

**SONA COLLEGE OF TECHNOLOGY, SALEM-5**

**(An Autonomous Institution)**

**B.E- Electronics and Computer Engineering**

**CURRICULUM and SYLLABI**

**[For students admitted in 2025-2026]**

**B.E / B.Tech Regulations 2023**

**Approved by BOS and Academic Council meetings**

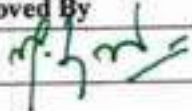




**Sona College of Technology, Salem**  
**(An Autonomous Institution)**  
**Courses of Study for B.E/B.Tech. Semester I under Regulations 2023 (CBCS)**  
**Branch: Electronics and Computer Engineering**

S.No	Course Code	Course Title	L	T	P	J	C	Category	Total Contact Hours	Course Type
<b>Theory Courses</b>										
1.	U23ENG101A	Communication Skills in English	2	0	2	0	3	HS	60	TL
2.	U23MAT102B	Linear Algebra and Multivariable Calculus with MATLAB	3	0	2	0	4	BS	75	TL
3.	U23PHY103B	Engineering Physics	3	0	0	0	3	BS	45	T
4.	U23CHE104B	Chemistry of Electronic Materials	2	0	2	0	3	BS	60	TL
5.	U23PPR105	Problem Solving using Python Programming	3	0	0	0	3	ES	45	T
6.	U23EC101	Fundamentals of Electrical and Electronics	2	0	2	0	3	PC	60	TL
7.	U23TAM101	தமிழர் மரபு / Heritage of Tamils	1	0	0	0	1	HS	15	T
8.	U23GE101	Basic Aptitude-I	2	0	0	0	0	AC	30	T
<b>Practical Courses</b>										
9.	U23PPL112	Python Programming Laboratory	0	0	2	0	1	ES	30	L
<b>Total Credits</b>									<b>21</b>	
<b>Optional Language Elective*</b>										
10.	U23OL1101	French							15	T
11.	U23OL1102	German							15	T
12.	U23OL1103	Japanese	1	0	0	0	1	OL	15	T
13.	U23OL1104	Korean							15	T
14.	U23OL1105	Hindi							15	T

\*T- Theory, TT- Theory with Tutorial, TL- Theory with Laboratory, TP- Theory with Project, TLP- Theory with Laboratory and Project, L-Laboratory, LT- Laboratory with Theory, LP- Laboratory with Project

\*\*Students may opt for foreign languages viz., German/French/Japanese/Korean/Hindi with additional one credit. (Not accounted for CGPA calculation)

Approved By

				
<b>Chairperson, Science and Humanities BoS</b>	<b>Chairperson, ECE BoS</b>	<b>Member Secretary, Academic Council</b>	<b>Dean-Academics</b>	<b>Chairperson, Academic Council &amp; Principal</b>
<b>Dr.M.Renuga</b>	<b>Dr.R.S.Sabeenian</b>	<b>Dr.R.Shivakumar</b>	<b>Dr.J.Akilandeswari</b>	<b>Dr.S.R.R.Senthil Kumar</b>

Copy to:-

HOD/Electronics and Computer Engineering, First Semester B.E. ELCE, Students and Staff, COE

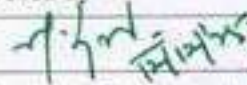
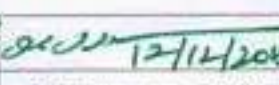
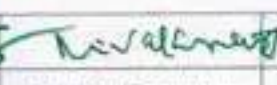
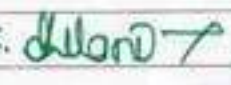

**Sona College of Technology, Salem**  
(An Autonomous Institution)  
**Courses of Study for B.E/B.Tech. Semester II under Regulations 2023 (CBCS)**  
**Branch: Electronics and Computer Engineering**

S.No	Course Code	Course Title	L	T	P	J	C	Category	Total Contact Hours	Course Type*
<b>Theory courses</b>										
1.	U23ENG201A	Technical English	2	0	0	0	2	HS	30	T
2.	U23MAT202B	Transforms and Differential Equations	3	1	0	0	4	BS	60	TT
3.	U23PHY203H	Physics for Electronics and Computer Engineering	2	0	2	0	3	BS	60	TL
4.	U23EX201	Digital System Design	2	0	2	0	3	PC	60	TL
5.	U23EX202	Electronic Circuits	3	0	0	0	3	PC	45	T
6.	U23CPR205	Programming in C	3	0	0	0	3	PC	45	T
7.	U23TAM201	தமிழரும் தொழில்நுட்பமும் / Tamil and Technology	1	0	0	0	1	HS	15	T
8.	U23GE201	Basic Aptitude- II	2	0	0	0	0	AC	30	T
9.	U23GE202	Disaster Management and Preparedness	2	0	0	0	0	AC	30	T
<b>Practical Courses</b>										
10.	U23CPL212	C Programming Laboratory	0	0	2	0	1	PC	30	L
11.	U23EX203	Electronic Circuits laboratory	0	0	2	0	1	PC	30	L
<b>Total Credits</b>							<b>21</b>			
<b>Optional Language Courses**</b>										
12.	U23OL1201	French-II							15	T
13.	U23OL1202	German-II							15	T
14.	U23OL1203	Japanese-II	1	0	0	0	1	OL	15	T
15.	U23OL1204	Korean-II							15	T
16.	U23OL1205	Hindi-II							15	T

\*T- Theory, TT- Theory with Tutorial, TL- Theory with Laboratory, TP- Theory with Project, TLP- Theory with Laboratory and Project, L-Laboratory, LT- Laboratory with Theory, LP- Laboratory with Project

\*\*Students may opt for foreign languages viz., German/French/Japanese/Korean/Hindi with additional one credit (Not accounted for CGPA calculation)

Approved By

				
Chairperson, Science and Humanities BoS	Chairperson, ECE BoS	Member Secretary, Academic Council	Dean-Academics	Chairperson, Academic Council & Principal
Dr.M.Renuga	Dr.R.S.Sabeenian	Dr.R.Shivakumar	Dr.J.Akilandeswari	Dr.S.R.R.Senthil Kumar

Copy to:-HOD/ ECE, Second Semester B.E. Electronics and Computer Engineering Students and Staff, COE

U23ENG101A	Communication Skills in English (Common to ADS, AIML, BME, CSD, CSE, CIVIL, ECE, EXE, EEE, EFE, EVE, FT, IT, MCT and SCE Branches)	L	T	P	J	C
		2	0	2	0	3

### Course Outcomes

At the end of the course, the student will be able to

CO1:	Use grammatical components effectively in both written and spoken communication
CO2:	Develop speaking skills for self-introduction, delivering speeches and technical presentation
CO3:	Demonstrate effective listening skills for academic and professional purposes
CO4:	Write emails, formal letters, build resumes and construct paragraphs
CO5:	Develop speaking skills both in terms of fluency and comprehensibility

### Pre-requisite:

- Knowledge and Understanding of Grammar
- Fundamental Language Skills (LSRW)

### CO/PO, PSO Mapping

(3/2/1 indicates the strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	1	1	1	1	3	3	2	3	3	2	3	2	3
CO2	1	1	1	1	1	3	3	3	3	3	3	3	3	3
CO3	1	2	3	2	2	3	3	2	3	3	3	3	3	3
CO4	1	2	1	2	2	3	3	3	3	3	3	3	3	3
CO5	1	2	2	3	2	3	3	3	3	3	3	3	3	3

### Course Assessment methods

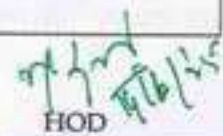
Direct	Indirect
CIE test I (10) (Theory) CIE test II (10) (Theory) CIE test III (10) (Theory) CIE test IV (15) (Practical)	Assignment/seminar/Quiz (5) Total CIE: 50 marks Semester End Examination (50) (SEE – Theory (25 marks + Lab (25 marks)) Course end survey

### Unit 01:

6 Hours

- General vocabulary, Parts of Speech, Articles
- Email, fixing an appointment, cancelling appointments, conference details, hotel accommodation, order for equipment, training programme details, paper submission for seminars and conferences
- Paragraph writing – Describing – defining – providing examples or evidences

<b>Unit 02:</b>				<b>6 Hours</b>
<ul style="list-style-type: none"> <li>• Tenses, Sentence Patterns</li> <li>• Instructions</li> <li>• Letter Writing - calling for quotations, placing orders</li> </ul>				
<b>Unit 03:</b>				<b>6 Hours</b>
<ul style="list-style-type: none"> <li>• Prefixes and Suffixes</li> <li>• Cover letter and resume writing</li> </ul>				
<b>Unit 04:</b>				<b>6 Hours</b>
<ul style="list-style-type: none"> <li>• Modal verbs, concord</li> <li>• Checklist</li> <li>• Letter Writing - Business communication, complaints, replies to queries from business customers</li> </ul>				
<b>Unit 05:</b>				<b>6 Hours</b>
<ul style="list-style-type: none"> <li>• If conditionals</li> <li>• Letter Writing - inviting dignitaries, accepting and declining invitations</li> </ul>				
<b>Lab component:</b>				
<ol style="list-style-type: none"> <li>1. Self-introduction, personal information, name, home background, study details, area of interest, hobbies, strengths and weaknesses, projects and paper presentations, likes and dislikes in food, travel, clothes, special features of home town.</li> <li>2. Mini presentation - Office Arrangements, Facilities, Office Functions, Sales, Purchases, Training Recruitment, Advertising, Applying for financial assistance, applying for a job.</li> <li>3. Listening - understanding short conversations or monologues, taking down phone messages, orders, notes, etc.</li> <li>4. Listening - entering information in tabular form</li> <li>5. Loud Reading</li> </ol>				
<b>Theory: 30 Hrs</b>	<b>Tutorial: --</b>	<b>Practical: 30 hours-</b>	<b>Project:--</b>	<b>Total Hours: 60 Hrs</b>
<b>TEXT BOOKS</b>				
1.	Technical English I & II, Dr. M. Renuga et al. Sonaversity, 2016			
2.	<b>Extensive Reading</b>			
	<ol style="list-style-type: none"> <li>1. She is Dancing Back to Life – A Short Story</li> <li>2. The Story of Google – Sara Gilbert, published by Jaico</li> <li>3. The Story of Amazon.com- Sara Gilbert, published by Jaico</li> </ol>			
<b>REFERENCES</b>				
1.	Norman Whitby, Business Benchmark – Pre-Intermediate to Intermediate, Students Book, Cambridge University Press, 2006.			
2.	A Course in Communication Skills, P. Kiranmai Dutt, Geetha Rajeevan, C. L. N. Prakash, published by Cambridge University Press India Pvt. Ltd.			

  
HOD

**Dr. M. RENUGA,**  
**Professor & Head,**  
Department of Humanities & Languages  
Sona College of Technology.  
SALEM - 637 002

SEMESTER - 1	LINEAR ALGEBRA AND MULTIVARIABLE CALCULUS WITH MATLAB (ECE,BME,EXE,EVE)										L	T	P	J	C
U23MAT102B											3	0	2	0	4
<b>Course Outcomes</b>															
At the end of the course, the student will be able to															
CO1:	apply the concepts of vector spaces and linear transformations in real world applications														
CO2:	apply the concepts of eigenvalues and eigenvectors of a real matrix and their properties to diagonalize the matrix.														
CO3:	find the Taylor's series expansion, Jacobians and the maxima and minima of functions of two variables														
CO4:	apply appropriate techniques of multiple integrals to find the area and volume														
CO5:	apply the concepts of vector differentiation and integration to find the area and volume.														
<b>Pre-requisites:</b>															
<ul style="list-style-type: none"> <li>Fundamentals of elementary algebra</li> <li>Fundamentals of calculus</li> </ul>							<ul style="list-style-type: none"> <li>Fundamentals of geometry</li> <li>Fundamentals of trigonometry</li> </ul>								
<b>CO/PO, PSO Mapping</b>															
(3/2/1 indicates the strength of correlation) 3-Strong, 2-Medium, 1-Weak															
Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)															
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
CO1	3	3		3								2	3		
CO2	3	3		3								2	3		
CO3	3	3		3								2	3		
CO4	3	3		3								2	3		
CO5	3	3		3								2	3		
<b>Course assessment methods [Theory with laboratory course]</b>															
<b>Direct</b>										<b>Indirect</b>					
CIE test I (10) (Theory) CIE test II (10) (Theory) CIE test III (10) (Theory) CIE test IV (15) (Practical) Assignment/Quiz/Seminar (5)					Total CIE: 50 marks Semester End Examination (50) [SEE- Theory (35) + Lab(15) marks]					Course end survey					
<b>Unit 01</b>	<b>VECTOR SPACES</b>												<b>9 Hours</b>		
Vector space – linear independence and dependence of vectors – basis – dimension – linear transformations (maps) – matrix associated with a linear map – range and kernel of a linear map.															
<b>Unit 02</b>	<b>EIGENVALUES AND EIGENVECTORS</b>												<b>9 Hours</b>		
Eigenvalues and eigenvectors of real matrices – properties of eigenvalues and eigenvectors – Cayley-Hamilton theorem – diagonalization of real symmetric matrices.															
<b>Unit 03</b>	<b>FUNCTIONS OF SEVERAL VARIABLES</b>												<b>9 Hours</b>		
Functions of several variables – partial differentiation – total derivative – Jacobians – Taylor's theorem for functions of two variables – maxima and minima of functions of two variables without constraints – constrained maxima and minima by Lagrange's method of undetermined multipliers.															
<b>Unit 04</b>	<b>MULTIPLE INTEGRALS</b>												<b>9 Hours</b>		
Double integrals – change of order of integration – change of variables from Cartesian to polar coordinates – area as double integrals in Cartesian coordinates – triple integrals – volume as triple integrals in Cartesian coordinates.															

Unit 05	VECTOR CALCULUS	9 Hours
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**Vector differentiation:** Scalar and vector valued functions – gradient, directional derivative, divergence and curl – scalar potential.

**Vector integration:** Line, surface and volume integrals – statement of Green's, Stoke's and Gauss divergence theorems – simple applications involving squares, rectangles, cubes and rectangular parallelepiped.

**List of MATLAB Programs**

1.	Programs based on elementary operations on matrices
2.	Computing the rank of a matrix
3.	Finding eigenvalues and eigenvectors of a matrix
4.	Finding partial derivatives of functions of several variables
5.	Computing stationary points of functions of two variables
6.	Taylor's series expansion of functions of two variables
7.	Evaluating double integrals
8.	Finding area as double integrals
9.	Evaluating triple integrals
10.	Finding volume as triple integrals

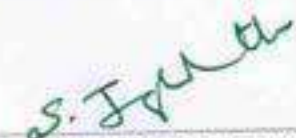
Theory: 45 Hrs	Tutorial: -	Practical: 30 Hrs	Project:--	Total Hours: 75 Hrs
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**TEXT BOOKS:**

1.	T. Veerarajan, "Linear Algebra and Partial Differential Equations", McGraw Hill Publishers, 1 <sup>st</sup> Edition, 2018.
2.	T. Veerarajan, "Engineering Mathematics for Semesters I & II", McGraw Hill Publishers, 1 <sup>st</sup> Edition, 2019.
3.	W. Yang, Y. K. Choi, K. Jackwon, M. C. Kim, H. J. Kim and T. Im, "Engineering Mathematics with MATLAB", CRC Press Publishers, 1 <sup>st</sup> Edition, 2017.

**REFERENCE BOOKS:**

1.	S. Lipschutz and M. L. Lipson, "Linear Algebra", McGraw Hill Publishers, 6 <sup>th</sup> Edition, 2018.
2.	E. Kreyszig, "Advanced Engineering Mathematics", Wiley Publishers, 10 <sup>th</sup> Edition, Reprint, 2017.
3.	C. Prasad and R. Garg, "Advanced Engineering Mathematics", Khanna Publishers, 1 <sup>st</sup> Edition, 2018.
4.	B. V. Ramana, "Higher Engineering Mathematics", McGraw Hill Publishers, 29 <sup>th</sup> Reprint, 2017.
5.	B. S. Grewal, "Higher Engineering Mathematics", Khanna Publishers, 44 <sup>th</sup> Edition, 2018.
6.	D. Xu, "Calculus problem solutions with MATLAB", Walter de Gruyter Publishers, 1 <sup>st</sup> Edition, 2020.



**DR. S. JAYABHARATHI**  
Head / Department of Mathematics

**Dr. S. JAYABHARATHI**  
ASSOCIATE PROFESSOR & HEAD  
DEPARTMENT OF MATHEMATICS,  
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SALEM-636 005, Tamilnadu.  
Ph: 0427 - 4099999.



**DR. M. RENUGA**  
BoS Chairperson/S&H

**Dr. M. RENUGA,**  
Professor & Head,  
Department of Humanities & Languages,  
Sona College of Technology,  
SALEM - 636 005.

U23PHY103B	ENGINEERING PHYSICS (Common to CSE, CSD, CSE(AIIML), CBE, SCE, ECE & EXE)	L	T	P	J	C
		3	0	0	0	3

### Course Outcomes

At the end of the course, the student will be able to

CO1:	Analyse the relation between arrangement of atoms and material properties.
CO2:	Discuss the dual nature of matter and radiation and the application of wave nature of particles.
CO3:	Describe the basic components of lasers.
CO4:	Differentiate the electrical and thermal conductivity of metals.
CO5:	Elucidate the theory and classification of semiconducting materials.

### Pre-requisite:

Basic knowledge in atomic physics and optics.

### CO/PO, PSO Mapping

(3/2/1 indicates the strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO 1	3	2	-	-	-	2	2	-	-	2	-	2	-	2
CO 2	3	2	-	-	-	2	2	-	-	2	-	2	-	2
CO 3	3	2	-	-	-	2	2	-	-	2	-	2	-	2
CO 4	3	2	-	-	-	2	2	-	-	2	-	2	-	2
CO 5	3	2	-	-	-	2	2	-	-	2	-	2	-	2

### Course Assessment methods

Direct		Indirect
CIE test I (9) CIE test II (9) CIE test III (10) Objectives Test (7)	Assignment/seminar/Quiz (5) Total CIE: 40 marks Semester End Examination (60)	Course end survey

### Unit 01: CRYSTAL PHYSICS

9 Hours

Importance of crystals - Types of crystals - Basic definitions in crystallography (Lattice -space lattice - unit cell - lattice parameters - basis) - Bravais lattices - Lattice planes and Miller indices - Interplanar distance - d spacing in cubic lattice - Calculation of number of atoms per unit cell - Atomic radius - Coordination

number - Atomic Packing Factor for SC, BCC, FCC and HCP structures - Polymorphism and allotropy - Crystal imperfections - Point, line and surface defects - Burger vector.

**Unit 02: QUANTUM PHYSICS**

**9 Hours**

Limitations of classical theory - Dual nature of matter and radiation - Compton effect - Expression for Compton shift (no derivation) - de Broglie waves - Heisenberg's Uncertainty principle - Schrodinger's time independent and time dependent wave equations - Physical significance of wave function - Energy and wave function of an electron trapped in one dimensional box - Application of wave nature of particles - Electron microscope - Comparison of optical and electron microscope - Scanning electron microscope - Limitations of electron microscope.

**Unit 03: LASERS**

**9 Hours**

Energy level - Stimulated absorption - Population inversion - Meta stable state - Spontaneous emission - Stimulated emission - Basic components of a laser - Einstein's theory of spontaneous and stimulated emission of radiation - Types of lasers - Solid state laser - Nd:YAG laser - Gas laser - CO<sub>2</sub> laser - Semiconductor laser - Homojunction and hetero junction laser - Holography - Construction and reconstruction of hologram - Application of laser in industry - Cutting, welding and drilling - Medical applications - Lasik.

**Unit 04: CONDUCTING MATERIALS**

**9 Hours**

Basic definitions - Classical free electron theory of metals - Expression for electrical conductivity and thermal conductivity - Wiedemann Franz law - Lorentz number - Drawbacks of classical free electron theory - Quantum theory - band theory of solids (qualitative treatment only) - Fermi energy and Fermi distribution function - Effect of temperature on Fermi function - Density of energy states - Carrier concentration in metals.

**Unit 05: SEMICONDUCTING MATERIALS**

**9 Hours**

Intrinsic semiconductors - Energy band diagram - Direct and indirect band gap semiconductors - Carrier concentration in intrinsic semiconductors - Fermi level - Variation of Fermi level with temperature - Electrical conductivity - Band gap determination - Extrinsic semiconductors - Carrier concentration in n-type and p-type semiconductors (Qualitative Treatment only) - Variation of Fermi level with temperature and impurity concentration - Hall effect - Determination of Hall coefficient - Applications.

**Theory: 45 Hrs**

**Tutorial: --**

**Practical: --**

**Project:--**

**Total Hours: 45 Hrs**

**TEXT BOOKS**

1. M.N. Avadhanulu, P.G. Kshirsagar, "A Textbook of Engineering Physics", S.Chand & Company Ltd, New Delhi 2014.
2. D. K. Bhattacharya, Poonam Tandon "Engineering Physics", Oxford University Press 2017.

**REFERENCES**

1.	"Engineering Physics", Sonaversity, Sona College of Technology, Salem, Revised Edition 2018.
2.	B. K. Pandey and S. Chaturvedi, "Engineering Physics", Cengage Learning India Pvt. Ltd., Delhi, 2021.
3.	V. Raghavan, "Materials Science and Engineering: A First Course" Prentice Hall India Learning Private Limited, 6 <sup>th</sup> Edition, 2015.
4.	William D. Callister Jr., David G. Rethwisch, "Callister's Materials Science and Engineering", 10th Edition, Global Edition 2019.
5.	R.Wolfson, "Essential University Physics", Volume 1 & 2, Pearson Education (Indian Edition), 2009.

*C. Shanthi*  
14.6.2025

**Dr. C. Shanthi**  
HOD / Science

**Dr. C. SHANTHI**, M.Sc., M.E., Ph.D.,  
Professor of Physics  
Head, Department of Sciences  
Sona College of Technology (Autonomous)  
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*M. Renuga*  
14/6/25

**Dr.M. Renuga**  
BoS - Chairperson,  
Science and Humanities

**Dr. M. RENUGA**,  
Professor & Head,  
Department of Humanities & Lan  
Sona College of Technology,  
SALEM - 636 005.

U23CHE104B	<b>CHEMISTRY OF ELECTRONIC MATERIALS</b> [Common to Electronics and Communication Engineering, Electronics and Computer Engineering & Electronics Engineering (VLSI Design and Technology)]	L	T	P	J	C
		2	0	2	0	3

### Course Outcomes

At the end of the course, the student will be able to

CO1:	Understand the concepts of electrochemistry and its applications in engineering and technology.
CO2:	Analyze the methods of synthesis, conducting mechanism, characteristics and commercial applications of conducting polymers.
CO3:	Acquire the knowledge of optoelectronic devices and an understanding of the trade-offs when using these devices in their respective applications.
CO4:	Describe the working principle and application of various electrochemical processes carried out in electronic industries.
CO5:	Analyze the need of e-waste management and disposal methods across the globe.

**Pre-requisite:** Basic knowledge on the concepts of organic, inorganic and physical chemistry.

### CO/PO, PSO Mapping

(3/2/1 indicates the strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2					2							2
CO2	3	2												2
CO3	3	2					2							2
CO4	3	2					2							2
CO5	3	2					3							2

### Course Assessment methods

Direct	Indirect
CIE test I (10) CIE test II (10) CIE test III (10) CIE test IV(15) (Practical)	Assignment/seminar/Quiz(5) Total CIE: 50 marks Semester End Examination: 50 marks [SEE - Theory (25 marks), Lab (25 marks)]
	Course end survey

### Unit 01: ELECTROCHEMISTRY

6 Hours

Electrode potential-Nernst equation - derivation and problems based on single electrode potential calculation-Reference electrodes - Standard hydrogen electrode - Calomel electrode - Glass electrode - measurement of pH - Electrochemical series - Significance - Measurement of emf by Pogendorff's method - Potentiometric titrations (redox  $\text{Fe}^{2+}$  Vs Dichromate) - Conductometric titrations (HCl vs NaOH).

<b>Unit 02: INTRODUCTION TO MOLECULAR ELECTRONICS</b>				<b>6 Hours</b>
Introduction-organic semiconductors for molecular electronics – concepts and choice of suitable organic molecules – principles in optical properties - potential applications of electronic components formed from single, or small groups of molecules - Conducting polymers - Synthesis of polyacetylene-polythiophene-structure property relationships - doping concept in conducting polymers - Graphene Oxide - Preparation (Hummer's method), properties and commercial applications.				
<b>Unit 03: OPTOELECTRONIC MATERIALS</b>				<b>6 Hours</b>
Electroluminescence-Exciton-OLED materials–Organic field effect transistors - Liquid crystalline polymers-classification of liquid crystals, chemical constitution, stability and applications - Organic solar cells - perovskite, linear heterojunction and bulk heterojunction - Dye sensitized organic solar cells – working principles, nature of materials, advantages and disadvantages.				
<b>Unit 04: ELECTROCHEMICAL PROCESSING</b>				<b>6 Hours</b>
Electroplating-Principle and process - Plating Parameters - Current and energy efficiency-Electroplating of Cu and Ni -Fundamentals of electroless deposition - Electroless plating of Cu and Ni-Fabrication of PCB's-Electrochemical etching of copper from PCB's-Anodizing-Definition-Principle and working methodology of aluminium anodizing- Cyclic voltammetry- basic principles and applications - Electrochemical Sensors – definitions and applications.				
<b>Unit 05: E-WASTE MANAGEMENT</b>				<b>6 Hours</b>
Introduction-Components of E-waste-Need of E-waste Management-Pollutants in E-waste-Impact on environment and human health-E-waste methods of disposal-Recycling process-Advantages-Recycling of PCB and battery components-Recycling of conventional solar cells-Extraction of copper and gold from e-waste (PCB).				
<b>List of Experiments</b>				<b>30 Hours</b>
<ol style="list-style-type: none"> <li>1) Estimation of HCl by pH metry.</li> <li>2) Estimation of HCl by conductometry (HCl Vs NaOH).</li> <li>3) Estimation of mixture of acids by conductometry (HCl + CH<sub>3</sub>COOH Vs NaOH).</li> <li>4) Estimation of ferrous ion by potentiometric titration.</li> <li>5) Estimation of copper content from discarded PCBs by EDTA method.</li> <li>6) Estimation of chromium prepared from electroplating sludge by Permanganometry.</li> <li>7) Determination of molecular weight of a polymer by viscosity measurements.</li> <li>8) Estimation of hardness of water sample by EDTA method.</li> <li>9) Estimation of alkalinity of water sample by indicator method.</li> <li>10) Estimation of iron content in water by spectrophotometry.</li> </ol>				
<b>Theory: 30 Hrs</b>	<b>Tutorial: 0</b>	<b>Practical: 30 Hrs</b>	<b>Project: 0</b>	<b>Total Hours: 60 Hrs</b>
<b>TEXT BOOKS.</b>				
1. Engineering Chemistry, P C Jain & Monica Jain, Dhanpat Rai Publication, 2015-16th Edition.				

2.	Sam-Shajing Sun, Larry R. Dalton "Introduction to Organic Electronic and Optoelectronic Materials and Devices", CRC press., London, 2017, 2nd edition.
<b>REFERENCES</b>	
1.	Bansi D. Malhotra "Handbook of Polymers in Electronics", Rapra Technology Ltd., UK, 2002. 1st edition.
2.	Stergios Logothetidis "Handbook of Flexible Organic Electronics Materials - Manufacturing and Applications", WoodHead publishing., London, 2015. , 1st edition.
3.	Andrew S. Tanenbaum, "Modern Operating Systems", Prentice Hall of India, 3rd edition 2013.
4.	OLED Display Fundamentals and Applications, Takatoshi Tsujimura, Wiley-Blackwell , 2012.

*CS*  
14.6.2025

Dr. C. Shanthi

HOD / Science

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*M. Renuga*  
14/6/25

Dr. M. Renuga

BoS - Chairperson

Science and Humanities

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U23PPR105	<b>PROBLEM SOLVING USING PYTHON PROGRAMMING</b> (Common to ADS, IT, CSE, CSE(AI/ML), CSD, SCE, CBE, CIVIL, BME, ECE, EXE, EVE, EEE, EFE, MECH, MCT and SFE Branches)											L	T	P	J	C
												3	0	0	0	3
<b>Course Outcomes</b>																
At the end of the course, the student will be able to																
CO1	Develop algorithmic solutions to simple computational problems															
CO2	Write simple Python programs															
CO3	Write programs with the various control statements and handling strings in Python															
CO4	Develop Python programs using functions and files															
CO5	Analyze a problem and use appropriate data structures to solve it.															
<b>Pre-requisite: NIL</b>																
<b>CO/PO, PSO Mapping</b>																
(3/2/1 indicates the strength of correlation) 3-Strong, 2-Medium, 1-Weak																
COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2		
CO1	2	2	3	1	1									1		
CO2	2	2	3	1	1									1		
CO3	2	2	3	1	1									1		
CO4	2	2	3	1	1									1		
CO5	2	2	3	1	1									1		
<b>Course Assessment methods</b>																
<b>Direct</b>												<b>Indirect</b>				
CIE test I (9)						Objectives Test (7)						Course end survey				
CIE test II (9)						Total CIE: 40 marks										
CIE test III (10)						Semester End Examination (60)										
Assignment/seminar/Quiz (5)																
<b>UNIT I</b>	<b>ALGORITHMIC PROBLEM SOLVING</b>												<b>9 Hours</b>			
Need for computer languages, Algorithms, building blocks of algorithms (statements, state, control flow, functions), notation (pseudo code, flow chart, programming language), algorithmic problem solving, simple strategies for developing algorithms (iteration, recursion).																
<b>UNIT II</b>	<b>BASICS OF PYTHON PROGRAMMING</b>												<b>9 Hours</b>			
Introduction-Python Interpreter-Interactive and script mode -Values and types, variables, operators, expressions, statements, precedence of operators, Multiple assignments, comments, input function, print function, Formatting numbers and strings, implicit/explicit type conversion.																
<b>UNIT III</b>	<b>CONTROL STATEMENTS AND STRINGS</b>												<b>9 Hours</b>			
Conditional (if), alternative (if-else), chained conditional (if-elif-else). Iteration-while, for, infinite loop, break, continue, pass, else. Strings-String slices, immutability, string methods and operations.																

<b>UNIT IV</b>	<b>FUNCTIONS, FILES AND MODULES</b>				<b>9 Hours</b>
Functions - Introduction, inbuilt functions, user defined functions, passing parameters – positional arguments, default arguments, keyword arguments, return values, local scope, global scope and recursion. Files -Text files, reading and writing files. Modules – create – import.					
<b>UNIT V</b>	<b>DATA STRUCTURES: LISTS, SETS, TUPLES, DICTIONARIES</b>				<b>9 Hours</b>
Lists-creating lists, list operations, list methods, mutability list functions, searching and sorting, Sets-creating sets, set operations. Tuples-Tuple assignment, Operations on Tuples, lists and tuples, Tuple as return value- Dictionaries-operations and methods, Nested Dictionaries, Union Operation.					
<b>Theory: 45 Hrs</b>		<b>Tutorial: –</b>	<b>Practical: –</b>	<b>Project:--</b>	<b>Total Hours: 45 Hrs</b>
<b>TEXT BOOKS</b>					
1.	Reema Thareja, "Problem Solving and Programming with Python" Oxford University Press, 2 <sup>nd</sup> Edition 2023.				
<b>REFERENCES</b>					
1.	Ashok Namdev Kamthane, Amit Ashok Kamthane, "Programming and Problem Solving with Python" Mc-Graw Hill Education, 2018.				
2.	Charles Dierbach, "Introduction to Computer Science using Python: A Computational Problem Solving Focus" Wiley India Edition, 2013.				
3.	Allen Downey, "Think Python: How to Think Like a Computer Scientist" O'Reilly Media, 2nd Edition 2016.				
4.	Timothy A. Budd," Exploring Python" Mc-Graw Hill Education (India) Private Ltd., 2015.				

  
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U23EC101	FUNDAMENTALS OF ELECTRICAL AND ELECTRONICS Common to B.E(ECE,EXE,EVE)	L	T	P	J	C
		2	0	2	0	3

**Course Outcomes**

At the end of the course, the student will be able to

CO1:	Realize the basic concepts of electrical quantities and components.
CO2:	Understand the workings of electrical machines.
CO3:	Analyse the construction and characteristics of semiconductor devices.
CO4:	Examine the BJT formation and its characteristics and Identify the applications of BJT.
CO5:	Describe the operational principles of Special Devices

**Pre-requisite:**

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**CO/PO, PSO Mapping**

(3/2/1 indicates the strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO 1	1	3	1	1	2	3	2	2		1	2	3	3	2
CO 2	1	1	2	2	1	3	2	1		3	1	3	1	
CO 3	1	3	2	3	2	3	2	2		3	2	3	3	2
CO 4	1	2	2	3	2	3	2	1		3	2	3	3	2
CO 5	1	2	2	3	2	3	2	1		3	2	3	3	2

**Course Assessment methods**

Direct		Indirect
CIE test I (10) - Theory CIE test II (10) - Theory CIE test III (10) - Theory CIE test IV(15) - Laboratory	Assignment / Quiz/ Seminar (5) Total CIE: <b>50 marks</b> Semester End Examination: <b>50 marks</b> [SEE- Theory (25 marks), Lab (25 marks)]	Course end survey

**Unit 01: BASIC OF ELECTRICAL PERCEPTIONS**

**6 Hours**

Definition of Electric Voltage, Current, Power, Energy, Ohms law, Limitations of Ohms law, Comparison of AC & DC Signals- Resistance in series and parallel combinations- comparison of series and parallel circuits-

Series combination of capacitance and Inductance – Kirchoff's Law – simple problems.	
<b>Unit 02: ELECTRICAL MACHINES</b>	<b>6 Hours</b>
DC Generator and DC Motors: Construction and working principle – Types – EMF equation – Transformer: Construction and working principle – EMF equation.	
<b>Unit 03: BASIC SEMICONDUCTOR DEVICES</b>	<b>6 Hours</b>
Energy band theory-Conductor-Insulator-Semiconductor- Review of intrinsic and extrinsic semiconductors – Devices – Construction of PN junction – VI Characteristics - Transition and diffusion capacitances - Zener diode- VI characteristics - Zener diode as voltage regulator.	
<b>Unit 04: BJT AND ITS APPLICATIONS</b>	<b>6 Hours</b>
Bipolar Junction Transistor – Construction and working - Input and Output characteristics in CB, CE, CC Configurations –Application of transistor as a switch.	
<b>Unit 05: SPECIAL DEVICES</b>	<b>6 Hours</b>
Construction, working & Characteristics of – Tunnel Diode - Varactor diode - Photo diode - Photo transistor- UJT - SCR – TRIAC - DIAC.	
<b>List of Experiments</b>	<b>30 Hours</b>
<ol style="list-style-type: none"> <li>1) Measurement of AC and DC signals using Measuring Instruments</li> <li>2) Realization and design problem on Ohms Law</li> <li>3) Realization and design problem on KCL and KVL</li> <li>4) VI characteristics of PN junction diode</li> <li>5) VI characteristics of Zener Diode</li> <li>6) Input and Output Characteristics of BJT in CE configuration</li> <li>7) Input and Output Characteristics of BJT in CC configuration</li> <li>8) Input and Output Characteristics of BJT in CB configuration</li> <li>9) Realization of transistor as switch</li> <li>10) VI characteristics of UJT</li> </ol>	

*J. S.*

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Professor & Head of the Department,

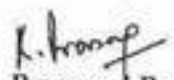
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11) VI characteristics of SCR				
12) VI characteristics of TRIAC				
13) Simulation of Servo Motor to study its performance				
Theory: 30 Hrs	Tutorial: --	Practical: 30 Hrs	Project: --	Total Hours: 60 Hrs

<b>TEXT BOOKS</b>	
1.	D P Kothari and I J Nagrath, "Basic Electrical and Electronics Engineering", Mc Graw Hills (India) Private Limited, 2 <sup>nd</sup> Edition 2020.
2.	Salivahanan S. and Sureshkumar N., "Electronic Devices and Circuits", 4th Edition, McGraw-Hill, New Delhi, 2017
<b>REFERENCES</b>	
1.	D. Devaraj, S. K. Bhattacharya, "Basic Electrical and Electronics Engineering", Pearson India, 2017
2.	Abhi Chakrabarti, Sudipta Debnath, Soumitra Kumar Mandal, "Basic Electrical & Electronics Book ", Mc Graw Hill Education; Fifth Edition, 2016.
3.	Ravish Singh, " Basic Electrical & Electronics Engineering", McGraw Hill Education, 2014

  
Prepared By  
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Approved By  
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U23TAM101	<b>தமிழர் மரபு / Heritage of Tamils</b>		L	T	P	J	C
			1	0	0	0	1
<b>Course Outcomes</b>							
At the end of the course, the student will be able to							
CO1:	Describe Tamil Language and Literature						
CO2:	Analyse Heritage - Rock Art Paintings To Modern Art – Sculpture						
CO3:	Explain Folk and Martial Arts						
CO4:	Describe Thinaï Concept of Tamils						
CO5:	Analyse Contribution of Tamils to Indian National Movement and Indian Culture						
<b>Course Assessment methods</b>							
<b>Direct</b>				<b>Indirect</b>			
CIE test I (30)	Total CIE: 100 marks			Course end survey			
CIE test II (30)	Semester End Examination: NIL						
CIE test III (40)							
<b>Unit 01: LANGUAGE AND LITERATURE</b>						<b>3 Hours</b>	
Language Families in India - Dravidian Languages – Tamil as a Classical Language - Classical Literature in Tamil – Secular Nature of Sangam Literature – Distributive Justice in Sangam Literature - Management Principles in Thirukural - Tamil Epics and Impact of Buddhism & Jainism in Tamil Land - Bakthi Literature Azhwars and Nayanmars - Forms of minor Poetry - Development of Modern literature in Tamil - Contribution of Bharathiyar and Bharathidhasan..							
<b>Unit 02: HERITAGE - ROCK ART PAINTINGS TO MODERN ART – SCULPTURE</b>						<b>3 Hours</b>	
Hero stone to modern sculpture - Bronze icons - Tribes and their handicrafts - Art of temple car making - - Massive Terracotta sculptures, Village deities, Thiruvalluvar Statue at Kanyakumari, Making of musical instruments - Mridhangam, Parai, Veenai, Yazh and Nadhaswaram - Role of Temples in Social and Economic Life of Tamils							
<b>Unit 03: FOLK AND MARTIAL ARTS</b>						<b>3 Hours</b>	
Therukoothu, Karagattam, Villu Pattu, Kaniyan Koothu, Oyillattam, Leather puppetry, Silambattam, Valari, Tiger dance - Sports and Games of Tamils							
<b>Unit 04: THINAI CONCEPT OF TAMILS</b>						<b>3 Hours</b>	
Flora and Fauna of Tamils & Aham and Puram Concept from Tholkappiyam and Sangam Literature - Aram Concept of Tamils - Education and Literacy during Sangam Age - Ancient Cities and Ports of Sangam Age - Export and Import during Sangam Age - Overseas Conquest of Cholas.							
<b>Unit 05: CONTRIBUTION OF TAMILS TO INDIAN NATIONAL MOVEMENT AND INDIAN CULTURE</b>						<b>3 Hours</b>	
Contribution of Tamils to Indian Freedom Struggle - The Cultural Influence of Tamils over the other parts of India – Self-Respect Movement - Role of Siddha Medicine in Indigenous Systems of Medicine – Inscriptions & Manuscripts – Print History of Tamil Books							
Theory: 15 Hrs		Tutorial: --		Practical: --		Project:--	
Total Hours: 15 Hrs							
<b>REFERENCES</b>							
1	தமிழக வரலாறு – மக்களும் பண் பொடும் – மக.மக. பிள்மள (தவளியீடு: தமிழ்நொடு பொடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).						
2	கணினித் தமிழ் – முமனவர ில. சுந்தரம் . (விகடன் பிரசுரம் )						

3	கீழடி - மவமக நதிக்கமரயில் ஂங்ககொல நகர நொகரிகம் (ததொல்லியல் துமறதவளியீடு)
4	பொருமந - ஆற்றங்கமர நொகரிகம். (ததொல்லியல் துமற தவளியீடு)
5	Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL - (in print)
6	Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies)
7	Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
8	The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)
9	Keeladi - 'Sangam City Civilization on the banks of river Vaigai' (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
10	Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published by: The Author)
11	Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
12	Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) - Reference Book.

  
HOD

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U23TAM101	தமிழர் மரபு / Heritage of Tamils	L	T	P	J	C
		1	0	0	0	1
<b>Course Outcomes</b>						
At the end of the course, the student will be able to						
CO1:	Describe Tamil Language and Literature					
CO2:	Analyse Heritage - Rock Art Paintings To Modern Art – Sculpture					
CO3:	Explain Folk and Martial Arts					
CO4:	Describe Thinaï Concept of Tamils					
CO5:	Analyse Contribution of Tamils to Indian National Movement and Indian Culture					
<b>Course Assessment methods</b>						
<b>Direct</b>				<b>Indirect</b>		
CIE test I (30)		Total CIE: 100 marks		Course end survey		
CIE test II (30)		Semester End Examination: NIL				
CIE test III (40)						
<b>அலகு 1 : மொழி மற்றும் இலக்கியம்</b>					<b>3 Hours</b>	
இந்திய மொழிக் குடும்பங்கள் - திராவிட மொழிகள் - தமிழ் ஒரு செம்மொழி -தமிழ் செவ்விலக்கியங்கள் - சங்க இலக்கியத்தின் சமயச் சார்பற்ற தன்மை - சங்க இலக்கியத்தில் பகிர்தல் அறம் - திருக்குறளில் மேலாண்மைக் கருத்துக்கள் - தமிழ்க் காப்பியங்கள், தமிழகத்தில் சமண பௌத்த சமயங்களின் தாக்கம் - பக்தி இலக்கியம், ஆழ்வார்கள் மற்றும் நாயன்மார்கள் - சிற்றிலக்கியங்கள் - தமிழில் நவீன இலக்கியத்தின் வளர்ச்சி - தமிழ் இலக்கிய வளர்ச்சியில் பாரதியார் மற்றும் பாரதிதாசன் ஆகியோரின் பங்களிப்பு.						
<b>அலகு 2 : மரபு – பாறை ஓவியங்கள் முதல் ஓவியங்கள் வரை – சிற்பக் கலை</b>					<b>3 Hours</b>	
நடுகல் முதல் சிற்பங்கள் வரை – ஐம்பொன் சிலைகள் - பழங்குடியினர் மற்றும் அவர்கள் தயாரிக்கும் கைவினைப் பொருட்கள், பொம்மைகள் - தேர் செய்யும் கலை- சுடுமண் சிற்பங்கள் - நாட்டுப்புறத் தெய்வங்கள் - குமரிமுனையில் திருவள்ளூர் சிலை - இசைக் கருவிகள் - மிருதங்கம், பறை, வீணை, யாழ், நாதஸ்வரம் - தமிழர்களின் சமூக பொருளாதார வாழ்வில் கோவில்களின் பங்கு						
<b>அலகு 3: நாட்டுப்புறக் கலைகள் மற்றும் வீர விளையாட்டுகள்</b>					<b>3 Hours</b>	
தெருக்கூத்து, கரகாட்டம், வில்லுப்பாட்டு, கணியான் கூத்து, ஓயிலாட்டம், தோலபாவைக் கூத்து, சிலம்பாட்டம், வளரி, புலியாட்டம், தமிழர்களின் விளையாட்டுகள்.						
<b>அலகு 4: தமிழர்களின் திணைக் கோட்பாடுகள்</b>					<b>3 Hours</b>	
தமிழகத்தின் தாவரங்களும், விலங்குகளும் - தொல்காப்பியம் மற்றும் சங்க இலக்கியத்தில் அகம் மற்றும் புறக் கோட்பாடுகள் – தமிழர்கள் போற்றிய அறக்கோட்பாடு – சங்ககாலத்தில் தமிழகத்தில் எழுத்தறிவும், கல்வியும் -						

சங்ககால நகரங்களும் துறை முகங்களும் - சங்ககாலத்தில் ஏற்றுமதி மற்றும் இறக்குமதி - கடல்கடந்த நாடுகளில் சோழர்களின் வெற்றி.

அலகு 5: இந்திய தேசிய இயக்கம் மற்றும் இந்திய பண்பாட்டிற்குத் தமிழர்களின் பங்களிப்பு

3 Hours

இந்திய விடுதலைப்போரில் தமிழர்களின் பங்கு - இந்தியாவின் பிறப்பகுதிகளில் தமிழ்ப் பண்பாட்டின் தாக்கம் - சுயமரியாதை இயக்கம் - இந்திய மருத்துவத்தில், சித்த மருத்துவத்தின் பங்கு - கல்வெட்டுகள் கையெழுத்துப்படிக்கல் - தமிழ்ப் புத்தகங்களின் அச்சு வரலாறு.

Theory: 15 Hrs

Tutorial: --

Practical: --

Project:--

Total Hours: 15 Hrs

REFERENCES

1	தமிழக வரலாறு - மக்களும் பண்பாடு - கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).
2	கணினித் தமிழ் - முனைவர் இல.சுந்தரம்.(விகடன் பிரசுரம்).
3	கீழடி - வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)
4	பொருளை - ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு)
5	Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL - (in print)
6	Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies)
7	Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies)
8	The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)
9	Keeladi - 'Sangam City Civilization on the banks of river Vaigai' (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
10	Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published by: The Author)
11	Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
12	Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) - Reference Book.

  
HOD

**Dr. M. RENUGA,**  
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SALEM - 636 003.

U23GE101	BASIC APTITUDE-1	L	T	P	J	C
		2	0	0	0	0

### Course Outcomes

At the end of the course, the student will be able to

<b>CO1:</b>	Solve the problems in Divisibility , Division algorithm ,Successive Division and HCF & LCM. Identify Synonyms and Antonyms.
<b>CO2:</b>	Elucidate the problems in BODMAS rule, Approximation, Surds and Indices, Algebraic Simplification and Square root and Cube root. Choose appropriate Verbal Analogies and edit the given passages.
<b>CO3:</b>	Crack the problems involving Ratio and Proportion, and discuss Proportionality Theorems. Comprehend the given passages for Reading Comprehension activity and answer the questions correctly.
<b>CO4:</b>	Deduce the problems involving Linear equation and Quadratic equation. Demonstrate good vocabulary skill by doing the one word substitution and sentence filler exercise with high degree of accuracy.
<b>CO5:</b>	Interpret the logical reasoning problems from Number series ,Coding and Decoding and Exhibit good expertise in detecting errors in the given sentences.

### Pre-requisite:

- Basic English language and Grammar knowledge
- Knowledge in Basic Mathematics

### CO/PO, PSO Mapping

(3/2/1 indicates the strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	1	1	1	3	3	3	2	3
CO2	3	3	3	2	1	1	1	3	3	3	2	3
CO3	3	3	3	2	1	1	1	3	3	3	2	3
CO4	3	3	3	2	1	1	1	3	3	3	2	3
CO5	3	3	3	2	1	1	1	3	3	3	2	3

### Course Assessment methods

Direct		Indirect
CIE test I (30) - Theory	Total CIE: 100 marks Semester End Examination – NIL	Course end survey
CIE test II (30) - Theory		
CIE test III (40) – Theory		

<b>Unit 01</b>				<b>6 Hours</b>
Number Properties: Classification of numbers - Divisibility - Division algorithm - Successive Division - HCF and LCM – Problems Verbal Aptitude: Synonyms and b. Antonyms				
<b>Unit 02</b>				<b>6 Hours</b>
Simplification: BODMAS Rule - Approximation - Surds and Indices - Algebraic Simplification - Square root and Cube root – Problems Verbal Aptitude: Verbal analogy, Editing passages				
<b>Unit 03</b>				<b>6 Hours</b>
Ratio and Proportion : Ratio - Properties of Ratios - Compound Ratio - Coin based problems - Proportion - Proportionality Test - Proportionality Theorems - Inverse Proportion - Variation – Problems  Verbal Aptitude: Reading Comprehension				
<b>Unit 04</b>				<b>6 Hours</b>
Equations: a. Linear equation: Simultaneous Linear Equations - Consistent System - Inconsistent System - Problems b. Quadratic Equation: Different Ways to Express the Quadratic Equation - Discriminant of the Quadratic Equations - Roots - Nature of the Roots - Relation between roots and coefficient of equation - Formation of a Quadratic Equation – Problems  Verbal Aptitude: One word substitution , Sentence filler words				
<b>Unit 05</b>				<b>6 Hours</b>
Logical Reasoning : Number series – Coding and Decoding – Problem Verbal Aptitude: Error detection				
<b>Theory: 30 Hrs</b>	<b>Tutorial: 0</b>	<b>Practical: 0</b>	<b>Project: 0</b>	<b>Total Hours: 30 Hrs</b>
<b>TEXT BOOKS</b>				
1.	S.Chand and Dr.R.S.Aggarwal, “Quantitative Aptitude for competitive examinations”, S Chand and Company Limited 2019.			
2.	Nishit K.Sinha, “Logical Reasoning and Data Interpretation”, Pearson 2021.			

*S. Anita*  
11/09/2023

**Dr.S.Anita**  
**Head/Training**  
**Dr. S. ANITA**  
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U23PPL112	<b>PYTHON PROGRAMMING LABORATORY</b> (Common to ADS, IT, CSE, CSE(AI/ML), CSD, SCE, CBE, CIVIL, BME, ECE, EXE, EVE, EEE, EFE, MECH, MCT and SFE Branches)	L	T	P	J	C
		0	0	2	0	1

### Course Outcomes

At the end of the course, the student will be able to

CO1	Implement the algorithms using basic control structures in Python
CO2	Develop Python programs to use functions, strings and data structures to solve different types of problems
CO3	Implement persistent storing information through file operations

Pre-requisite: NIL

### CO/PO, PSO Mapping

(3/2/1 indicates the strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	3	2	1								1
CO2	3	3	3	3	2	2								1
CO3	3	3	3	3	2	2								1

### Course Assessment methods

Direct		Indirect
CIE test I (15)	RTPS (10) Record (10) Total CIE: 60 marks Semester End Examination (40 marks)	Course end survey
Quiz I- (5)		
CIE test II (15)		
Quiz II- (5)		

### LIST OF EXPERIMENTS

1. Draw flowchart using any open source software.
2. Implement programs with simple language features.
3. Implement various branching statements in python.
4. Implement various looping statements in python.
5. Develop python programs to perform various string operations like concatenation, slicing, indexing.
6. Implement user defined functions using python.
7. Implement recursion using python.
8. Implement python program to perform operations on file and module.
9. Develop python programs to perform operations on list and tuples.
10. Implement dictionary and set in python.

Theory: --

Tutorial: --

Practical: 30Hrs

Project: --

Total Hours: 30 Hs

*J. Akilandeswari*

Dr. J. AKILANDESWARI  
Professor & Head

Department of Information Technology  
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U23OL1101		French			L	T	P	J	C
					1	0	0	0	1
<b>Course Outcomes</b>									
<b>At the end of the course, the student will be able to</b>									
CO1:	Read French phrases, Spell French phonitis, practice French accents, differentiate French and English sounds								
CO2:	Introduce oneself, talk about someone, ask others personal information, identify an object, ask and respond politely in a conversation								
CO3:	Read and write a small announcement, describe about neighbours, write a small portrait								
CO4:	Express one's wishes, talk about one's hobbies, ask time, describe one's status of life in a blog, justify a choice, express one's preferences, write a list of needs								
CO5:	Suggest to do something, appreciate something, talk about a movie, write a postal card								
<b>Course Assessment methods</b>									
<b>Direct</b>					<b>Indirect</b>				
CIE test I (30) CIE test II (30) CIE test III (40)					Total CIE: 100 marks Semester End Examination: NIL Course end survey				
<b>Unit 01:</b>								<b>3 Hours</b>	
Hr 2: Alphabets, Basic wishes, self-introduction, basic verbs: avoir and être Hr 4: Nationalities and countries, colors, days & months Hr 6: Definite articles, numbers 0-20, write about one's identification									
<b>Unit 02:</b>								<b>3 Hours</b>	
Hr 8: Professions, conjugation: 1 <sup>st</sup> group verbs, indefinite articles Hr 10: Preposition of place, identity card, negative sentence Hr 12: Things around us, subjective and ephatitic pronouns, self-introduction online									
<b>Unit 03:</b>								<b>3 Hours</b>	
Hr 14: Talk about accommodation, conjugation: aller and venir, possessive adjectives Hr 16: Adjective's gender, noun's gender, things in a room, simple prepositions Hr 18: Physical description, speak about accommodation, writing a self-potrait									
<b>Unit 04:</b>								<b>3 Hours</b>	
Hr 20: Hobbies, conjugation: vouloir, pouvoir and devoir, connected articles Hr 22: Interrogative adjectives, daily activities, time and seasons, pronominal verbs Hr 24: Near future tense, talk about preferences, write a mail									
<b>Unit 05:</b>								<b>3 Hours</b>	
Hr 26: Outing activities, conjugation: faire and sortir, demonstrative adjectives Hr 28: Adverbs of frequency, family members, past tenses (passé composé and imparfait) Hr 30: French arts, talk about a film, and write a postal card									
<b>Theory: 15 Hrs</b>		<b>Tutorial: --</b>		<b>Practical: --</b>		<b>Project:--</b>		<b>Total Hours: 15 Hrs</b>	
<b>TEXT BOOKS</b>									
1.	The course faculty will provide relevant audios, videos, handouts and notes								
2.	Books : Saison (Méthode de français, cahier d'activités)								
3.	Reference books : La conjugaison, Dondon, Echo								

*M. Renuga*  
HOD

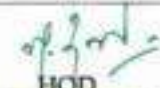
**Dr. M. RENUGA,**  
Professor & Head,

Department of Humanities & Language  
Sona College of Technology,  
SALEM - 637 002

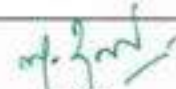
U23OL1102	German				L	T	P	J	C
					1	0	0	0	1
<b>Course Outcomes</b>									
At the end of the course, the student will be able to									
CO1:	Use common, everyday expressions to greet others and introduce themselves.								
CO2:	Construct simple sentences /questions.								
CO3:	Initiate and sustain basic conversation based on family, professions,								
CO4:	Hobbies and food.								
CO5:	Identify differences in using nouns based on gender.								
<b>Course Assessment methods</b>									
Direct					Indirect				
CIE test I (30) CIE test II (30) CIE test III (40)					Total CIE: 100 marks Semester End Examination: NIL				
					Course end survey				
<b>Unit 01:</b>					<b>3 Hours</b>				
<ul style="list-style-type: none"> <li>Greeting and taking leave, introducing oneself, introducing others</li> </ul>									
<b>Unit 02:</b>					<b>3 Hours</b>				
<ul style="list-style-type: none"> <li>Alphabets, spelling, numbers</li> </ul>									
<b>Unit 03:</b>					<b>3 Hours</b>				
<ul style="list-style-type: none"> <li>Age, Telephone/mobile numbers, Month, Date, Time</li> </ul>									
<b>Unit 04:</b>					<b>3 Hours</b>				
<ul style="list-style-type: none"> <li>Languages, Family, Asking/giving information about family members</li> </ul>									
<b>Unit 05:</b>					<b>3 Hours</b>				
<ul style="list-style-type: none"> <li>Hobbies, Professions</li> </ul>									
Theory: 15 Hrs		Tutorial: --		Practical: --		Project:--		Total Hours: 15 Hrs	
<b>TEXT BOOKS</b>									
1. Netzwerk A1									

  
 HOD  
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 SALEM - 637

U23OL1103	Japanese	L	T	P	J	C
		1	0	0	0	1
<b>Course Outcomes</b>						
At the end of the course, the student will be able to						
CO1:	Use words and phrases of greeting in Japanese, write the letters of the alphabet, identify names of objects and do a self-introduction using short and simple sentences					
CO2:	Demonstrate the use of time-related words and verb conjunctions and make light conversation asking for directions and answering questions					
CO3:	Use different kinds of verbs through the day and those used for giving things, and demonstrate the use of adjectives					
CO4:	Express liking for the Japanese language, describe the locations of different things and demonstrate counting in Japanese					
CO5:	Make comparisons of stated things, express a willingness to go to Japan and use 'Te-form' verbs					
<b>Course Assessment methods</b>						
<b>Direct</b>				<b>Indirect</b>		
CIE test I (30)	Total CIE: 100 marks		Course end survey			
CIE test II (30)	Semester End Examination: NIL					
CIE test III (40)						
<b>Unit 01:</b>				<b>3 Hours</b>		
Hr 1-2: Greeting words and phrases; the Japanese alphabet: 104 Hiragana and 104 Katakana letters Hr 3-4: Identifying words from pictures or objects shown Hr 5-6: Self-introduction						
<b>Unit 02:</b>				<b>3 Hours</b>		
Hr 7-8: Asking for directions when shopping Hr 9-10: Time words and Verb Conjugations Hr 11-12: Making light conversation						
<b>Unit 03:</b>				<b>3 Hours</b>		
Hr 13-14: Expressions to use verbs from morning to night Hr 15-16: Verbs used for giving things Hr 17-18: Adjectives						
<b>Unit 04:</b>				<b>3 Hours</b>		
Hr 19-20: Ways to show liking for the Japanese language Hr 21-22: Describing the location of things (or where things are) Hr 23-24: Japanese numbers and counting						
<b>Unit 05:</b>				<b>3 Hours</b>		
Hr 25-26: Making comparisons Hr 27-28: Expressions wishing for something, like 'I want to go to Japan ...!' Hr 29-30: Using 'Te-form' Verb						
Theory: 15 Hrs		Tutorial: --	Practical: --	Project:--	Total Hours: 15 Hrs	
<b>TEXT BOOKS</b>						
1.	The course faculty will provide handouts / notes / course material.					
2.	Books on Basic Japanese language available in the college library.					

  
 HOD  
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U23OL1104		Korean					L	T	P	J	C
							1	0	0	0	1
<b>Course Outcomes</b>											
At the end of the course, the student will be able to											
CO1:	Use single vowels and consonants syllable structure.										
CO2:	Greet others and introduce themselves.										
CO3:	Identify time , date and week										
CO4:	Explain location and places										
CO5:	Construct simple sentences / questions.										
<b>Course Assessment methods</b>											
<b>Direct</b>						<b>Indirect</b>					
CIE test I (30) CIE test II (30) CIE test III (40)						Total CIE: 100 marks Semester End Examination: NIL Course end survey					
Unit 01: Hangeul								3 Hours			
Single Vowels & Consonants Syllable Structure Tense Consonants Aspirated Consonants Double Vowels Final Consonants Double Final Consonants Liaison											
Unit 02: Introduction								3 Hours			
Greetings Talking about names Self-introduction Introducing my family members											
Unit 03: Time and Date								3 Hours			
Talking about location Talking about dates and days of the week Talking about doing something in the past											
Unit 04: Location and Places								3 Hours			
Talking about location Talking about doing something at a location Talking about directions											
Unit 05: Future								3 Hours			
Talking about doing something in the future Talking about plans for the future Talking about hope for the future											
Theory: 15 Hrs		Tutorial: --		Practical: --		Project:--		Total Hours: 15 Hrs			
<b>REFERENCES</b>											
1 Vitamin Korean - 1											

  
 HOD  
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U23OL1105		Hindi			L	T	P	J	C
					1	0	0	0	1
<b>Course Outcomes</b>									
At the end of the course, the students will be able to									
CO1:	Write स्वर(अ - अः), व्यंजन(क - श्र)								
CO2:	Identify and write बारहखडी(क - श्रः)								
CO3:	Coin 2,3&4 letters words								
CO4:	Read and frame sentences ( grammar, verb, noun, pronoun, adjective, etc...)								
CO5:	Communicate effectively using tenses ( with Continuous )								
<b>Course Assessment methods</b>									
<b>Direct</b>					<b>Indirect</b>				
CIE test I (30) CIE test II (30) CIE test III (40)					Total CIE: 100 marks Semester End Examination: NIL			Course end survey	
Unit 01: स्वर (अ - अः), व्यंजन (क - श्र)								3 Hours	
Hindi letters learning Letters identification Reading Writing Letters pronunciation									
Unit 02: बारहखडी (क - श्रः)								3 Hours	
Hindi letters learning Letters identification Reading Writing Letters pronunciation									
Unit 03: 2,3 & 4 letters words								3 Hours	
Words making Words meaning Reading & Writing									
Unit 04 : Grammar, ( Verb, noun, pronoun, adjective, etc...)								3 Hours	
Words meaning Reading & Writing Sentence framing									
Unit 05 : Tenses ( with Continuous )								3 Hours	
Talking about school Talking about family, friends Talking about doing something in the past, present, future Translation									
Theory: 15 Hrs		Tutorial: --		Practical: --		Project:--		Total Hours: 15 Hrs	
<b>REFERENCES</b>									
1	Diploma in Hindi (department of higher education, Delhi)								

  
FOD

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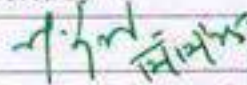
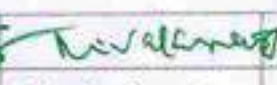
**Sona College of Technology, Salem**  
(An Autonomous Institution)  
**Courses of Study for B.E/B.Tech. Semester II under Regulations 2023 (CBCS)**  
**Branch: Electronics and Computer Engineering**

S.No	Course Code	Course Title	L	T	P	J	C	Category	Total Contact Hours	Course Type*
<b>Theory courses</b>										
1.	U23ENG201A	Technical English	2	0	0	0	2	HS	30	T
2.	U23MAT202B	Transforms and Differential Equations	3	1	0	0	4	BS	60	TT
3.	U23PHY203H	Physics for Electronics and Computer Engineering	2	0	2	0	3	BS	60	TL
4.	U23EX201	Digital System Design	2	0	2	0	3	PC	60	TL
5.	U23EX202	Electronic Circuits	3	0	0	0	3	PC	45	T
6.	U23CPR205	Programming in C	3	0	0	0	3	PC	45	T
7.	U23TAM201	தமிழரும் தொழினுட்பமும் / Tamil and Technology	1	0	0	0	1	HS	15	T
8.	U23GE201	Basic Aptitude- II	2	0	0	0	0	AC	30	T
9.	U23GE202	Disaster Management and Preparedness	2	0	0	0	0	AC	30	T
<b>Practical Courses</b>										
10.	U23CPL212	C Programming Laboratory	0	0	2	0	1	PC	30	L
11.	U23EX203	Electronic Circuits laboratory	0	0	2	0	1	PC	30	L
<b>Total Credits</b>							<b>21</b>			
<b>Optional Language Courses**</b>										
12.	U23OL1201	French-II							15	T
13.	U23OL1202	German-II							15	T
14.	U23OL1203	Japanese-II	1	0	0	0	1	OL	15	T
15.	U23OL1204	Korean-II							15	T
16.	U23OL1205	Hindi-II							15	T

\*T- Theory, TT- Theory with Tutorial, TL- Theory with Laboratory, TP- Theory with Project, TLP- Theory with Laboratory and Project, L-Laboratory, LT- Laboratory with Theory, LP- Laboratory with Project

\*\*Students may opt for foreign languages viz., German/French/Japanese/Korean/Hindi with additional one credit (Not accounted for CGPA calculation)

Approved By

				
Chairperson, Science and Humanities BoS	Chairperson, ECE BoS	Member Secretary, Academic Council	Dean-Academics	Chairperson, Academic Council & Principal
Dr.M.Renuga	Dr.R.S.Sabeenian	Dr.R.Shivakumar	Dr.J.Akilandeswari	Dr.S.R.R.Senthil Kumar

Copy to:-HOD/ ECE, Second Semester B.E. Electronics and Computer Engineering Students and Staff, COE

U23ENG201A	<b>Technical English</b> (Common to ADS, AIML, BME, CSD, CSE, SCE, CIVIL, ECE, EEE,EVE, EXE, EFE, MCT, FT, IT Branches)	<b>L</b>	<b>T</b>	<b>P</b>	<b>J</b>	<b>C</b>
		<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

### Course Outcomes

At the end of the course, the student will be able to

<b>CO1:</b>	Frame sentences correctly, both in written and spoken forms of language with accuracy and fluency.
<b>CO2:</b>	Develop effective reading skills and reinforce language skills required for using grammar and building vocabulary
<b>CO3:</b>	Organise ideas and supporting arguments logically.
<b>CO4:</b>	Develop skills for writing conversations, proposals, reports and transcoding.
<b>CO5:</b>	Read for understanding and interpreting information and to utilise information accordingly.

### Pre-requisite:

- Knowledge and Understanding of Grammar
- Fundamental Language Skills (LSRW)

### CO/PO, PSO Mapping

(3/2/1 indicates the strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	1	2	2	2	3	3	2	3	3	3	3	3	3
CO2	1	2	2	3	2	3	3	2	3	3	2	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	1	3	1	2	2	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3	3	3	3	3

### Course Assessment methods

Direct		Indirect
CIE test I (8)	Attendance (5)	Course end survey
CIE test II (8)	Assignment/seminar/Quiz (5)	
CIE test III (8)	Total CIE: 40 marks	
Objectives Test (6)	Semester End Examination (60)	

### Unit 01:

6 Hours

- Comparative adjectives
- Recommendations
- Guided writing – Conversation in workplace context
- Reading passages for specific information transfer

### Unit 02:

6 Hours

- Prepositions, adverbs
- Note making
- Reading passage with multiple choice questions, reading for gist and reading for specific information

### Unit 03

6 Hours



- Collocations, direct and indirect speech

<ul style="list-style-type: none"> <li>• Memo</li> <li>• Proposal: establishing a lab, introducing a subject in the curriculum, training programme for students</li> <li>• Short reading passage: gap-filling exercise related to grammar</li> </ul>				
<b>Unit 04:</b>				<b>6 Hours</b>
<ul style="list-style-type: none"> <li>• Cause and effect</li> <li>• Technical report writing – feasibility report, accident report, survey report</li> <li>• Short reading passages for sentence matching exercises, picking out specific information in a short text</li> </ul>				
<b>Unit 05:</b>				<b>6 Hours</b>
<ul style="list-style-type: none"> <li>• Active, Passive and Impersonal Passive Voices</li> <li>• Transcoding – bar chart, pie chart, tabular column, graph, flow chart</li> </ul>				
<b>Theory: 30 Hrs</b>	<b>Tutorial: --</b>	<b>Practical: --</b>	<b>Project:--</b>	<b>Total Hours: 30 Hrs</b>
<b>TEXT BOOKS</b>				
1. Technical English I & II, Dr. M. Renuga et al. Sonaversity, 2016				
2. <b>Extensive Reading</b>				
<ul style="list-style-type: none"> <li>1. Who Moved my Cheese? – Spencer Johnson-G. P. Putnam's Sons</li> <li>2. Discover the Diamond in You – Arindham Chaudhari – Vikas Publishing House Pvt. Ltd.</li> </ul>				
<b>REFERENCES</b>				
1. Norman Whitby, Business Benchmark – Pre-Intermediate to Intermediate, Students Book, Cambridge University Press, 2006.				
2. A Course in Communication Skills, P. Kiranmai Dutt, Geetha Rajeevan, C. L. N. Prakash, published by Cambridge University Press India Pvt. Ltd.				

  
 HOD

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SEMESTER - II	TRANSFORMS AND DIFFERENTIAL EQUATIONS											L	T	P	J	C
U23MAT202B	(Common to EEE, ECE, BME, EFE, EXE and EVE)											3	1	0	0	4
<b>Course Outcomes</b>																
At the end of the course, the student will be able to																
CO1:	apply the classical methods to solve linear ordinary differential equations with constant coefficients.															
CO2:	apply the Laplace transforms technique and its properties to solve ordinary differential equations.															
CO3:	express a periodic signal as an infinite sum of sine and cosine wave components using Fourier series.															
CO4:	apply the Fourier transform techniques to convert the signal in terms of the frequencies of the waves.															
CO5:	find the general and singular solutions of linear and nonlinear partial differential equations.															
<b>Pre-requisites:</b>																
<ul style="list-style-type: none"> <li>Fundamentals of elementary algebra</li> <li>Fundamentals of calculus</li> </ul>								<ul style="list-style-type: none"> <li>Fundamentals of trigonometry</li> <li>Fundamentals of geometry</li> </ul>								
<b>CO/PO, PSO Mapping</b>																
(3/2/1 indicates the strength of correlation) 3-Strong, 2-Medium, 1-Weak																
Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)																
COs	POs												PSOs		PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1 (EEE,ECE EFE, EXE)	PSO2 (EEE, BME & EFE)	PSO3 (BME)	
CO1	3	3	3	3	2							2	3	3	1	
CO2	3	3	3	3	2							2	3	3	1	
CO3	3	3	3	3	2							2	3	3	1	
CO4	3	3	3	3	2							2	3	3	1	
CO5	3	3	3	3	2							2	3	3	1	
<b>Course Assessment methods</b>																
<b>Direct</b>												<b>Indirect</b>				
CIE test I (8)					Attendance (5)							Course end survey				
CIE test II (8)					Assignment/seminar/Quiz (5)											
CIE test III (8)					Total CIE: <b>40 marks</b>											
Objectives Test (6)					Semester End Examination: <b>60 marks</b>											
<b>Unit 01</b>	<b>ORDINARY DIFFERENTIAL EQUATIONS</b>											<b>12 Hours</b>				
Higher order linear ordinary differential equations with constant coefficients – Cauchy's and Legendre's linear ordinary differential equations – Method of variation of parameters.																
<b>Unit 02</b>	<b>LAPLACE TRANSFORMS</b>											<b>12 Hours</b>				
<b>Laplace transform:</b> Conditions for existence – Transform of elementary functions – Basic properties – Transform of derivatives and integrals – Transform of unit step function and impulse function – Initial and final value theorems – Transform of periodic functions. <b>Inverse Laplace transform:</b> Standard results – Statement of convolution theorem and its applications – Solution of second order linear ordinary differential equations with constant coefficients using Laplace transform.																

Unit 03	<b>FOURIER SERIES</b>	<b>12 Hours</b>
General Fourier series – Dirichlet's conditions – Change of intervals – Odd and even functions – Half range sine and cosine series – Root mean square – Parseval's identity – Harmonic analysis.		
Unit 04	<b>FOURIER TRANSFORMS</b>	<b>12 Hours</b>
Statement of Fourier integral theorem – Infinite Complex Fourier transform pair and their Properties – Infinite Fourier sine and cosine transforms pair and their properties – Transforms of simple functions – Parseval's identity.		
Unit 05	<b>PARTIAL DIFFERENTIAL EQUATIONS</b>	<b>12 Hours</b>
Formation of partial differential equations – Lagrange's partial differential equation – Clairaut's form of partial differential equations – Second order linear partial differential equation with constant coefficients.		
<b>Theory: 45 Hours</b>	<b>Tutorial: 15 Hours</b>	<b>Practical: - Project: - Total Hours: 60 Hours</b>
<b>TEXT BOOKS:</b>		
1.	T. Veerarajan, "Transforms and Partial Differential Equations", McGraw Hill Publishers, 3 <sup>rd</sup> Edition, 2016.	
2.	T. Veerarajan, "Engineering Mathematics for Semesters I & II", McGraw Hill Publishers, 1 <sup>st</sup> Edition, 2019.	
<b>REFERENCE BOOKS:</b>		
1.	E. Kreyszig, "Advanced Engineering Mathematics", Wiley Publishers, 10 <sup>th</sup> Edition, Reprint, 2017.	
2.	C. Prasad and R. Garg, "Advanced Engineering Mathematics", Khanna Publishers, 1 <sup>st</sup> Edition, 2018.	
3.	B. S. Grewal, "Higher Engineering Mathematics", Khanna Publishers, 44 <sup>th</sup> Edition, 2018.	
 <b>Dr. S. JAYABHARATHI</b> Head / Department of Mathematics <b>Dr. S. JAYABHARATHI</b> ASSOCIATE PROFESSOR & HEAD DEPARTMENT OF MATHEMATICS, SONA COLLEGE OF TECHNOLOGY, SALEM-636 005, Tamilnadu. Ph: 0427 - 4099999.		
 <b>Dr. M. RENUGA</b> <b>Dr. M. RENUGA,</b> Professor & Head, Department of Humanities & Languages, Sona College of Technology, SALEM - 636 005.		
<b>B.E/B. Tech Regulations 2023</b>		<b>S&amp;H BoS Date: 14.06.2025</b>

U23PHY203H	PHYSICS FOR ELECTRONICS AND COMPUTER ENGINEERING	L	T	P	J	C
		2	0	2	0	3

### Course Outcomes

At the end of the course, the student will be able to

CO1:	Deduce Maxwell's equations using the fundamentals of electrostatics.
CO2:	Analyse the polarization mechanisms in dielectrics.
CO3:	Illustrate the divergence and curl of the magnetic field.
CO4:	Distinguish the types of magnetic materials.
CO5:	Discuss the basic principles of quantum computing.

### Pre-requisite:

Basic Knowledge of electricity and magnetism, Quantum Physics

### CO/PO, PSO Mapping

(3/2/1 indicates the strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	-	-	-	2	2	-	-	2	-	1	-	2
CO2	3	2	-	-	-	2	2	-	-	2	-	1	-	2
CO3	3	2	-	-	-	2	2	-	-	2	-	1	-	2
CO4	3	2	-	-	-	2	2	-	-	2	-	1	-	2
CO5	3	2	-	-	-	2	2	-	-	2	-	1	-	2

### Course Assessment methods

Direct		Indirect
CIE test I (10) - Theory CIE test II (10) - Theory CIE test III (10) - Theory CIE test IV(10) - Laboratory	Attendance (5) Assignment / Quiz/ Seminar (5) Total CIE: 50 marks Semester End Examination: 50 marks [SEE- Theory (25 marks), Lab (25 marks)]	Course end survey

### Unit 01: ELECTROSTATIC

6 Hours

Electrostatics - Basic properties of electric charge - Coulomb's Law - Electric field - Electric field intensity -

Field due to a point charge and system of charges - Electric lines of force and its properties - Electric flux - Gauss's law - Applications of Gauss's law - Field due to an infinitely long straight charged wire - Field due to two parallel charged sheets - Field due to uniformly charged spherical shell - Electric potential - Relation between electric field and potential - Divergence and Curl of E.

<b>Unit 02: DIELECTRIC MATERIALS</b>	<b>6 Hours</b>
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Basic definitions - Electric dipole - Electric dipole moment - Electric displacement vector - Electrical susceptibility - Dielectric constant - Dielectric polarization - Electronic, ionic, orientation and space charge polarization - Frequency and temperature dependence of polarization - Internal field - Clausius-Mosotti relation (no derivation) - Dielectric loss - Dielectric breakdown - Uses of dielectric materials (capacitor and transformer).

<b>Unit 03: MAGNETOSTATICS</b>	<b>6 Hours</b>
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Magnetic effect of current - Magnetic fields - Maxwell's right-hand cork screw rule - Biot Savart law - Magnetic induction due to infinitely long straight conductor carrying current - Magnetic induction along the axis of a circular coil carrying current - Ampere's circuital law - Right-hand palm rule - Applications of Ampere's circuital law - Magnetic induction due to a long solenoid carrying current - Magnetic Lorentz force - Force experienced by a current carrying conductor in a magnetic field - Fleming's left-hand rule - Divergence and curl of B - Comparison of magnetostatics and electrostatics.

<b>Unit 04: MAGNETIC MATERIALS</b>	<b>6 Hours</b>
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Basic definitions - Magnetic moment - Magnetic field - Magnetic field intensity - Magnetic permeability - Magnetization - Intensity of magnetization - Magnetic susceptibility - Types of magnetic materials - Dia, Para and Ferromagnetic materials - Domain theory of ferromagnetism - Origin of domains - Ferrites - Structure, properties and applications - hysteresis - Hard and soft magnetic materials.

<b>Unit 05: QUANTUM COMPUTING</b>	<b>6 Hours</b>
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Quantum system for information processing - quantum states - classical bits - quantum bits or qubits - CNOT gate - multiple qubits - Bloch sphere - quantum gates - advantage of quantum computing over classical computing.

Theory: 30 Hrs	Tutorial: --	Practical: 30 Hrs	Project: --	Total Hours: 60 Hrs
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**TEXTBOOKS**

- |    |  |
|----|--|
| 1. | M.N. Avadhanulu, P.G. Kshirsagar, "A Textbook of Engineering Physics", S. Chand & Company Ltd, New Delhi 2014. |
| 2. | B. K. Pandey and S. Chaturvedi, "Engineering Physics", Cengage Learning India Pvt. Ltd., Delhi, 2021.          |

3.	Charles Kittel, Introduction to Solid State Physics, Wiley India Edition, 2019
4.	Parag K. Lala, Quantum Computing: A Beginner's Introduction, McGraw-Hill Education (Indian Edition), 2020.
<b>REFERENCES</b>	
1.	V. Raghavan, "Materials Science and Engineering: A First Course" Prentice Hall India Learning Private Limited, 6th Edition, 2015.
2.	Arthur Beiser, Shobhit Mahajan, S. Rai Choudhury, "Concepts of Modern Physics", McGraw-Hill (Indian Edition), 2017.
3.	M. Arumugam, "Materials Science", Anuradha Publications, Kumbakonam, 2006.
4.	William D. Callister Jr., David G. Rethwisch, "Callister's Materials Science and Engineering", 10th Edition, Global Edition 2019.
5.	R. Wolfson, "Essential University Physics", Volume 1 & 2. Pearson Education (Indian Edition), 2009.
6.	Y.B. Band and Y. Avishai, Quantum Mechanics with Applications to Nanotechnology and Information Science, Academic Press, 2013.

LIST OF EXPERIMENTS		30 Hours
1.	Determination of the thickness of a thin wire by forming interference fringes using air wedge apparatus.	
2.	Determination of velocity of ultrasonic waves and compressibility of the given liquid using ultrasonic interferometer.	
3.	Determination of the thermal conductivity of a bad conductor using Lee's Disc apparatus.	
4.	Determination of specific resistance of a given wire using Carey Foster's bridge.	
5.	Determination of the wavelength of a diode laser.	
6.	Determination of particle size of lycopodium powder using diode laser.	
7.	Determination of acceptance angle and numerical aperture of an optical fiber using a diode laser.	
8.	Determination of hysteresis using B-H curve method.	
9.	Determination of coefficient of viscosity of liquid by Poiseuille's method.	
10.	Determination of band gap of the given semiconductor diode.	

  
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 BoS - Chairperson,  
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U23EX201	DIGITAL SYSTEM DESIGN				L	T	P	J	C					
					2	0	2	0	3					
<b>Course Outcomes</b>														
At the end of the course, the student will be able to														
CO1:	Understand logic gates, logic functions and simplify Boolean expressions.													
CO2:	Develop the knowledge of combinational logic circuits													
CO3:	Design sequential logic circuits													
CO4:	Implement shift registers and counters using Flip flops.													
CO5:	Establish a strong understanding of Memories and PLD.													
<b>Pre-requisite:</b>														
<b>CO/PO, PSO Mapping</b>														
(3/2/1 indicates the strength of correlation) 3-Strong, 2-Medium, 1-Weak														
COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	2	1	1					1	1	3	3
CO2	3	3	2	2	1	1					1	1	3	3
CO3	3	3	2	2	1	1					1	1	3	3
CO4	3	3	2	2	1	1					1	1	3	3
CO5	3	3	2	2	1	1					1	1	3	3
<b>Course Assessment methods</b>														
<b>Direct</b>										<b>Indirect</b>				
CIE test I (10) - Theory CIE test II (10) - Theory CIE test III (10) - Theory CIE test IV(10) - Laboratory Attendance (5)					Assignment / Quiz/ Seminar (5) Total CIE: <b>50 marks</b> Semester End Examination: <b>50 marks</b> [SEE- Theory (25 marks), Lab (25 marks)]					Course end survey				
<b>Unit 01: BOOLEAN ALGEBRA AND LOGIC GATES</b>										<b>6 Hours</b>				
Review of Number systems - Boolean Algebra: Basic definitions, Basic Theorems and Properties of Boolean Algebra, Boolean Functions, Canonical and Standard Forms, Simplification of Boolean functions. Gate-Level Minimization: The Map Method (K-map up to 4 variable), Product of Sums and Sum of Products Simplification, Digital logic gates - NAND and NOR Implementation- Quine-														

McCluskey method of minimization - CMOS logic families.				
<b>Unit 02: COMBINATIONAL LOGIC CIRCUITS</b>				<b>6 Hours</b>
Design of Half and Full Adders - Half and Full Subtractors - Binary Parallel Adder - Carry look ahead Adder- BCD Adder – Code converters - BCD to Excess-3 – Magnitude Comparator – Decoders – Encoders – Priority Encoder - Multiplexers – Demultiplexers - Verilog HDL for Combinational logic circuits				
<b>Unit 03: SEQUENTIAL LOGIC CIRCUITS</b>				<b>6 Hours</b>
Flip-Flops – SR – D- JK-T– Master Slave JK Flip-Flop – Conversion of Flip Flops – Design of Clocked Sequential Circuits – Moore/Mealy models- State Diagram – State Table – State Reduction and Assignment - Verilog HDL for Sequential logic circuits				
<b>Unit 04: REGISTERS AND COUNTERS</b>				<b>6 Hours</b>
Registers – Shift Registers – SISO – SIPO – PIPO – Synchronous Counters – Up-down Binary Counter – Ring Counter – Johnson Counters – Asynchronous Counters – Asynchronous Design Procedure – Race Free State Assignment – Hazards.				
<b>Unit 05: MEMORY AND PROGRAMMABLE LOGIC DEVICES</b>				<b>6 Hours</b>
Classification of memories: RAM - Static and Dynamic RAM, ROM - PROM, EPROM, EEPROM - Programmable Logic Devices – PROM - Programmable Logic Array – Programmable Array Logic – Introduction to FPGA.				
<b>List of Experiments</b>				<b>30 Hours</b>
<ol style="list-style-type: none"> <li>1. Design and implementation of Boolean theorems &amp; functions</li> <li>2. Design and implementation of Adders and Subtractors</li> <li>3. Design and implementation of Magnitude Comparator</li> <li>4. Design and implementation of Code Converters – Binary to Gray and BCD to Excess 3</li> <li>5. Design and implementation of Multiplexer and Demultiplexer</li> <li>6. Design and implementation of Decoder and Encoder</li> <li>7. Design and implementation of Asynchronous Counter</li> <li>8. Design and implementation of Synchronous Counter</li> <li>9. Design and implementation of Shift Registers – SISO, SIPO and PIPO.</li> <li>10. Verilog HDL for Combinational and Sequential logic circuits</li> </ol>				
<b>Theory: 30 Hrs</b>	<b>Tutorial: --</b>	<b>Practical: 30 Hrs</b>	<b>Project: --</b>	<b>Total Hours: 60 Hrs</b>
<b>TEXT BOOKS</b>				
1.	M. Morris Mano and Michael D. Ciletti, 'Digital Design with an Introduction to the Verilog HDL', 6th Edition, Pearson Education, 2018.			
2.	Schilling, Herbert Taub and Donald, 'Digital Integrated Electronics', Tata McGraw-Hill, 2017.			

## REFERENCES

1.	John F Wakerly , 'Digital Design Principles and Practices', 4 <sup>th</sup> Edition, Prentice Hall India, 2008.
2.	A.Anandkumar, 'Fundamentals of digital circuits, 4 <sup>th</sup> Edition, Prentice Hall India, Paper back'2016.
3.	Jayaram Bhasker, 'A Verilog HDL Primer', 2nd E, BS publications, Paper back'2008.
4.	S.Salivahanan and S.Arivazhagan, "Digital Electronics", 1st Edition, Vikas Publishing House pvt Ltd, 2018.
5.	Albert Paul Malvino and Donald P. Leach, "Digital Principles and Applications, McGraw-Hill, 4th edition, 1986.

  
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U23EX202	ELECTRONIC CIRCUITS					L	T	P	J	C				
						3	0	0	0	3				
<b>Course Outcomes</b>														
At the end of the course, the student will be able to														
CO1:	Understand the concepts of power supply and wave shaping circuits													
CO2:	Analyze the construction and characteristics of FET and MOSFET													
CO3:	Illustrate the transistor biasing and its stabilization.													
CO4:	Analyze the characteristics of Feedback amplifiers and Tuned Amplifiers													
CO5:	Examine the characteristics of Large Signal Amplifiers and Oscillators.													
<b>Pre-requisite:</b>														
Fundamental of Electrical and Electronics, Electronic Devices and Circuit														
<b>CO/PO, PSO Mapping</b>														
(3/2/1 indicates the strength of correlation) 3-Strong, 2-Medium, 1-Weak														
COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	3	3	2			2	1	2	3	3
CO2	3	3	3	3	3	3	2			2	1	2	3	3
CO3	3	3	3	3	3	3	2			2	1	2	3	3
CO4	3	3	3	3	3	3	2			2	1	2	3	3
CO5	3	3	3	3	3	3	2			2	1	2	3	3
<b>Course Assessment methods</b>														
<b>Direct</b>							<b>Indirect</b>							
CIE test I	(8)	Assignment/ seminar/Quiz (5)					Course end survey							
CIE test II	(8)	Total CIE : <b>40 marks</b>												
CIE test III	(8)	Semester End Examination: <b>60 marks</b>												
Objectives Test	(6)													
Attendance	(5)													
<b>Unit 01: POWER SUPPLY AND WAVE SHAPING CIRCUITS</b>											<b>9 Hours</b>			
Diode Rectifiers - Half-wave, full-wave and bridge rectifiers with resistive load- Filters C, L- Voltage Regulator using 78XX -Diode Clippers – Series – Shunt – Positive clipper – Negative clipper.														

<b>Unit 02: FIELD EFFECT TRANSISTORS</b>				<b>9 Hours</b>
JFETs (N-channel) Construction – Drain and Transfer characteristics -Pinch off voltage and its significance-Depletion-mode MOSFET-Construction and working- Drain and Transfer characteristics - Comparison of MOSFET with JFET.				
<b>Unit 03: TRANSISTOR BIASING</b>				<b>9 Hours</b>
Need for biasing – Stability factor - Fixed bias circuit, Load line and quiescent point - Stability factors – Different types of biasing circuits - Method of stabilizing the Q point - Advantage of Self bias (voltage divider bias) over other types of biasing.				
<b>Unit 04: FEEDBACK AMPLIFIERS AND TUNED AMPLIFIERS</b>				<b>9 Hours</b>
Classification of amplifiers – Feedback concept – General characteristics of negative feedback – Negative feedback topologies -Voltage Series feedback – Current Series feedback – Input / Output resistance – Tuned amplifiers - Q factor – Single tuned – Double tuned				
<b>Unit 05: LARGE SIGNAL AMPLIFIERS AND OSCILLATORS</b>				<b>9 Hours</b>
Classification based on biasing condition - Class A large signal amplifiers – Transformer coupled audio power amplifier – Efficiency – Class B amplifiers - Push-Pull amplifiers – Efficiency - Class AB operation - Classification of Oscillators –Barkhausen criterion – General form of LC oscillators – Hartley oscillator-Colpitts oscillators				
<b>Theory: 45 Hrs</b>	<b>Tutorial: 0</b>	<b>Practical: 0</b>	<b>Project: 0</b>	<b>Total Hours: 45 Hrs</b>
<b>TEXT BOOKS</b>				
1.	Salivahanan S. and Sureshkumar N., “Electronic Devices and Circuits”, 5th Edition, McGraw-Hill, 2023			
2.	David A. Bell, “Electronic devices and circuits” 5th edition, Prentice-Hall, 2018.			
<b>REFERENCES</b>				
1.	Robert L. Boylestad Electronic Devices and Circuit Theory, 11e 11th Edition, Kindle Edition, 2014			
2.	Dr.Sanjay Sharma, “Electronic Principles”, S.K.Kataria and Sons, 3 <sup>rd</sup> Edition, 2014			

  
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U23CPR205	PROGRAMMING IN C (Common to ADS, IT, CSE, CSE(AIML), CSD, CBE, SCE, ECE, EFE, EVE and EXE Branches)	L	T	P	J	C
		3	0	0	0	3

### Course Outcomes

At the end of the course, the student will be able to

CO1:	Write simple C programs using console input and output functions
CO2:	Write C programs using arrays, decision making and looping statements
CO3:	Design and develop simple application using functions and pointers.
CO4:	Design and develop real-time applications using structures and unions
CO5:	Design and develop real-time applications using file operation

### Pre-requisite:

#### CO/PO, PSO Mapping

(3/2/1 indicates the strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	3	2	2	2	-	2	-	2	2	3	3	2	2
CO2	2	2	3	2	2	1	-	2	-	2	2	3	2	2	2
CO3	2	3	3	2	2	1	-	2	-	2	2	3	3	2	2
CO4	2	3	3	2	2	1	-	2	-	2	1	3	3	2	2
CO5	2	3	3	2	2	2	-	2	-	2	2	3	3	2	2

### Course Assessment methods

Direct		Indirect
CIE test I (8) CIE test II (8) CIE test III (8) Objectives Test (6) Attendance (5)	Assignment/seminar/Quiz (5) Total CIE: <b>40 marks</b> Semester End Examination: <b>60 marks</b>	Course end survey

<b>Unit 01: C PROGRAMMING BASICS</b>	<b>9 Hours</b>
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Structure of a C program - C Character set, Identifiers and Keywords, Data Types, Declarations, Expressions, Statements and Symbolic constants, Operators – Arithmetic Operators – Unary operators – Relational and Logical Operators – Assignment operators – Conditional operators. Unformatted and formatted Input/Output functions, pre-processor directives and storage classes.


<b>Unit 02: CONTROL STATEMENTS, ARRAYS AND STRING</b>	<b>9 Hours</b>
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Conditional statements, Unconditional statements, branching and looping statements - Arrays – Initialization – Declaration – One dimensional and Two dimensional arrays. String- String operations – String Arrays. Simple programs- sorting- searching – matrix operations.

<b>Unit 03: FUNCTIONS AND POINTERS</b>	<b>9 Hours</b>
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Function – Library functions and user-defined functions – Function prototypes and function definitions – Call by value – Call by reference – Recursion – Pointers - Definition – Initialization – Pointers arithmetic – Pointers and

arrays – Pointers and Functions - Dynamic memory Allocation - Example Programs.					
<b>Unit 04:</b>	<b>STRUCTURES AND UNIONS</b>				<b>9 Hours</b>
Need for structure data type – structure definition – Structure declaration – Structure within a structure – Passing structures to functions – Array of structures – Pointers to structures – Union - Programs using structures and Unions					
<b>Unit 05:</b>	<b>FILE MANIPULATIONS</b>				<b>9 Hours</b>
Files-File operations- Binary files and text files – Types of File processing-Sequential access -Random Access File - Command line arguments.					
<b>Theory: 45 Hrs</b>	<b>Tutorial: 0</b>	<b>Practical: 0</b>	<b>Project: 0</b>		<b>Total Hours: 45 Hrs</b>
<b>TEXT BOOKS</b>					
1.	Deitel and Deitel, "C How to Program", Pearson Education, New Delhi, 2011.				
2.	Yashavant P. Kanetkar. "Let Us C", BPB Publications, 14th edition, 2016.				
<b>REFERENCES</b>					
1.	Kernighan,B.W and Ritchie,D.M, "The C Programming language", Second Edition, Pearson Education, 2006.				
2.	Byron S Gottfried, "Programming with C", Schaum's Outlines, Second Edition, Tata McGraw-Hill, 2006.				
3.	Anita Goel and Ajay Mittal, "Computer Fundamentals and Programming in C", Dorling Kindersley (India) Pvt. Ltd., Pearson Education in South Asia, 2011.				
4.	E. Balagurusamy, "Programming in ANSI C", seventh edition, Tata McGraw Hill, 2016.				

  
**Dr. B. SATHIYABHAMA**, B.E., M.Tech., Ph.D.  
 PROFESSOR & HEAD,  
 Dept. of Computer Science and Engineering  
 SONA COLLEGE OF TECHNOLOGY  
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U23CPL212	<b>C PROGRAMMING LABORATORY</b> (Common to ADS, IT, CSE,CSE(AIIML),CSD,CBE, SCE, ECE,EFE, EVE and EXE Branches)	L	T	P	J	C
		0	0	2	0	1

### Course Outcomes

At the end of the course, the student will be able to

CO1	Design and develop simple programs using branching, looping statements
CO2:	Develop programs using functions, arrays, structures and string handling
CO3:	Write programs using pointers and dynamic memory allocation and file handling

### Pre-requisite:

#### CO/PO, PSO Mapping

(3/2/1 indicates the strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	3	2	2	2	-	-	-	-	-	-	1	2	2
CO2	2	2	3	2	2	1	-	-	-	-	-	-	1	2	2
CO3	2	3	3	2	2	1	-	-	-	-	-	-	1	2	2

### Course Assessment methods

#### Direct

CIE test I (15)  
Quiz 1- (5)  
CIE test II (15)  
Quiz 2- (5)

RTPS (10)  
Record (10)  
Total CIE: **60 marks**  
Semester End Examination: **40 marks**


#### Indirect

Course end survey

### List of Experiments:

1. Programs using Input, Output and assignment statements.
2. Programs using Branching statements
3. Programs using Looping statements
4. Programs using Functions
5. Programs using Arrays
6. Programs using Structures
7. Programs using Strings
8. Programs using Pointers (both data pointers and function pointers)
9. Programs using dynamic memory allocation
10. Programs using Recursion
11. Programs using Files

Theory: 0	Tutorial: 0	Practical: 30Hrs	Project: 0	Total Hours: 30 Hrs
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Dr. B. SATHIYABHAMA, B.E., Tech., Ph.D.  
PROFESSOR & HEAD,  
Dept. of Computer Science and Engineering

U23EX203	ELECTRONIC CIRCUITS LABORATORY	L	T	P	J	C
		0	0	2	0	1

### Course Outcomes

At the end of the course, the student will be able to

CO1:	Design of Rectifiers, Wave shaping circuits, Transistor biasing
CO2:	Examine the characteristics of BJT, JFET and MOSFET
CO3:	Analyze the characteristics of Feedback amplifiers and Tuned Amplifiers

Pre-requisite:

### CO/PO, PSO Mapping

(3/2/1 indicates the strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	3	3	2	2	2	2	2	3	3	3	3
CO2	3	3	2	3	3	2	2	2	2	2	3	3	3	3
CO3	3	3	2	3	3	2	2	2	2	2	3	3	3	3

### Course Assessment methods

Direct			Indirect			
CIE test I	(15)	RTPS	(10)	<b>Dr. R.S. SABEENIAN, M.E., Ph.D.</b> MBA, FIETE, FIE(I), MIEEE, MISTE, MIUPRAI, Professor & Head of the Department, Department of Electronics and Communication Engineering, <b>Sona College of Technology,</b> <b>Salem - 636 005, Tamil Nadu.</b>		
Quiz 2	(5)	Record	(10)			
CIE test II	(15)	Total CIE:	60 marks			
Quiz 2	(5)	Semester End Examination	40 marks			

### List of Experiments

1. Construct a half-wave rectifier with or without a filter, and analyze the input and output waveforms.
2. Construct a full-wave rectifier, with or without a filter, and examine the input and output waveforms.
3. Construct a bridge wave rectifier with or without a filter, and plot the input and output waveforms.
4. Develop a voltage regulator using a Zener diode and test its load and line regulation characteristics.
5. Construct a fixed 5V power supply using a linear voltage regulator IC.
6. Design a fixed bias circuit, and calculate the base current (IB), collector current (IC), and

collector-emitter voltage (VCE).

7. Construct a voltage divider bias circuit, and calculate  $I_B$ ,  $I_C$ , and VCE.
8. Design and plot the drain and transfer characteristics of a Junction Field-Effect Transistor (JFET).
9. Design and plot the drain and transfer characteristics of a Metal-Oxide-Semiconductor Field-Effect Transistor (MOSFET).
10. Construct and analyze a voltage series feedback amplifier.
11. Design and construct a current series feedback amplifier.
12. Design and build a single-tuned amplifier using a resonant LC circuit and analyze its performance.

<b>Theory: 0</b>	<b>Tutorial: 0</b>	<b>Practical: 30Hrs</b>	<b>Project: 0</b>	<b>Total Hours: 30Hrs</b>
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*27/1/25*

**Dr. R.S. SABEENIAN, M.E., Ph.D.,**  
**MBA, FIETE, FIE(I), MIEEE, MISTE, MIUPRAI,**  
Professor & Head of the Department,  
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U23TAM201	<u>தமிழரும் தொழில்நுட்பமும்</u>	L	T	P	J	C
		1	0	0	0	1
<b>Course Outcomes</b>						
At the end of the course, the student will be able to						
CO1:	Describe the weaving and ceramic technology					
CO2:	Explain the design and construction technology					
CO3:	Analyse the manufacturing technology					
CO4:	Describe the agriculture and irrigation technology					
CO5:	Explain the Scientific Tamil and Tamil Computing					
<b>Course Assessment methods</b>						
<b>Direct</b>				<b>Indirect</b>		
CIE test I (30)	Total CIE: 100 marks			Course end survey		
CIE test II (30)	Semester End Examination: NIL					
CIE test III (40)						
<b>Unit 01: WEAVING AND CERAMIC TECHNOLOGY</b>						<b>3 Hours</b>
அலகு I <u>நெசவு மற்றும் பாணைத் தொழில்நுட்பம்:</u> சங்க காலத்தில் நெசவுத் தொழில் - பாணைத் தொழில்நுட்பம் - கரும்பு சிவப்பு பாண்டங்கள் பாண்டங்களில் கீறல் குறிப்புகள்.						
<b>Unit 02: DESIGN AND CONSTRUCTION TECHNOLOGY</b>						<b>3 Hours</b>
அலகு II <u>வடிவமைப்பு மற்றும் கட்டிடத் தொழில்நுட்பம்:</u> சங்க காலத்தில் வடிவமைப்பு மற்றும் கட்டுமானங்கள் & சங்க காலத்தில் வீட்டுப் பொருட்களில் வடிவமைப்பு- சங்க காலத்தில் கட்டுமான பொருட்களும் நடுகல்லும் - சிலப்பதிகாரத்தில் மேடை அமைப்பு பற்றிய விவரங்கள் - மாமல்லபுரம் சிற்பங்களும், கோவில்களும் - சோழர் காலத்துப் பெருங்கோயில்கள் மற்றும் பிற வழிபாட்டுத் தலங்கள் - நாயக்கர் காலக் கோயில்கள் - மாதிரி கட்டமைப்புகள் பற்றி அறிதல், மதுரை மீனாட்சி அம்மன் ஆலயம் மற்றும் திருமலை நாயக்கர் மஹால் - செட்டிநாட்டு வீடுகள் - பிரிட்டிஷ் காலத்தில் சென்னையில் இந்தோ-சாரோசெனிக் கட்டிடக் கலை.						
<b>Unit 03: MANUFACTURING TECHNOLOGY</b>						<b>3 Hours</b>
அலகு III <u>உற்பத்தித் தொழில் நுட்பம்:</u> கப்பல் கட்டும் கலை - உலோகவியல் - இரும்புத் தொழிற்சாலை - இரும்பை உருக்குதல், எஃகு - வரலாற்றுச் சான்றுகளாக செம்பு மற்றும் தங்க நாணயங்கள் - நாணயங்கள் அச்சுத்தல் - மணி உருவாக்கும் தொழிற்சாலைகள் - கல்மணிகள், கண்ணாடி மணிகள் - கடுமண் மணிகள் - சங்கு மணிகள் - எஃகு உருவாக்கும் தொழிற்சாலைகள் - தொல்லியல் சான்றுகள் - சிலப்பதிகாரத்தில் மணிகளின் வகைகள்.						
<b>Unit 04: AGRICULTURE AND IRRIGATION TECHNOLOGY</b>						<b>3 Hours</b>
அலகு IV <u>வேளாண்மை மற்றும் நீர்ப்பாசனத் தொழில் நுட்பம்:</u> அணை, ஏரி, குளங்கள், மதுகு - சோழர்காலக் குழுவித் தாம்பின் முக்கியத்துவம் - கால்நடை பராமரிப்பு - கால்நடைகளுக்காக வடிவமைக்கப்பட்ட கிணறுகள் - வேளாண்மை மற்றும் வேளாண்மைச் சார்ந்த செயல்பாடுகள் - கடல்சார் அறிவு - மீள்வளம் - முத்து மற்றும் முத்துக்குளித்தல் - பெருங்கடல் குறித்த பண்டைய அறிவு - அறிவுசார் சமூகம்.						
<b>Unit 05: SCIENTIFIC TAMIL &amp; TAMIL COMPUTING</b>						<b>3 Hours</b>
அலகு V <u>அறிவியல் தமிழ் மற்றும் கணிததமிழ்:</u> அறிவியல் தமிழின் வளர்ச்சி - கணிததமிழ் வளர்ச்சி - தமிழ் நூல்களை மின்பதிப்பு செய்தல் - தமிழ் மென்பொருட்கள் உருவாக்கம் - தமிழ் இணையக் கல்விக்கழகம் - தமிழ் மின் நூலகம் - இணையத்தில் தமிழ் அகராதிகள் - சொற்குவைத் திட்டம்.						

Theory: 15 Hrs	Tutorial: --	Practical: --	Project:--	Total Hours: 15 Hrs
<b>TEXT BOOKS</b>				
1.	தமிழக வரலாறு - மக்களும் பண்பாடும் - கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).			
2.	கணிணித் தமிழ் - முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்). கீழடி - வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு) பொருளை - ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு)			
<b>REFERENCES</b>				
3.	Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)			
4.	Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies.			
5.	Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).			
6.	The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)			
7.	Keeladi - 'Sangam City Civilization on the banks of river Vaigai' (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)			
8.	Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published by: The Author)			
9.	Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)			
10	Journey of Civilization Indus to Vaigai (R.Ramakrishna) (Published by: RMRL) – Reference Book.			

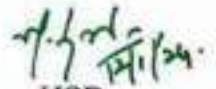
  
HOD

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SALEM - 636 005.

U23TAM201	TAMILS AND TECHNOLOGY	L	T	P	J	C
		1	0	0	0	1
<b>Course Outcomes</b>						
At the end of the course, the student will be able to						
CO1:	Describe the weaving and ceramic technology					
CO2:	Explain the design and construction technology					
CO3:	Analyse the manufacturing technology					
CO4:	Describe the agriculture and irrigation technology					
CO5:	Explain the Scientific Tamil and Tamil Computing					
<b>Course Assessment methods</b>						
<b>Direct</b>				<b>Indirect</b>		
CIE test I (30)		Total CIE: 100 marks		Course end survey		
CIE test II (30)		Semester End Examination: NIL				
CIE test III (40)						
<b>Unit 01: WEAVING AND CERAMIC TECHNOLOGY</b>						<b>3 Hours</b>
Weaving Industry during Sangam Age – Ceramic technology – Black and Red Ware Potteries (BRW) – Graffiti on Potteries						
<b>Unit 02: DESIGN AND CONSTRUCTION TECHNOLOGY</b>						<b>3 Hours</b>
Designing and Structural construction House & Designs in household materials during Sangam Age - Building materials and Hero stones of Sangam age – Details of Stage Constructions in Silappathikaram - Sculptures and Temples of Mamallapuram - Great Temples of Cholas and other worship places - Temples of Nayaka Period - Type study (Madurai Meenakshi Temple)- Thirumalai Nayakar Mahal - Chetti Nadu Houses, Indo - Saracenic architecture at Madras during British Period.						
<b>Unit 03: MANUFACTURING TECHNOLOGY</b>						<b>3 Hours</b>
Art of Ship Building - Metallurgical studies - Iron industry - Iron smelting, steel -Copper and gold- Coins as source of history - Minting of Coins – Beads making-industries Stone beads -Glass beads - Terracotta beads -Shell beads/ bone beats - Archeological evidences - Gem stone types described inSilappathikaram.						
<b>Unit 04: AGRICULTURE AND IRRIGATION TECHNOLOGY</b>						<b>3 Hours</b>
Dam, Tank, ponds, Sluice, Significance of Kumizhi Thoempu of Chola Period, Animal Husbandry - Wells designed for cattle use - Agriculture and Agro Processing - Knowledge of Sea - Fisheries – Pearl - Conche diving - Ancient Knowledge of Ocean - Knowledge Specific Society						
<b>Unit 05: SCIENTIFIC TAMIL &amp; TAMIL COMPUTING</b>						<b>3 Hours</b>
Development of Scientific Tamil - Tamil computing – Digitalization of Tamil Books – Development of Tamil Software – Tamil Virtual Academy – Tamil Digital Library – Online Tamil Dictionaries –Sorkuvai Project						
<b>Theory: 15 Hrs</b>		<b>Tutorial: --</b>		<b>Practical: --</b>		<b>Project:--</b>
<b>Total Hours: 15 Hrs</b>						
<b>TEXT BOOKS</b>						
1.	தமிழக வரலாறு - மக்களும் பண்பாடும் - கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).					
2.	கணினித் தமிழ் - முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்). கீழடி - வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு) பொருதை - ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு)					

**REFERENCES**

1.	Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)
2.	Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies).
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8.	Journey of Civilization Indus to Vaigai (R.Ramakrishna) (Published by: RMRL) – Reference Book.

  
HOD

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U23GE201	BASIC APTITUDE-II	L	T	P	J	C
		2	0	0	0	0

### Course Outcomes

At the end of the course, the students will be able to

<b>CO1:</b>	Solve the problems in Divisibility, Division algorithm, Successive Division and HCF & LCM. Identify Synonyms and Antonyms.
<b>CO2:</b>	Elucidate the problems in BODMAS rule, Approximation, Surds and Indices, Algebraic Simplification and Square root and Cube root. Choose appropriate Verbal Analogies and edit the given passages.
<b>CO3:</b>	Crack the problems involving Ratio and Proportion, and discuss Proportionality Theorems. Comprehend the given passages for Reading Comprehension activity and answer the questions correctly.
<b>CO4:</b>	Deduce the problems involving Linear equation and Quadratic equation. Demonstrate good vocabulary skill by doing the one word substitution and sentence filler exercise with high degree of accuracy.
<b>CO5:</b>	Interpret the logical reasoning problems from Number series ,Coding and Decoding and Exhibit good expertise in detecting errors in the given sentences.

### Pre-requisite:

- Basic English language and Grammar knowledge
- Knowledge in Basic Mathematics

### CO/PO, PSO Mapping

(3/2/1 indicates the strength of correlation) 3-Strong, 2-Medium, 1-Weak

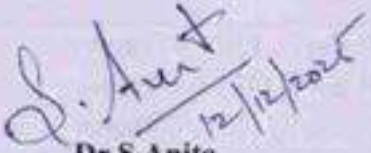
Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)

COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	1	1	1	3	3	3	2	3
CO2	3	3	3	2	1	1	1	3	3	3	2	3
CO3	3	3	3	2	1	1	1	3	3	3	2	3
CO4	3	3	3	2	1	1	1	3	3	3	2	3
CO5	3	3	3	2	1	1	1	3	3	3	2	3

### Course Assessment methods

Direct		Indirect
CIE test I (30) - Theory	Total CIE: 100 marks Semester End Examination – NIL	Course end survey
CIE test II (30) - Theory		
CIE test III (40) - Theory		

<b>Unit 01</b>	<b>6 Hours</b>
Number Properties: Classification of numbers - Divisibility - Division algorithm - Successive Division - HCF and LCM - Problems Verbal Aptitude: Synonyms and b. Antonyms	
<b>Unit 02:</b>	<b>6 Hours</b>
Simplification: BODMAS Rule - Approximation - Surds and Indices - Algebraic Simplification - Square root and Cube root - Problems Verbal Aptitude: Verbal analogy, Editing passages	
<b>Unit 03:</b>	<b>6 Hours</b>
Ratio and Proportion : Ratio - Properties of Ratios - Compound Ratio - Coin based problems - Proportion - Proportionality Test - Proportionality Theorems - Inverse Proportion - Variation - Problems Verbal Aptitude: Reading Comprehension	
<b>Unit 04:</b>	<b>6 Hours</b>
Equations: a. Linear equation: Simultaneous Linear Equations - Consistent System - Inconsistent System - Problems b. Quadratic Equation: Different Ways to Express the Quadratic Equation - Discriminant of the Quadratic Equations - Roots - Nature of the Roots - Relation between roots and coefficient of equation - Formation of a Quadratic Equation - Problems Verbal Aptitude: One word substitution , Sentence filler words	
<b>Unit 05:</b>	<b>6 Hours</b>
Logical Reasoning : Number series - Coding and Decoding - Problem Verbal Aptitude: Error detection	
<b>Theory: 30 Hrs</b>	<b>Tutorial: 0</b>
<b>Practical: 0</b>	<b>Project: 0</b>
<b>Total Hours: 30 Hrs</b>	
<b>TEXT BOOKS</b>	
1.	S.Chand and Dr.R.S.Aggarwal, "Quantitative Aptitude for competitive examinations", S Chand and Company Limited 2019.
2.	Nishit K.Sinha, "Logical Reasoning and Data Interpretation", Pearson 2021.

  
**Dr.S.Anita**  
**Professor & Head**  
**Department of Training**

U23GE202	Disaster Management and Preparedness	L	T	P	J	C
		2	0	0	0	0

**Course Outcomes**

At the end of the course, the students will be able to

CO1:	Explain basic disaster concepts, causes, and vulnerability in India.
CO2:	Classify natural and man-made disasters and their impacts.
CO3:	Apply disaster risk reduction measures and disaster management cycle.
CO4:	Describe disaster management policies, institutions, and stakeholder roles in India.
CO5:	Analyze the role of development and technology in disaster management.

**Pre-requisite:**

Nil

**CO/PO, PSO Mapping**

(3/2/1 indicates the strength of correlation) 3-Strong, 2-Medium, 1-Weak

COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	-	-	-	2	2	-	-	-	-	-	-	-
CO2	2	3	-	-	-	2	3	-	-	-	-	-	-	-
CO3	-	2	3	2	-	2	2	-	-	-	-	-	-	-
CO4	-	-	-	-	-	3	2	2	2	2	-	-	-	-
CO5	-	-	2	2	3	-	3	-	-	-	-	2	-	-

**Course Assessment methods**

Direct		Indirect
CIE Test I (30) Theory CIE Test II (30) Theory CIE Test III (40) Theory	Total CIE: 100 marks Semester End Examination - Nil	Course end survey

<b>UNIT-I - INTRODUCTION</b>				<b>06 Hours</b>
Concepts and definitions: disaster, hazard, vulnerability and its types, risk-severity, frequency, impact, prevention, mitigation. Causes for Disasters. Vulnerability profile of India				
<b>UNIT-II - DISASTERS AND ITS IMPACTS</b>				<b>06 Hours</b>
Disaster's classification: natural disasters (floods, cyclones, earthquakes, landslides, forest fires, etc.); manmade disasters (industrial pollution, transportation accidents, terrorist strikes, etc.) Disaster impacts and their effects				
<b>UNIT-III - DISASTER RISK REDUCTION (DRR)</b>				<b>06 Hours</b>
Disaster management cycle - its phases: (prevention, mitigation, preparedness, relief, and recovery); structural and non-structural measures; early warning systems; post-disaster environmental response.				
<b>UNIT-IV - DISASTER MANAGEMENT IN INDIA</b>				<b>06 Hours</b>
Indian Disaster Management Act 2005- Policy on Disaster Management. Roles and responsibilities of NGOs, the community, and army forces. DRR programmes and the activities in India.				
<b>UNIT-V - DEVELOPMENT AND TECHNOLOGY FOR DISASTER MANAGEMENT</b>				<b>06 Hours</b>
Relationship between disaster and development. Reconstruction and development methods for disasters. Geo-informatics in Disaster Management (RS, GIS, IOT). Accessibility and Emergency Services for People with Disabilities.				
<b>Theory: 30 Hrs</b>	<b>Tutorial: --</b>	<b>Practical: --</b>	<b>Project:--</b>	<b>Total Hours: 30 Hrs</b>
<b>TEXT BOOKS</b>				
1.	Ghosh G.K., 2006, Disaster Management, APH Publishing Corporation.			
2.	Singh B.K., 2008, Handbook of Disaster Management: Techniques & Guidelines, Rajat Publication.			
3.	Pradeep Sahni, 2004, Disaster Risk Reduction in South Asia, Prentice Hall.			
<b>REFERENCES</b>				
1.	Disaster Medical Systems Guidelines. Emergency Medical Services Authority, State of California, EMSA no.214, June 2003.			
2.	Inter-Agency Standing Committee (IASC) (Feb. 2007). IASC Guidelines on Mental Health and Psychosocial Support in Emergency Settings. Geneva: IASC.			
3.	<a href="http://ndma.gov.in/">http://ndma.gov.in/</a> (Home page of National Disaster Management Authority).			
4.	<a href="http://www.ndmindia.nic.in/">http://www.ndmindia.nic.in/</a> National Disaster management in India, Ministry of Home.			



U23OL1201	French - II				
	L	T	P	J	C
	1	0	0	0	1
<b>Course Outcomes</b>					
At the end of the course, the student will be able to					
CO1:	Accept and refuse of an invitation, give some instruction of do's and don'ts, converse in commercial centres, write an invitation				
CO2:	Describe a city, locate a place in a city, ask further details, describe one's hometown				
CO3:	Talk about things around us, recite a past event, identify sign boards, express agree and disagree, express obligation and prohibition, sell an object in online				
CO4:	Talk about one's goals, express one's feelings, write a list of things to do, express an opinion, talk about weather, draft a mail response				
CO5:	Express one's interest and wish, describe a pet animal, express one's aversions, encourage others, write to ask for a help, narrate a past event, write a biography				
<b>Course Assessment methods</b>					
<b>Direct</b>			<b>Indirect</b>		
CIE test I (30)	Total CIE: 100 marks		Course end survey		
CIE test II (30)	Semester End Examination: NIL				
CIE test III (40)					
<b>Unit 01:</b>				<b>3 Hours</b>	
Hr 2: City shopping and services, conjugation: payer, manger and acheter, negative sentence					
Hr 4: Imperative sentence, food and beverages, utensils, cutleries, corckeries					
Hr 6: Quantitative articles, quantities, pronoun 'en', express appreciation, write an invitation					
<b>Unit 02:</b>				<b>3 Hours</b>	
Hr 8: City and localities, Conjugation: prendre, adjectives of place, pronoun 'y'					
Hr 10: Transport, leisure activities, preposition of place, degrees of comparison					
Hr 12: Asking information about a new place, describe a city					
<b>Unit 03:</b>				<b>3 Hours</b>	
Hr 14: Things in a store, conjugation : faire, imparfait 2, passé composé					
Hr 16: Things in a repairing shop, computer, relative pronouns: que and qui					
Hr 18: Imperative negative, express obligation and interdiction, online sale and response					
<b>Unit 04:</b>				<b>3 Hours</b>	
Hr 20: Professions, conjugation: croire, voir, recent past tense					
Hr 22: Traveling formalities, expressing about health condition, future tense					
Hr 24: Pronoun COD, talk about weather condition, write about one's plans and projections					
<b>Unit 05:</b>				<b>3 Hours</b>	
Hr 26: Citizenship and solidarity, conjugation: connaitre and savoir, depuis vs pendant					
Hr 28: Imparfait vs passé composé, nature and environment, indirect pronouns COI					
Hr 30: Animals, conditional, talk on supporting others, write a biography					
Theory: 15 Hrs		Tutorial: --	Practical: --	Project:--	Total Hours: 15 Hrs
<b>TEXT BOOKS</b>					
1. The course faculty will provide relevant audios, videos, handouts and notes.					
2. Books : Saison (Méthode de français, cahier d'activités)					
3. Reference books : La conjugaison, Dondon, Echo					

M. Renuga  
13/2/24  
HOD

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SALEM

U23OL1202	German - II				L	T	P	J	C
					1	0	0	0	1
<b>Course Outcomes</b>									
At the end of the course, the student will be able to									
CO1:	Use grammatical expressions appropriately in day-to-day conversation.								
CO2:	Make them frame simple sentences /questions.								
CO3:	Accentuate to start and sustain basic conversation								
CO4:	Helps them articulate thoughts in German								
CO5:	Identify the different forms of the verb								
<b>Course Assessment methods</b>									
<b>Direct</b>					<b>Indirect</b>				
CIE test I (30) CIE test II (30) CIE test III (40)			Total CIE: 100 marks Semester End Examination: NIL		Course end survey				
<b>Unit 01:</b> Nominative/accusative case, adjectives							3 Hours		
<b>Unit 02:</b> Modes of transportation, orientation, giving/understanding simple directions							3 Hours		
<b>Unit 03:</b> • Food and beverages, Modal verbs, Separable verbs							3 Hours		
<b>Unit 04:</b> • Simple sentences using modal / separable verbs							3 Hours		
<b>Unit 05:</b> • Articles of clothing							3 Hours		
Theory: 15 Hrs		Tutorial: --		Practical: --		Project:--		Total Hours: 15 Hrs	
<b>TEXT BOOKS</b>									
1.	Netzwerk A1								

*M. Renuga*  
HOD 13/2/24

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SALEM - 636 :

U23OL1203	Japanese - II	L	T	P	J	C
		1	0	0	0	1
<b>Course Outcomes</b>						
<b>At the end of the course, the student will be able to</b>						
CO1:	Use verbs in polite conversation or for dissuasion and describe two different activities					
CO2:	Demonstrate the application of causative verbs and those that express ability or possibility, and describe experiences					
CO3:	Use plain-style expressions, those that state opinions, and verbs and adjectives that go with nouns					
CO4:	Express sentences that use 'when' and 'if' and those that describe how services are given and received					
CO5:	Read 126 letters of Kanji, and demonstrate adequate knowledge of the lessons learnt in Levels I and II to pass the Japanese Language Proficiency Test (JLPT) for the N5 Level					
<b>Course Assessment methods</b>						
<b>Direct</b>				<b>Indirect</b>		
CIE test I (30)	Total CIE: 100 marks		Course end survey			
CIE test II (30)	Semester End Examination: NIL					
CIE test III (40)						
<b>Unit 01:</b>					<b>3 Hours</b>	
Hr 1-2: Words and verbs expressing requests / Kanji 1-10						
Hr 3-4: Asking for permission; making statements to prohibit something / Kanji 11-20						
Hr 5-6: Describing two activities / Kanji 21-30						
<b>Unit 02:</b>					<b>3 Hours</b>	
Hr 7-8: Verbs that express 'I have to ...' / Kanji 31-40						
Hr 9-10: Verbs which express ability or possibility / Kanji 41-50						
Hr 11-12: Describing experience / Kanji 51-60						
<b>Unit 03:</b>					<b>3 Hours</b>	
Hr 13-14: Plain-style expressions / Kanji 61-70						
Hr 15-16: Expressions like 'I think that ...' / Kanji 71-80						
Hr 17-18: Qualifying nouns with verbs and adjectives / Kanji 81-90						
<b>Unit 04:</b>					<b>3 Hours</b>	
Hr 19-20: Expressions using 'When ...' / Kanji 91-100						
Hr 21-22: Describing the giving and receiving of services / Kanji 101-110						
Hr 23-24: Expressions using 'If ...' / Kanji 111-126						
<b>Unit 05:</b>					<b>3 Hours</b>	
Hr 25-26: Preparing for JLPT N5						
Hr 27-28: Preparing for JLPT N5						
Hr 29-30: Preparing for JLPT N5						
<b>Theory: 15 Hrs</b>		<b>Tutorial: --</b>	<b>Practical: --</b>	<b>Project:--</b>	<b>Total Hours: 15 Hrs</b>	
<b>TEXT BOOKS</b>						
1.	The course faculty will provide handouts / notes / course material.					
2.	Books on Basic Japanese language available in the college library.					

HOD

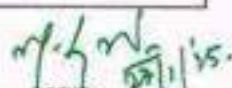
**Dr. M. RENUGA,**  
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 Sena College of Technology,

U23OL1204		Korean - II			L	T	P	J	C
					1	0	0	0	1
<b>Course Outcomes</b>									
At the end of the course, the student will be able to									
CO1:	Identify time								
CO2:	Identify the date and days of the week								
CO3:	Explain location and places								
CO4:	Explain destination								
CO5:	Construct simple sentences / questions.								
<b>Course Assessment methods</b>									
<b>Direct</b>					<b>Indirect</b>				
CIE test I (30) CIE test II (30) CIE test III (40)					Total CIE: 100 marks Semester End Examination: NIL Course end survey				
Unit 01: Time						3 Hours			
Talking about time									
Unit 02: Date						3 Hours			
Talking about dates and days of the week Talking about doing something in the past									
Unit 03: Location						3 Hours			
Talking about location Talking about doing something at a location									
Unit 04: Direction						3 Hours			
Talking about directions									
Unit 05: Future						3 Hours			
Talking about doing something in the future Talking about plans for the future Talking about hope for the future									
Theory: 15 Hrs		Tutorial: --		Practical: --		Project:--		Total Hours: 15 Hrs	
<b>REFERENCES</b>									
1	Vitamin Korean - 1								

  
 13/2/24  
 HOD

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 SALEM - 636 002.

U23OL1205		Hindi - II			L	T	P	J	C
					1	0	0	0	1
<b>Course Outcomes</b>									
<b>At the end of the course, the students will be able to</b>									
CO1:	Write Tenses and Self – Introduction								
CO2:	Write Hindi numbers & sentence Translations								
CO3:	Read and Write comprehension question & days of the week								
CO4:	Read and frame sentences ( Story ) & part of the body								
CO5:	Communicate effectively using tenses ( Conversation )								
<b>Course Assessment methods</b>									
<b>Direct</b>					<b>Indirect</b>				
CIE test I (30)			Total CIE: 100 marks			Course end survey			
CIE test II (30)			Semester End Examination: NIL						
CIE test III (40)									
Unit 01: Tenses and Self – Introduction							3 Hours		
Learning Hindi pronunciation Speaking based on Tenses ( Present, past & future ) Reading Writing									
Unit 02: Hindi Numbers & Sentence Translations							3 Hours		
Reading Writing Letters pronunciation Meanings learning									
Unit 03: Comprehension question & Days of the week							3 Hours		
Reading & analysing the meaning Learning									
Unit 04 : Story and Part of the body							3 Hours		
Words meaning Reading & Writing Sentence framing									
Unit 05 : Conversation and Colours name							3 Hours		
Conversation between a boy and Doctor Coersation between Taxi driver and Passenger									
Theory: 15 Hrs		Tutorial: --		Practical: --		Project:--		Total Hours: 15 Hrs	
<b>REFERENCES</b>									
1	Diploma in Hindi (department of higher education, Delhi)								
2	Hindi Prachara sabha exam books ( Prathamic and Madhyama )								

  
 HOD

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