
6. <https://www.overleaf.com/learn/latex/Beamer>

## **METHOD OF EVALUATION**

Internal	Maximum Marks: 50	Passing Minimum: 20
Theory	10 + 15 + 25 = 50 marks	
External	Maximum Marks: 50	Passing Minimum: 20
Theory	MCQ - 30; Written Test - 20 marks	





Since 1844

# DEPARTMENT OF PHYSICS

## ST. JOSEPH'S COLLEGE (AUTONOMOUS)

Special Heritage Status awarded by UGC

Accredited at A++ Grade (4<sup>th</sup> Cycle) by NAAC

College with Potential for Excellence by UGC

DBT-STAR & DST-FIST Sponsored College

TIRUCHIRAPPALLI - 620 002, TAMILNADU, INDIA.

### Minutes of the BoS Meeting of Physics held on 25-04-2023 at 11. 30 AM

All the members of both shift 1 and shift 2 were present (except Mr. J. Martin)

Head of the Department, Dr. N. Ravi, welcomed the members and introduced the external members to the members of the Department of Physics.

HOD informed the agenda to the members.

Meeting approved the following two value added courses with minor modifications and suggestions given by the members. The courses are

1. Bio Physics (for PG students)
2. Practical Physics of Photography and Videography (For UG students)

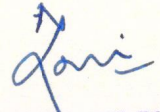
Meeting ratified the certificate course offered by the Department during this semester (2022-23) with ~~3~~ extra credits of 45 hours duration.


Dr. Johnson, thanked retiring staff members, Dr. N. Ravi, Head of the Department and Dr. A. Alfred Cecil Raj for their services to the Department.

Meeting Unanimously forwarded the following two experts for BoS 2023-24. They are

1. Dr. R. Justin Joseyphus, Professor and Head, Department of Physics, NIT, Trichy.
2. Dr. R. John Bosco Balaguru, Dean, Sastra University, Thanjavur.

Meeting came to an end by 12.15 pm

  
HEAD. DEPT. OF PHYSICS  
ST. JOSEPH'S COLLEGE  
(AUTONOMOUS)  
TIRUCHIRAPPALLI - 2

  
25-4-23  
Dr. R. RAJ MUHAMED,  
M.Sc., M.Phil., Ph.D., P.G.D.C.A., B.Ed.,  
Associate Professor in Physics,  
Jamal Mohamed College (Autonomous)  
Tiruchirappalli-620 020.

692

## SCI-LAB FOR COMPUTATION AND ANALYSIS

Department	Physics
Course Coordinator	Dr. B. Kanickairaj Dr. S. Lourduraj
Offered to	Students of undergraduate and postgraduate
Target group	Interdepartmental
Course duration	45 hours (Theory - 30; Practical - 15)
Total Credits	3
Teaching Mode	Hybrid
Course Fee	₹ 400/-

### COURSE OVERVIEW

- To acquire the knowledge on Sci-lab with its programming language for scientific computations
- To understand the concepts behind the operations and their corresponding results
- To learn the Sci-Lab software effectively and developed their programming skills
- perform the operations with looping, branching structures and graphical representation by using Sci-Lab software
- learn the installation of Sci-lab software and execution of programs

#### Unit-I: Basic elements of the language

Creating real variables, Variables names, Comments and continuation lines, Elementary mathematical functions, Pre-defined mathematical variables, Booleans Complex numbers, Integers, Overview of integers, Conversions between integers. Operators: Colon ":" and dollar "\$". eye matrices , Low level operations, Element wise operations,

#### Unit-II: Matrices

Create a matrix of real values, The empty matrix, Query matrix, Accessing the elements of matrix, The "eye" matrix, The dollar "\$" operator, Matrix operations Creating matrix & Construction of various types of Matrices in Sci-lab. Conjugate transpose and non-conjugate transpose. Multiplication of two vectors Lower & higher level linear algebra.

#### Unit-III: Looping and branching

if-then-else – for- while-do- do-while-break and continue statement, unconditional branching-simple physics problems.

#### Unit-IV: Functions

Basic & special functions, file input & output functions: Read, Write, load & save, Function in files – In-line files, Function libraries: creation, start-up files, user supplied libraries- simple physics problems.

#### Unit-V: Programming using Sci-Lab

Sci-lab introduction and installation, Basics: Creating real variables, elementary mathematical operations. Programming in Sci-lab using if statement, using select statement, Programming in Sci-lab using for statement, using while statement, using break and continuous statement. Defining and using functions in Sci-lab, Creating graphs of simple functions, 2D & 3D plots and Contour plots- simple physics problems.

#### REFERENCES

1. Michael, B. (2010). *Introduction to Sci-lab*. Consortium Sci-lab.
2. Stephen, L. C., Chancelier, J. P., and Ranine, N. *Modeling and simulation in Sci-lab*, Springer.
3. Lydia, E. D., and Christoph, L. S. *Sci-lab Bag of Tricks*.
4. Rietsch, E. *An introduction to scilab from a matlab user's point of view*.

#### METHOD OF EVALUATION

Internal	Maximum Marks: 50	Passing Minimum: 30
Theory	10 + 5 + 5 = 20 marks	
Practical	10 + 10 + 10 = 30 marks	
External	Maximum Marks: 50	Passing Minimum: 25
Theory	10 + 5 + 5 = 20 marks	
Practical	10 + 10 + 10 = 30 marks	





## DEPARTMENT OF STATISTICS ST. JOSEPH'S COLLEGE (Autonomous)

*Special Heritage Status awarded by UGC Accredited at A++ Grade (4<sup>th</sup> Cycle) by NAAC  
College with Potential for Excellence by UGC DBT-STAR & DST-FIST sponsored College*

TIRUCHIRAPPALLI - 620 002.

Phone : 0431 - 4226400, 2700320, Fax : 0431 - 2701501

Website : [www.sjctni.edu](http://www.sjctni.edu)

### **Minutes of the meeting conducted on 01.10.2022**

A department level meeting was conducted on 01.10.2022 at 12.30pm to get the approval for the items mentioned in the circular issued by Rev. Fr. Principal, dated 30.09.2022. After a thorough discussion, three of the staff members have agreed to act as resource persons for the certificate course "Applications of Statistics". The course duration is 45 hours starting from 29<sup>th</sup> October 2022 to 4<sup>th</sup> March 2023. The syllabus and the scheme of evaluation for the course were approved unanimously by all the Staff members. Weekly schedule and list of the Staff members are attached with this report. Meeting came to an end at 1.20pm.

Dr. A. Philip Arokiadoss is the certificate course coordinator.

Members Present:

Signature

Dr. Lilly George, Head

*Lilly George*

Dr. R. Vijayakumar

*R. Vijayakumar*

Dr. J. Glorypersial

*J. Glorypersial*

Dr. T. Venkatesan

*T. Venkatesan*

Dr. A. Philip Arokiadoss

*A. Philip Arokiadoss*

## APPLICATION OF STATISTICS

Department	Statistics
Course Coordinator	Dr. A. Philip Arokiadoss
Offered to	Students of undergraduate and postgraduate
Target group	Intercollegiate
Course duration	45 hours
Total Credits	3
Teaching Mode	Hybrid
Course Fee	₹ 600/-

### COURSE OVERVIEW

- Statistics has wide range of applicability
- The methods used in different areas are taken into consideration
- Real life examples will be given to apply statistical tools

#### Unit I: Statistics in Agriculture

Basic designs - completely randomise design, randomised complete block design and Latin square design - Balanced Incomplete Block design - Partial Balanced Incomplete Block design - Factorial experiment ( $2^2$  and  $2^3$  only).

#### Unit II: Statistics in Business

Time series - meaning, components and models - Business forecasting - methods of estimating trend - graphic, semi-average, moving average and method of least squares (straight line, second degree parabola, exponential curve) - Seasonal variation.

#### Unit III: Statistics in Economics

Index numbers - meaning, uses and methods of construction - Un-weighted and weighted index numbers - Tests of an index numbers - Cost of living index numbers.

#### Unit IV: Statistics in Industries

Basic concepts of statistical quality control - Control charts for variables - Control charts for attributes - Fundamental concepts of Acceptance Sampling plan by Attributes - OC and AOQ Curves.

#### Unit V: Statistics for Health Sciences

Measurement of population, rate and ratio of vital events - Measurements of mortality - Crude Death Rate (CDR), Specific Death Rate (SDR), Infant Mortality Rate (IMR) and Standardised

Death Rates - Measurement of Fertility - Crude Birth Rate (CBR), General Fertility Rate (GFR), Specific Fertility Rate (SFR) and Total Fertility Rate (TFR).

## REFERENCES

1. Gupta, S. C., and Kapoor, V. K. (2013). *Fundamentals of Applied Statistics*, Sultan Chand & Sons.
2. Navnitham, P. A. (2015). *Business Mathematics and Statistics*. Jai Publishers.

## METHOD OF EVALUATION

Internal	Maximum Marks: 100	Passing Minimum: 40
Theory	Test I - 40; Test II - 40; Assignment - 20	
External	Maximum Marks: 100	Passing Minimum: 40
Theory	Written Test - 100 marks	

## CREATIVE COMMUNICATION

Department	Statistics
Course Coordinator	Dr. J. Saleth Dr. S. Srinivasan
Offered to	Students of undergraduate and postgraduate
Target group	Interdepartmental
Course duration	45 hours (Theory - 25; Practical - 20)
Total Credits	3
Teaching Mode	Hybrid
Course Fee	₹ 500/-

## COURSE OVERVIEW

- Provides training for becoming a Journalist
- Develops communicative and creative skills
- Encourages students to participate in television programmes
- Motivates students to publish articles in reputed journals

## METHOD OF EVALUATION

Internal	Maximum Marks: 50	Passing Minimum: 20
Theory	10 + 10 = 20 marks	
Practical	10 + 10 + 10 = 30 marks	
External	Maximum Marks: 50	Passing Minimum: 40%
Theory	20 marks	
Practical	30 marks	

#### அலகு - 1

##### ஊடகஅறிமுகம்

அறிமுகம் - பண்புகள் - வரலாற்றுப் பின்னணி - கோட்பாடுகள் - ஊடகமொழிகள் - தொகுப்புஊடகச் சூழல்.

#### அலகு - 2

##### எழுத்தாற்றல் திறன்கள்

பல்வேறு படைப்புகளின் வடிவத்தை அறிமுகப்படுத்தல் - படைப்புகளின் உள்ளடக்கத்தைப் புலப்படுத்துதல் - கவிதைகளை எழுத வைத்தல் - சிறுகதைகளை எழுத வைத்தல் - கட்டுரைகளை எழுத வைத்தல்.

#### அலகு - 3

##### பேச்சாற்றல் திறன்கள்

பேச்சாற்றல் உத்திகள் - வாசிப்புப் பயிற்சி - குறிப்பெடுத்தல் - உரையாபரித்தல் - வரவேற்புரை, நன்றியுரை, தொகுப்புரை, நூல் அறிமுகஉரை மற்றும் சிற்றுகதைகளைப் பேசப்பயிற்சி வழங்குதல்.

#### அலகு - 4

##### இதழாளர் திறன்கள்

ஊடக இயங்குதளங்கள் - செய்தி எழுதுதல் - செய்தி உருவாக்குதல் - புலனாய்வு - நேர்காணல்.

#### அலகு - 5

##### ஊடகப் பங்களிப்பு

செய்திவாசிப்புப் பயிற்சி - விவாத நிகழ்ச்சிப்பயிற்சி - சிற்றிதழ்கள் மற்றும் சமூக ஊடகங்களில் எழுதவைத்தல் - மாணவர்களின் நூல்களை வெளிக்கொணருதல்.

#### பாட நூல்கள்

1. எம்.பன்.அ, **ஊடகங்களின் இயங்குதளங்கள்**, வைகறை பதிப்பகம், திண்டுக்கல், முதற்பதிப்பு 2007
2. கதிரேசன்.க, **பேச்சுக்கலை 64**, மணிபாரதி பதிப்பகம், சிதம்பரம், முதற்பதிப்பு 2007
3. திருமலை.ம, **பேச்சுக்கலை**, மீனாட்சி புத்தக நிலையம், மதுரை, மூன்றாம் பதிப்பு 2013
4. யூஜின்முத்து, **படிப்பது எப்படி?**, வைகறை பதிப்பகம், திண்டுக்கல், முதற்பதிப்பு 2005

## METHOD OF EVALUATION

Internal	Maximum Marks: 50	Passing Minimum: 20
Theory	10 + 10 = 20 marks	
Practical	10 + 10 + 10 = 30 marks	
External	Maximum Marks: 50	Passing Minimum: 40%
Theory	20 marks	
Practical	30 marks	

Course Code	Title of the Course	Hours	Credits
22CCTA01	படைப்பாக்கத் தொடர்பியல்	45	3

S.No.	CO- Statement
CO-1	ஊடகங்களின் வரலாற்றுச் சூழலைத் தெரிந்து கொள்வர்
CO-2	ஊடகமொழிகளைக் கற்றுக்கொள்வர்.
CO-3	தங்களின் படைப்பாற்றலை எழுத்தாற்றல் மற்றும் பேச்சாற்றல் திறன்களின் மூலம் வெளிப்படுத்துவர்.
CO-4	ஊடகவியலாளருக்கான பண்புகளைப் பெற்று, ஊடகப் பங்களிப்பாற்றும் திறன்களைப் பெறுவர்.

#### அலகு - 1

##### ஊடகஅறிமுகம்

அறிமுகம் - பண்புகள் - வரலாற்றுப் பின்னணி - கோட்பாடுகள் - ஊடகமொழிகள் - தொகுப்புஊடகச் சூழல்.

#### அலகு - 2

##### எழுத்தாற்றல் திறன்கள்

பல்வேறு படைப்புகளின் வடிவத்தை அறிமுகப்படுத்தல் - படைப்புகளின் உள்ளடக்கத்தைப் புலப்படுத்துதல் - கவிதைகளை எழுத வைத்தல் - சிறுகதைகளை எழுத வைத்தல் - கட்டுரைகளை எழுத வைத்தல்.

#### அலகு - 3

##### பேச்சாற்றல் திறன்கள்

பேச்சாற்றல் உத்திகள் - வாசிப்புப் பயிற்சி - குறிப்பெடுத்தல் - உரையாரித்தல் - வரவேற்புரை, நன்றியுரை, தொகுப்புரை, நூல் அறிமுகஉரை மற்றும் சிற்றுகதைகளைப் பேசப்பயிற்சி வழங்குதல்.

#### அலகு - 4

##### இதழாளர் திறன்கள்

ஊடக இயங்குதளங்கள் - செய்தி எழுதுதல் - செய்தி உருவாக்குதல் - புலனாய்வு - நேர்காணல்.

#### அலகு - 5

##### ஊடகப் பங்களிப்பு

செய்திவாசிப்புப் பயிற்சி - விவாத நிகழ்ச்சிப்பயிற்சி - சிற்றிதழ்கள் மற்றும் சமூக ஊடகங்களில் எழுதவைத்தல் - மாணவர்களின் நூல்களை வெளிக்கொணருதல்.

#### பாட நூல்கள்

1. ஸ்டீபன்.அ, ஊடகங்களின் இயங்குதளங்கள், வைகறை பதிப்பகம், திண்டுக்கல், முதற்பதிப்பு 2007
2. கதிரேசன்.க, பேச்சுக்கலை 64, மணிபாரதி பதிப்பகம், சிதம்பரம், முதற்பதிப்பு 2007
3. திருமலை.ம, பேச்சுக்கலை, மீனாட்சி புத்தக நிலையம், மதுரை, மூன்றாம் பதிப்பு 2013
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### DETAILS OF VALUE ADDED COURSES OFFERED, 2022-23

Department	Course Title	In-charge
Commerce Honours	Financial Data Analysis Using Microsoft Excel	Mr. G. Prabhakaran
Biochemistry	Diet Therapy	Mr. T. Antony Diwakar Chandran
Biotechnology	Better Health Through Beneficial Microbes	Dr. V. Swbna
Botany	Horticulture and Landscaping	Dr. M. Bastin Churchill
Chemistry	Food Standards and Quality Control	Mr. A. Ceril Jeoffery
Chemistry	Memory Techniques	Dr. A. N. Paul Angelo
Commerce	Financial Modelling Using Excel	Dr. Antony Jusuraja Dr. L. Georgia
Computer Science	Data Analysis Using Python	Dr. A. Aloysius Dr. K. Maheswaran
Counselling Psychology	Enneagram	Dr. Emmanuel Arockiam SJ
Data Science	Soft Skills and Debugging	Dr. I. Priya Stella Mary
Data Science	Programming Skills	Dr. V. Arul Kumar
Data Science	Smart and Innovative Technologies	Dr. M. Kirushanth Dr. K. Subash
Data Science	Data Visualization	Dr. A. Beatrice Dorothy Dr. I. Priya Stella Mary
Data Science	Data Science Tools	Dr. A. Beatrice Dorothy
Data Science	Case Study Analysis	Dr. M. Kirushanth
Economics	Indian Economy and Polity	Dr. R. Ganesasubramanian Dr. J. Jayasree Naiken
Electronics	Embedded C	Fr. J. John Wilson SJ
English	Introduction to Theatre Arts	Ms. K. Primrose
Human Resource Management	Finance Skills for Workplace	Mr. G. Louis Victor
Physics	Solar PV Installation and Maintenance	Dr. S. Anbarasu Dr. G. Samuel Dr. A. Sinthiya Dr. A. Alexander
Statistics	Research Through Statistical Packages	Dr. A. Philip Arockiadoss
Tamil	Art of Translation	Dr. A. Benjamin Aron Titus Mr. A. Adaikalaraj Dr. J. Saleth
Tamil	Art of Advertising	Dr. A. Benjamin Aron Titus Mr. A. Adaikalaraj Dr. J. Saleth
Visual Communication	Radio Jokey	Mr. G. Sathish

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Rev. Dr. M. Arockiasamy Xavier, SJ - Principal & Chairman  
Dr. K. Rajan – Coordinator  
Dr. S. Soosairaj

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**Joseph Start-Up Centre**

Rev. Dr. M. Arockiasamy Xavier, SJ - Principal & Chairman  
Rev. Fr. M. Berchmans, SJ - Director

**Archbishop Casimir Instrumentation Centre (ACIC)**

Rev. Dr. M. Arockiasamy Xavier, SJ - Director  
Dr. A. Leo Rajesh - Coordinator  
Dr. A. Arun Viveke  
Mr. Y. Vincent Sagayaraj

**Fr. Jerome Centre for Information and Communication  
Technology (JCICT)**

Rev. Dr. M. Arockiasamy Xavier, SJ - Principal & Director  
Rev. Dr. S. Santiago, SJ - Coordinator

**Enterprise Resource Planning (ERP) Team**

Rev. Dr. M. Arockiasamy Xavier, SJ - Principal & Chairman  
Rev. Dr. S. Santiago, SJ - Coordinator  
Dr. A. RoseVenis  
Dr. R. Qurshid Begum  
Dr. J. Ronald Martin

**Network & System Maintenance in JCICT**

Rev. Dr. M. Arockiasamy Xavier, SJ - Principal & Director  
Rev. Dr. S. Santiago, SJ - Coordinator  
JCICT Staff

### **Website Team & Software Development Team**

Rev. Dr. M. Arockiasamy Xavier, SJ - Principal & Chairman  
Rev. Dr. S. Santiago, SJ – Coordinator  
Dr. D. Ravindran  
Dr. A. Rose Venis  
Dr. R. Qurshid Begum  
Dr. S. Hendry Leo Kanickam  
Dr. V. Arul Kumar  
Mr. N.M. Pushparaj

### **Fr. Ehrhart Computer Centre**

Rev. Dr. M. Arockiasamy Xavier, SJ - Principal & Director  
Rev. Dr. S. Arul Oli, SJ - Director

### **Fr. Savariraj Computer Centre**

Rev. Dr. M. Arockiasamy Xavier, SJ - Principal & Director  
Mr. A. Charles - Coordinator

### **Air Quality Monitoring Station**

Rev. Dr. M. Arockiasamy Xavier, SJ - Principal & Chairman  
Dr. S.R. Senthilkumar - Coordinator

## **STUDENT SERVICES**

### **Hostel Administration**

Rev. Dr. S. Paul Pragash, SJ - Director, New Hostel  
Rev. Dr. V. Gilbert Camillus - Director, S.H. Hostel  
Rev. Dr. S. Santiago, SJ - Director, Bellarmine Hostel  
Rev. Fr. M. Berchmans, SJ - Director, Sports Hostel  
Rev. Sr. S. Immaculate Mary - Director, St. Theresa Girls' Hostel  
Rev. Dr. A. Sebastin Thangadurai, SJ - Advisor, St. Theresa Girls' Hostel

### **JASS & Soft Skills**

Rev. Dr. M. Arockiasamy Xavier, SJ-Principal & Director  
Dr. A. John Balaiah-Coordinator  
Dr. D. Ravindran  
Dr. J. John Love Joy  
Mr. S. Dominique  
Dr. J. Maria Joseph  
Dr. M. Antony Jesuraja  
Dr. N. Maheswari

### **Training & Placement Cell**

Rev. Dr. M. Arockiasamy Xavier, SJ -Principal & Chairman  
Dr. M. Mahendran- Coordinator  
Dr. S. Sahaya Sathish  
Dr. J. John Love Joy  
Dr. A. Irudaya Jothi  
Dr. A. Philip Arockiadoss  
Mr. S. Arputharaj  
Biochemistry : Dr. P.G. Geegi  
Biotechnology : Dr. J. Arutchelvi

Botany	:	Dr. M. Francis Sathiyaseelan Dr. A. Egbert Selwin Rose
Computer Science (S-I)	:	Dr. K.R. Martin Rev. Dr. S. Arul Oli, SJ
Computer Science (S-II)	:	Ms. S. Thulasi Bharathi Ms. M. Merla Agnes Mary
Data Science	:	Dr. M. Kriushanth
Information Technology	:	Dr. A. Antony Prakash
Mathematics (S-I)	:	Dr. J. Uma Maheswari
Mathematics (S-II)	:	Dr. P. Lawrence Rozario Raj
Statistics	:	Dr. T. Venkatesan
English (S-I)	:	Mr. B. Sam Jerome Sharone Dr. Cheryl Davis
English (S-II)	:	Mr. D. Prasanth Arockiasamy
History	:	Dr. M. Britto Stalin
Tamil	:	Dr. S. Shagila Banu Dr. B. Johnson
BBA	:	Dr. J. Vincent Xavier
Commerce (S-I)	:	Mr. D. Maria Antony
Commerce (S-II)	:	Dr. S. Jerome
Commerce CA	:	Dr. J. Arputha Sahaya Raj Dr. D. John Prabakaran
B.Com Honours	:	Ms. A. Mary Magdalene
Economics	:	Ms. J. Jayashree Naiken Dr. R. Ganesasubramanian
HRM	:	Dr. J. Wilfred Angello Gerald
Chemistry	:	Mr. A. Ceril Jeoffrey
Electronics	:	Dr. P. Subbuthai Ms. V. Sivakamasundari
Physics	:	Dr. M. Antony Arockiaraj Dr. S. Dinakaran Dr. P. Maggie Dayana Dr. M. Lawrence Ms. B. Mary Dayana Dr. A.J. Clement Lourduraj Dr. H. Joy Prabu
B.Sc. Visual Communication	:	Ms. K. Ramya
B.Voc. Viscom	:	Dr. S. Tamilarasai
B.Voc. SD & SA	:	Ms. B. Geno Cinthia

#### **Internship Cell**

Rev. Dr. M. Arockiasamy Xavier, SJ - Principal & Chairman  
Dr. D. Ravindran -Coordinator  
Dr. G. Iruthayaraj  
All the Final Year UG Class Mentors



### **Bridge Course Advisory Committee**

Rev. Dr. M. Arockiasamy Xavier, SJ - Principal & Chairman

Rev. Dr. S. Paul Pragash, SJ - Coordinator

Dr. V.L. Jayapaul

Dr. V. Francis

Dr. J. John Love Joy

Dr. R. Qurshid Begum

Dr. M.S. Xavier Pradeep Singh

Dr. J. Charles Arockiasamy

Dr. G. Kannaiyan

### **Bridge Course Committee**

Dr. V. Francis - Coordinator

Dr. M. S. Xavier Pradeep Singh - Assistant Coordinator

Dr. G. Kannaiyan - Assistant Coordinator

### **Remedial Coaching**

Dr. G. Iruthayaraj - Coordinator

Rev. Dr. S. Arul Oli, SJ

Dr. S. Britto Ramesh Kumar

Dr. M. John Britto

Dr. S. Soosairaj

Dr. A. Edwin Vasu

Dr. J. Vinoth Kumar

Ms. B. Mary Dayana

Mr. S. Thiyagarajan

### **Student Counsellors**

Ms. F.M. Christeela

Ms. S. Shylin

### **Mentoring Facilitation Committee**

Rev. Dr. L. John Peter Arulanandam - Coordinator

Dr. D. Ravindran

Dr. G. Iruthayaraj

Dr. A. John Balaiah

Dr. B. Augustine Arockiaraj

Dr. F.X. Virgin Fraga

### **Fine Arts Committee**

Rev. Dr. M. Arockiasamy Xavier, SJ-Principal & Chairman

Rev. Dr. L. John Peter Arulanandam, SJ

Dr. A. Simi - Coordinator

Dr. F.X. Virgin Fraga

Dr. A. Vimal Jerald

Dr. R. Arul

### **Sports & Games Committee**

Rev. Dr. M. Arockiasamy Xavier, SJ-Principal & Chairman

Dr. P. Rajendran - Deputy Principal

Rev. Fr. M. Berchmans, SJ - Coordinator

Dr. A. Prem Edwin - Physical Director

Rev. Dr. L. John Peter Arulanandam, SJ  
 Dr. D. Ravindran  
 Dr. G. Iruthayaraj  
 Mr. S. Dominique  
 Dr. B. Augustine Arockiaraj  
 Ms. S. Backya Selva Rathi  
 Dr. A. Maggie Dayana  
 Dr. D.R. Edwin Christy  
 Dr. Cheryl Davis  
 Mr. A. Abraham  
 Dr. Arockia Rajasekar  
 Dr. J. Benjamin Aron Titus  
 Dr. J. Arockia Jeyakumar  
 Dr. A. Leostandly  
 Dr. P. Lawrence Rozario Raj  
 Ms. J. Mercy Arokia Rani  
 Dr. J. Charles Arockiasamy  
 Dr. A. Angelpreethi  
 Dr. R. Arul  
 Dr. A. Jenifer Jothi Mary  
 All Heads of the Departments  
 All the NCC Officers, NSS Coordinators

#### **National Cadet Corps (TN) Bn**

Dr. M. M. Armstrong Arasu - Infantry  
 Dr. H. David Raja - Air Wing  
 Dr. V. Bastin Jerome - Navy  
 Dr. D. Wilson - Armoured Sqn.

#### **NSS Programme Officers**

Rev. Dr. M. Arockiasamy Xavier, SJ - Principal & Chairman  
 Dr. C. Rajarathinam - Unit-I  
 Dr. A. Francis Vijayakumar - Unit-II  
 Dr. J. Benjamin Aron Titus - Unit-III  
 Dr. M. Antony Arockiaraj - Unit-IV  
 Dr. A. Ezhugnayiru - Unit-V  
 Dr. A. Angelpreethi - Unit-VI

#### **Youth Red Cross**

Rev. Dr. M. Arockiasamy Xavier, SJ - Principal & Chairman  
 Dr. M. Francis Sathiyaseelan  
 Dr. A. Johny Kumar Tagore

#### **AICUF**

Rev. Fr. K. Maria Annaraj, SJ - Unit Advisor

### **Equal Opportunity Centre**

Rev. Dr. M. Arockiasamy Xavier, SJ - Principal & Chairman  
Dr. G. Iruthayaraj - Coordinator, Remedial Coaching  
Dr. Y. Dominic - Coordinator of SC/ST Cell  
Dr. V. Francis - Coordinator, Bridge Course  
Dr. A. Maggie Dayana - Coordinator, Women Students

### **Environment Club**

Rev. Dr. M. Arockiasamy Xavier, SJ - Principal & Chairman  
Rev. Dr. L. John Peter Arulanandam, SJ  
Dr. I. Arockiaraj - Coordinator  
Dr. M. Bastin Churchill

### **Dispensary & First Aid**

Ms. I. Elizabeth Rani

### **STUDENT CLUBS**

Rev. Dr. M. Arockiasamy Xavier, SJ - Principal & Chairman  
Dr. D. Ravindran - Chief Coordinator

#### **Astronomy Club**

Dr. A. Praveen- Coordinator  
Dr. J. Arockia Jeyakumar - Asst. Coordinator

#### **Communication Club**

Mr. S. Thiyagarajan – Coordinator

#### **St. Joseph's Bibliophile Club**

Dr. M. John Britto - Coordinator  
Dr. M. S. Xavier Pradheep Singh - Asst. Coordinator

#### **Bards' Club**

Dr. S. Sajeev - Coordinator  
Ms. G. Annie Rose - Asst. Coordinator

#### **Film Appreciation Club**

Dr. D. R. Edwin Christy - Coordinator  
Mr. B. Sam Jerome Sharone - Asst. Coordinator

#### **Drama Club**

Ms. K. Primrose - Coordinator  
Ms. G. Annie Rose - Asst. Coordinator

#### **JOSTALKS**

Mr. S. Ignatius Richard - Coordinator

#### **Debate Club**

Mr. S. Ignatius Richard - Coordinator

#### **Consumer Club**

Dr. R. Arul - Coordinator

#### **Ctrl + A Club**

Dr. P. Joseph Charles - Coordinator  
Dr. I. Carol - Asst. Coordinator

#### **Environment Club**

Mr. D. Maria Antony - Coordinator  
Dr. A. Francis Vijayakumar - Asst. Coordinator

#### **Mendeleev's Chemistry Club**

Dr. A. Arun Viveke - Coordinator

#### **Fr. Rapinat Bio Club**

Dr. M. Francis Sathiyaseelan- Coordinator

#### **Potential Development Club**

Dr. Y. Vijila - Coordinator

#### **Readers' Club**

Ms. A. Mary Magdalene - Coordinator

#### **FinTech**

Mr. J. Camilton - Coordinator

#### **Business Talk**

Mr. G. Prabhakaran - Coordinator

#### **ED Club**

Mr. G. Prabhakaran - Coordinator

**Entrepreneurship Development Club** Ms. C.F. Octovia Antony Sessammal - Coordinator

<b>Business Awareness Club</b>	Dr. S. Clemence Jenifer - Coordinator
<b>Career Guidance Club</b>	Ms. C. Annie Jane - Coordinator
<b>Innovation Club</b>	Dr. A. Antony Raj – Coordinator
	Dr. G. Genifer Silvena - Asst. Coordinator
<b>Fabrication Club</b>	Dr. B. Kanickairaj -Coordinator
	Dr. S. Lourduraj - Asst. Coordinator
<b>Einstein Quiz Club</b>	Dr. S. Prathap - Coordinator
	Ms. Mary Dayana - Asst. Coordinator
<b>Feyman’s Problem Solving Club</b>	Dr. R. Jerald Vijay - Coordinator
	Dr. M. Augustin - Asst. Coordinator
<b>VIP-NET Club (DST)</b>	Dr. R. Thomas - Coordinator
	Dr. A. Alexandar - Asst. Coordinator
<b>Prof. GNR Bio-Physics Club</b>	Dr. G. Samuel - Coordinator
	Dr. S. Rex Rosario - Asst. Coordinator
<b>Social Club</b>	Dr. J. Arputha Sahaya Raj - Coordinator
<b>Environment Club</b>	Dr. B. Fathima Mary - Coordinator
<b>Health Club</b>	Dr. J. Rajees - Coordinator
<b>Entrepreneurship Development Club</b>	Dr. D. John Prabakaran - Coordinator
<b>HR Club</b>	Dr. F.X. Virgin Fraga - Coordinator
<b>Marketing Club</b>	Dr. S. Arumugam - Coordinator
<b>Quiz Club</b>	Dr. R. Arul - Coordinator
<b>Tamil Research Club</b>	Dr. D. Wilson - Coordinator
	Dr. A. Maria Dhanabal - Asst. Coordinator
<b>Creative Writing Club</b>	Dr. A. Joseph Sahayaraj - Coordinator
	Dr. D. Wilson - Asst. Coordinator
<b>Folklore Club</b>	Dr. S. Srinivasan - Coordinator
	Dr. R. Murali Krishnan - Asst. Coordinator
<b>Tamil Drama Club</b>	Dr. S. Srinivasan - Coordinator
	Mr. I. Yogaraj - Asst. Coordinator
<b>Clique Construct Club</b>	Ms. B. Geno Cinthia - Asst. Coordinator
<b>Innovation Club</b>	Dr. I. Priya Stella Mary - Coordinator
<b>Software Development Club</b>	Dr. V. Arul Kumar - Coordinator
	Dr. M. Kriushanth - Asst. Coordinator
<b>Statistics 360 Club</b>	Dr. J. Glorypersial - Coordinator
<b>Adam Smith Civil Services Club</b>	Dr. M. Suvakkin - Coordinator
	Ms. P. Prarthna - Asst. Coordinator
<b>Bytes Club</b>	Dr. S. Britto Ramesh Kumar - Coordinator
	Dr. George Gabriel Richard Roy - Asst. Coordinator
<b>Multimedia Club</b>	Dr. A. Vimal Jerald - Coordinator
	Dr. S. Sathya Priya - Asst. Coordinator
<b>Trojan Horse Club</b>	Dr. J. Arutchelvi - Coordinator
<b>VisCom Club</b>	Dr. S. Tamilarasi – Coordinator

## **ACADEMIC ACTIVITIES 2022-23**

The following notable activities were carried out during the academic year 2022-23

- 15 Self-Paced Courses were offered through JosTEL, the Learning Management System of the college.
- 18 Certificate Courses (45 or more than hours) were conducted by 11 departments through online and offline modes.
- 24 Value-Added Courses (30 hours) were conducted by 17 departments.
- 9 MoUs were signed with reputed institutions and industries.
- Two patents were granted; The faculty had also applied for 17 patents.
- A 1kVA Windmill was installed in the college.
- JSC, the Start-up Centre of the college has been functioning with 20 student incubators, 5 staff incubators and one alumni incubator.
- 1850 students completed Google-certified online courses.
- SJC Research Grant to the tune of Rs. 8,25,000 was granted to 13 Faculty and 3 Research Scholars.

## **FEEDBACK ANALYSIS**

The IQAC collected feedback from all the stakeholders during the month of February and March

2023. All the stakeholders found the curriculum, infrastructure and training given to students highly satisfactory.

The following suggestions were provided by the various stakeholders:

- Communication Skills of the students is to be improved.
- More number of training sessions to be arranged for various competitive examinations conducted by UPSC/TNPSC, Career Counselling and Placement.
- Coaching for JAM, NET and SET exams is needed.
- Special coaching for slow learners is needed.
- Research labs can be updated with newer research equipment and suitable place for Ph. D research Scholars.
- Job-oriented new programmes can be introduced.

### **Action Taken on Feedback analysis**

- All the potential departments, NET/SET coaching cell and cell for civil service examinations were instructed to conduct coaching classes for JAM, NET, SET, UPSC, TNPSC *etc.*, exams.
- The Training and Placement Cell was instructed to conduct placement-related training for II UG, III UG, I PG and II PG students in collaboration with Joseph Academy of Soft Skills. The Cell had taken initiatives to offer training to improve the skills necessary for getting placed.
- All the departments were asked to conduct a greater number of Remedial Classes for slow learners.
- Space management team of the college was requested to provide space for research scholars in the library block.
- Need based new programmes to be introduced from the forthcoming academic year.