

SONA COLLEGE OF TECHNOLOGY, SALEM-5

(An Autonomous Institution)

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

CURRICULUM and SYLLABI

[For students admitted in 2023-2024]

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)

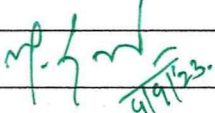
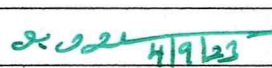
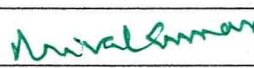

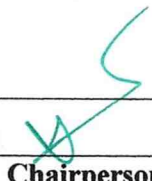
Branch: Electronics and Communication Engineering

S.No	Course Code	Course Title	L	T	P	J	C	Category	Total Contact Hours	Course Type	
Theory Courses											
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	
Practical Courses											
9.	U23PPL112	Python Programming Laboratory	0	0	2	0	1	ES	30	L	
Total Credits							21				
Optional Language Elective*											
10.	U23OL1101	French	1	0	0	0	1	OL	15	T	
11.	U23OL1102	German							15	T	
12.	U23OL1103	Japanese							15	T	
13.	U23OL1104	Korean							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 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/Electronics and Communication Engineering, First Semester B.E.ECE, Students and Staff, COE

Sona College of Technology, Salem

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Courses of Study for B.E/B.Tech. Semester II under Regulations 2023 (CBCS)

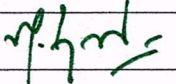
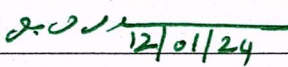
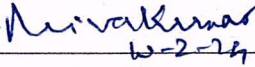
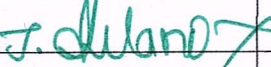
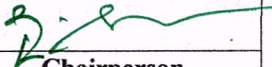
Branch: Electronics and Communication Engineering

S.No	Course Code	Course Title	L	T	P	J	C	Category	Total Contact Hours	Course Type*
Theory courses										
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.	U23PHY203C	Physics for Electronics and Communication Engineering	2	0	2	0	3	BS	60	TL
4.	U23EGR207	Engineering Graphics	3	0	0	0	3	ES	45	T
5.	U23EC201	Electronic Devices and Circuits	3	0	0	0	3	PC	45	T
6.	U23CPR205	Programming in C	3	0	0	0	3	ES	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
Total Credits 21										
Optional Language Courses**										
11.	U23OL1201	French-II	1	0	0	0	1	OL	15	T
12.	U23OL1202	German-II							15	T
13.	U23OL1203	Japanese-II							15	T
14.	U23OL1204	Korean-II							15	T

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Approved By

	 12/01/24	 12-2-24		
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

PRINCIPAL
SONA COLLEGE OF TECHNOLOGY
SALEM-636 005

Copy to:-

HOD/ Electronics and Communication Engineering, Second Semester B.E.ECE, Students and Staff, COE

Sona College of Technology, Salem

(An Autonomous Institution)

Courses of Study for B.E/B.Tech. Semester I under Regulations 2023 (CBCS)

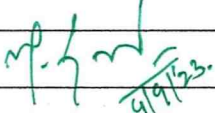
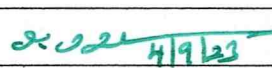
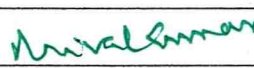


Branch: Electronics and Communication Engineering

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Theory Courses											
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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	
Practical Courses											
9.	U23PPL112	Python Programming Laboratory	0	0	2	0	1	ES	30	L	
Total Credits							21				
Optional Language Elective*											
10.	U23OL1101	French	1	0	0	0	1	OL	15	T	
11.	U23OL1102	German							15	T	
12.	U23OL1103	Japanese							15	T	
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HOD/Electronics and Communication Engineering, First Semester B.E.ECE, Students and Staff, COE

U23ENG101A	Communication Skills in English (Common to ADS, AIML, BME, CSD, CSE, CIVIL, ECE, EEE, MCT, FT, IT 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 and formal letters and build resumes and construct paragraphs														
CO5:	Develop speaking skills both in terms of fluency and comprehensibility														
Pre-requisite:															
<ul style="list-style-type: none"> • 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 (10) (Practical) Assignment/seminar/Quiz (5)					Attendance (5) Total CIE: 50 marks Semester End Examination (50) (SEE – Theory (25 marks + Lab (25 marks)					Course end survey					
Unit 01:												6 Hours			
<ul style="list-style-type: none"> • 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 															

Unit 02:				6 Hours	
<ul style="list-style-type: none"> • Tenses, Sentence Patterns • Instructions • Letter Writing - calling for quotations, placing orders 					
Unit 03:				6 Hours	
<ul style="list-style-type: none"> • Prefixes and Suffixes • Cover letter and resume writing 					
Unit 04:				6 Hours	
<ul style="list-style-type: none"> • Modal verbs, concord • Checklist • Letter Writing - Business communication, complaints, replies to queries from business customers 					
Unit 05:				6 Hours	
<ul style="list-style-type: none"> • If conditionals • Letter Writing - inviting dignitaries, accepting and declining invitations 					
Lab component:					
<ol style="list-style-type: none"> 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. 2. Mini presentation - Office Arrangements, Facilities, Office Functions, Sales, Purchases, Training Recruitment, Advertising, Applying for financial assistance, applying for a job. 3. Listening - understanding short conversations or monologues, taking down phone messages, orders, notes, etc. 4. Listening – entering information in tabular form 5. Loud Reading 					
Theory: 30 Hrs		Tutorial: --	Practical: 30 hours-	Project:--	Total Hours: 60 Hrs
TEXT BOOKS					
1.	Technical English I & II, Dr. M. Renuga et al. Sonaversity, 2016				
2.	Extensive Reading <ol style="list-style-type: none"> 1. She is Dancing Back to Life – A Short Story” 2. The Story of Google – Sara Gilbert, published by Jaico 3. The Story of Amazon.com- Sara Gilbert, published by Jaico 				
REFERENCES					
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 - 6

B. E. / ELECTRONICS AND COMMUNICATION ENGINEERING															
SEMESTER - I	LINEAR ALGEBRA AND MULTIVARIABLE CALCULUS WITH MATLAB										L	T	P	J	C
U23MAT102B											3	0	2	0	4
Course Outcomes															
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.														
Pre-requisites:															
<ul style="list-style-type: none"> Fundamentals of elementary algebra Fundamentals of calculus 							<ul style="list-style-type: none"> Fundamentals of geometry Fundamentals of trigonometry 								
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		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		
Course assessment methods [Theory with laboratory course]															
Direct							Indirect								
CIE test I (10) (Theory) CIE test II (10) (Theory) CIE test III (10) (Theory) CIE test IV (10) (Practical) Attendance (5) Assignment/Quiz/Seminar (5)							Total CIE: 50 marks Semester End Examination (50) [SEE- Theory (35) + Lab(15) marks]							Course end survey	
Unit 01	VECTOR SPACES										9 Hours				
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.															
Unit 02	EIGENVALUES AND EIGENVECTORS										9 Hours				
Eigenvalues and eigenvectors of real matrices – properties of eigenvalues and eigenvectors – Cayley-Hamilton theorem – diagonalization of real symmetric matrices.															
Unit 03	FUNCTIONS OF SEVERAL VARIABLES										9 Hours				
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.															

Unit 04	MULTIPLE INTEGRALS				9 Hours
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
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.	Taylors 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
TEXT BOOKS:					
1.	T. Veerarajan, “Linear Algebra and Partial Differential Equations”, McGraw Hill Publishers, 1 st Edition, 2018.				
2.	T. Veerarajan, “Engineering Mathematics for Semesters I & II”, McGraw Hill Publishers, 1 st Edition, 2019.				
3.	W. Yang, Y. K. Choi, K. Jaekwon, M. C. Kim, H. J. Kim and T. Im, “Engineering Mathematics with MATLAB”, CRC Press Publishers, 1 st Edition, 2017.				
REFERENCE BOOKS:					
1.	S. Lipschutz and M. L. Lipson, “Linear Algebra”, McGraw Hill Publishers, 6 th Edition, 2018.				
2.	E. Kreyszig, “Advanced Engineering Mathematics”, Wiley Publishers, 10 th Edition, Reprint, 2017.				
3.	C. Prasad and R. Garg, “Advanced Engineering Mathematics”, Khanna Publishers, 1 st Edition, 2018.				
4.	B. V. Ramana, “Higher Engineering Mathematics”, McGraw Hill Publishers, 29 th Reprint, 2017.				
5.	B. S. Grewal, “Higher Engineering Mathematics”, Khanna Publishers, 44 th Edition, 2018.				
6.	D. Xu, “Calculus problem solutions with MATLAB”, Walter de Gruyter Publishers, 1 st Edition, 2020.				

S. Jayabharathi

Dr. S. JAYABHARATHI

Head / Department of Mathematics
Sona College of Technology
Salem – 636 005

M. Renuga

Dr. M. RENUGA

BoS - Chairperson
Science and Humanities
Sona College of Technology
Salem – 636 005

BoS Date: 08. 07. 2023

B.E / B.Tech Regulations 2023

Dr. S. JAYABHARATHI
ASSOCIATE PROFESSOR & HEAD
DEPARTMENT OF MATHEMATICS,
SONA COLLEGE OF TECHNOLOGY,
SALEM-636 005. Tamilnadu.
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Dr. M. RENUGA,
Professor & Head,
Department of Humanities & Languages,
Sona College of Technology,
SALEM - 636 005.

U23PHY103B	ENGINEERING PHYSICS (Common to CSE, CSD, AIML & ECE)					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 classification and theory 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
CO1	3	2	-	-	-	2	2	-	-	2	-	2	-	3
CO2	3	2	-	-	-	2	2	-	-	2	-	2	-	3
CO3	3	2	-	-	-	2	2	-	-	2	-	2	-	3
CO4	3	2	-	-	-	2	2	-	-	2	-	2	-	3
CO5	3	2	-	-	-	2	2	-	-	2	-	2	-	3
Course Assessment methods														
Direct							Indirect							
CIE test I (8) CIE test II (8) CIE test III (8) Assignment/Seminar/Quiz (5)					Objectives Test (6) Attendance (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 <i>components</i> 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 ₂ 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 th 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.



Dr. C. SHANTHI, M.Sc., M.E., Ph.D.,
Professor of Physics
Head, Department of Sciences
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Dr. M. RENUGA,
Professor & Head,
Department of Humanities & Languages,
Sona College of Technology,
SALEM - 636 005.

U23CHE104B	CHEMISTRY OF ELECTRONIC MATERIALS	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
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(10)(Practical)					Assignment/seminar/Quiz(5) Attendance (5) Total CIE: 50 marks Semester End Examination (50)		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 - Potentiometric titrations (redox Fe ²⁺ Vs Dichromate) - Conductometric titrations (HCl vs NaOH).														
Unit 02: INTRODUCTION TO MOLECULAR ELECTONICS						6 Hours								

Introduction-Structural characteristics and doping concept in metals and metal oxide nanoparticles-Charge transport carriers: Soliton-Polaron and bipolaron. Conducting polymers: Polyacetylene-Synthesis of polyacetylene-Conducting mechanism of polyacetylene (explanation in terms of either p or n-doping) steps involved include polaron, bipolaron and soliton pair simple addition technique, Zeigler Natta catalyst)- Graphene Oxide: Preparation (Hummer's method), properties and commercial applications.				
Unit 03: OPTOELECTRONIC MATERIALS				6 Hours
Electroluminescence-Exciton-OLED materials–Organic transistors-Liquid crystalline polymers-classification of liquid crystals, chemical constitution, stability and applications–Organic solar cells-pervoskite, linear heterojunction and bulk heterojunction-Dye sensitized photovoltaics – working principle, materials, advantages and disadvantages.				
Unit 04: ELECTROCHEMICAL PROCESSING				6 Hours
Electroplating-Principle and process-Plating parameters-Current and energy efficiency-Electroplating of Cu - Fundamentals of electroless deposition - Electroless plating of Cu - Fabrication of PCB's - Electrochemical etching of copper from PCB's - Anodizing-Definition-Principle and working methodology of aluminium anodizing and its applications – Sensors – Definition and types.				
Unit 05: E-WASTE MANAGEMENT				6 Hours
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-Extraction of copper and gold from e-waste (PCB).				
List of Experiments				30 Hours
<ol style="list-style-type: none"> 1) Estimation of HCl by conductometry (HCl Vs NaOH). 2) Estimation of HCl by pH metry. 3) Estimation of ferrous ion by potentiometric titration. 4) Estimation of mixture of acids by conductometry (CH₃COOH + HCl Vs NaOH). 5) Estimation of copper content from discarded PCBs by EDTA method. 6) Estimation of chromium prepared from electroplating sludge by Permanganometry. 7) Estimation of hardness of water sample by EDTA method. 8) Estimation of alkalinity of water sample by indicator method. 				
Theory: 30 Hrs	Tutorial: 0	Practical: 30 Hrs	Project: 0	Total Hours: 60 Hrs
TEXT BOOKS				
1.	Engineering Chemistry, P C Jain & Monica Jain, Dhanpat Rai Publication, 2015-16th Edition.			
2.	Corrosion Engineering, M. G. Fontana, N. D. Greene, McGraw Hill Publications, New York, 3rd Edition, 1996.			
REFERENCES				
1.	Bansi D. Malhotra "Handbook of Polymers in Electronics", Rapra Technology Ltd., UK, 2002. 1st			

	edition.
2.	Sam-Shajing Sun, Larry R. Dalton "Introduction to Organic Electronic and Optoelectronic Materials and Devices", CRC press., London, 2017. , 2nd edition.
3.	Stergios Logothetidis "Handbook of Flexible Organic Electronics Materials - Manufacturing and Applications", WoodHead publishing., London, 2015. , 1st edition.
4.	Andrew S. Tanenbaum, "Modern Operating Systems", Prentice Hall of India, 3rd edition 2013.
5.	OLED Display Fundamentals and Applications, TakatoshiTsujiMura, Wiley-Blackwell , 2012.

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U23PPR105	PROBLEM SOLVING USING PYTHON PROGRAMMING					L	T	P	J	C				
	(Common to ADS, IT, CSE, CSE(AIML), CSD, CIVIL, BME, ECE, EEE, MECH and MCT Branches)					3	0	0	0	3				
Course Outcomes														
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.													
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	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
Course Assessment methods														
Direct						Indirect								
CIE test I (8) CIE test II (8) CIE test III (8) Assignment/seminar/Quiz (5)						Objectives Test (6) Attendance (5) Total CIE: 40 marks Semester End Examination (60)					Course end survey			
Unit 01: ALGORITHMIC PROBLEM SOLVING										9 Hours				
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).														
Unit 02: BASICS OF PYTHON PROGRAMMING										9 Hours				
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.														
Unit 03: CONTROL STATEMENTS AND STRINGS										9 Hours				
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.														

Unit 04: FUNCTIONS, FILES AND MODULES				9 Hours
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.				
Unit 05: DATA STRUCTURES: LISTS, SETS, TUPLES, DICTIONARIES				9 Hours
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.				
Theory: 45 Hrs	Tutorial: --	Practical: --	Project:--	Total Hours: 45 Hrs
TEXT BOOKS				
1.	Reema Thareja, "Problem Solving and Programming with Python" Oxford University Press, 2 nd Edition 2023.			
REFERENCES				
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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U23PPL112	PYTHON PROGRAMMING LABORATORY						L	T	P	J	C						
	(Common to ADS, IT, CSE, CSE(AI ML), CSD, CIVIL, BME, ECE, EEE, MECH and MCT Branches)						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) Quiz I- (5) CIE test II (15) Quiz II- (5)						RTPS (10) Record (10) Total CIE: 60 marks Semester End Examination (40 marks)						Course end survey					
LIST OF EXPERIMENTS																	
<ol style="list-style-type: none"> 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					

U23EC101	FUNDAMENTALS OF ELECTRICAL AND ELECTRONICS									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:	Analyze 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:														

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	P09	PO10	PO11	PO12	PSO1	PSO2
CO1	1	3	1	1	2	3	2	2		1	2	3	3	2
CO2	1	1	2	2	1	3	2	1		3	1	3	1	
CO3	1	3	2	3	2	3	2	2		3	2	3	3	2
CO4	1	2	2	3	2	3	2	1		3	2	3	3	2
CO5	1	2	2	3	2	3	2	1		3	2	3	3	2
Course Assessment methods														
Direct										Indirect				
CIE test I (10)					Assignment/seminar/Quiz(5)					Course end survey				
CIE test II (10)					Attendance (5)									
CIE test III (10)					Total CIE: 50 marks									
CIE test IV(10)(Practical)					Semester End Examination (50)									


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4.8.2023 Version 1.0

Programme: B.E (ECE)

B.E/B.Tech Regulations 2023

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 – Kirchhoff’s Law – simple problems.	
Unit 02: ELECTRICAL MACHINES	6 Hours
DC Generator and DC Motors: Construction and working principle – Types – EMF equation – Transformer: Construction and working principle – EMF equation.	
Unit 03: BASIC SEMICONDUCTOR DEVICES	6 Hours
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.	
Unit 04: BJT AND ITS APPLICATIONS	6 Hours
Bipolar Junction Transistor – Construction and working - Input and Output characteristics in CB, CE, CC Configurations –Application of transistor as a switch.	
Unit 05: SPECIAL DEVICES	6 Hours
Construction, working & Characteristics of – Tunnel Diode - Varactor diode - Photo diode - Photo transistor- UJT - SCR – TRIAC - DIAC.	
List of Experiments	30 Hours
<ol style="list-style-type: none"> 1) Measurement of AC and DC signals using Measuring Instruments 2) Realization and design problem on Ohms Law 3) Realization and design problem on KCL and KVL 4) VI characteristics of PN junction diode 5) VI characteristics of Zener Diode 6) Input and Output Characteristics of BJT in CE configuration 7) Input and Output Characteristics of BJT in CC configuration 8) Input and Output Characteristics of BJT in CB configuration 9) Realization of transistor as switch 	


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10) VI characteristics of UJT				
11) VI characteristics of SCR				
12) VI characteristics of TRIAC				
13) Simulation of Servo Motor to study its performance				
Theory: 30 Hrs	Tutorial: 0	Practical: 30 Hrs	Project: 0	Total Hours: 60 Hrs

TEXT BOOKS	
1.	D P Kothari and I J Nagrath, "Basic Electrical and Electronics Engineering", Mc Graw Hills (India) Private Limited, 2 nd Edition 2020.
2.	Salivahanan S. and Sureshkumar N., "Electronic Devices and Circuits", 4th Edition, McGraw-Hill, New Delhi, 2017
REFERENCES	
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


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U23TAM101	தமிழர் மரபு / Heritage of Tamils	L	T	P	J	C
		1	0	0	0	1
Course Outcomes						
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					
Course Assessment methods						
Direct				Indirect		
CIE test I (30)		Total CIE: 100 marks		Course end survey		
CIE test II (30)		Semester End Examination: NIL				
CIE test III (40)						
அலகு 1 : மொழி மற்றும் இலக்கியம்					3 Hours	
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.						
அலகு 2 : மரபு – பாறை ஓவியங்கள் முதல் ஓவியங்கள் வரை – சிற்பக் கலை					3 Hours	
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						
அலகு 3: நாட்டுப்புறக் கலைகள் மற்றும் வீர விளையாட்டுகள்					3 Hours	
தெருக்கூத்து, கரகாட்டம், வில்லுப்பாட்டு, கணியான் கூத்து, ஓயிலாட்டம், தோலபாவைக் கூத்து, சிலம்பாட்டம், வளரி, புலியாட்டம், தமிழர்களின் விளையாட்டுகள்.						
அலகு 4: தமிழர்களின் திணைக் கோட்பாடுகள்					3 Hours	
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 பிறப்புகுதிகளில் தமிழ்ப் பண்பாட்டின் தாக்கம் - சுயமரியாதை இயக்கம் - இந்திய மருத்துவத்தில், சித்த மருத்துவத்தின் பங்கு - கல்வெட்டுகள் கையெழுத்துப்படிக்கள் - தமிழ்ப் புத்தகங்களின் அச்ச 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	பொருதை -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

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U23TAM101	தமிழர் மரபு / Heritage of Tamils		L	T	P	J	C		
			1	0	0	0	1		
Course Outcomes									
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								
Course Assessment methods									
Direct				Indirect					
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: LANGUAGE AND LITERATURE						3 Hours			
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..									
Unit 02: HERITAGE - ROCK ART PAINTINGS TO MODERN ART – SCULPTURE						3 Hours			
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									
Unit 03: FOLK AND MARTIAL ARTS						3 Hours			
Therukoothu, Karagattam, Villu Pattu, Kaniyan Koothu, Oyillattam, Leather puppetry, Silambattam, Valari, Tiger dance - Sports and Games of Tamils									
Unit 04: THINAI CONCEPT OF TAMILS						3 Hours			
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.									
Unit 05: CONTRIBUTION OF TAMILS TO INDIAN NATIONAL MOVEMENT AND INDIAN CULTURE						3 Hours			
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	
REFERENCES									
1	தமிழக வரலாறு – மக்களும் பண் பொடும் – மக.மக. பிள்மள (தவளியீடு: தமிழ்நொடு பொடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).								
2	கணிணித ஂ தமிழ் – முமனவர ஂஇல. 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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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

CO1:	Solve the problems in Divisibility, Division algorithm, Successive Division and HCF & LCM. Identify Synonyms and Antonyms.
CO2:	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.
CO3:	Crack the problems involving Ratio and Proportion, and discuss Proportionality Theorems. Comprehend the given passages for Reading Comprehension activity and answer the questions correctly.
CO4:	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.
CO5:	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		

Unit 01				6 Hours
Number Properties: Classification of numbers - Divisibility - Division algorithm - Successive Division - HCF and LCM – Problems Verbal Aptitude: Synonyms and b. Antonyms				
Unit 02				6 Hours
Simplification: BODMAS Rule - Approximation - Surds and Indices - Algebraic Simplification - Square root and Cube root – Problems Verbal Aptitude: Verbal analogy, Editing passages				
Unit 03				6 Hours
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				
Unit 04				6 Hours
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				
Unit 05				6 Hours
Logical Reasoning : Number series – Coding and Decoding – Problem Verbal Aptitude: Error detection				
Theory: 30 Hrs	Tutorial: 0	Practical: 0	Project: 0	Total Hours: 30 Hrs
TEXT BOOKS				
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
15/09/2023

Dr.S.Anita
Head/Training
Dr. S. ANITA
Professor and Head
Department of Training,
SONA COLLEGE OF TECHNOLOGY,
SALEM-636 005.


U23OL1101		French			L	T	P	J	C
					1	0	0	0	1
Course Outcomes									
At the end of the course, the student will be able to									
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								
Course Assessment methods									
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				
Unit 01:								3 Hours	
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									
Unit 02:								3 Hours	
Hr 8: Professions, conjugation: 1 st group verbs, indefinite articles Hr 10: Preposition of place, identity card, negative sentence Hr 12: Things around us, subjective and ephatic pronouns, self-introduction online									
Unit 03:								3 Hours	
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									
Unit 04:								3 Hours	
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									
Unit 05:								3 Hours	
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									
Theory: 15 Hrs		Tutorial: --		Practical: --		Project:--		Total Hours: 15 Hrs	
TEXT BOOKS									
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


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U23OL1102	German				L	T	P	J	C
					1	0	0	0	1
Course Outcomes									
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.								
Course Assessment methods									
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				
Unit 01:								3 Hours	
<ul style="list-style-type: none"> Greeting and taking leave, introducing oneself, introducing others 									
Unit 02:								3 Hours	
<ul style="list-style-type: none"> Alphabets, spelling, numbers 									
Unit 03:								3 Hours	
<ul style="list-style-type: none"> Age, Telephone/mobile numbers, Month, Date, Time 									
Unit 04:								3 Hours	
<ul style="list-style-type: none"> Languages, Family, Asking/giving information about family members 									
Unit 05:								3 Hours	
<ul style="list-style-type: none"> Hobbies, Professions 									
Theory: 15 Hrs		Tutorial: --		Practical: --		Project:--		Total Hours: 15 Hrs	
TEXT BOOKS									
1. Netzwerk A1									


HOD
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U23OL1103		Japanese					L	T	P	J	C
							1	0	0	0	1
Course Outcomes											
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										
Course Assessment methods											
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					
Unit 01:								3 Hours			
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											
Unit 02:								3 Hours			
Hr 7-8: Asking for directions when shopping Hr 9-10: Time words and Verb Conjugations Hr 11-12: Making light conversation											
Unit 03:								3 Hours			
Hr 13-14: Expressions to use verbs from morning to night Hr 15-16: Verbs used for giving things Hr 17-18: Adjectives											
Unit 04:								3 Hours			
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											
Unit 05:								3 Hours			
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			
TEXT BOOKS											
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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 Department of Humanities & Language

U23OL1104		Korean			L	T	P	J	C
					1	0	0	0	1
Course Outcomes									
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.								
Course Assessment methods									
Direct					Indirect				
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: 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	
REFERENCES									
1	Vitamin Korean - 1								

M. Renuga
HOD

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Department of Humanities & Languages,
Sona College of Technology,

Sona College of Technology, Salem

(An Autonomous Institution)

Courses of Study for B.E/B.Tech. Semester II under Regulations 2023 (CBCS)

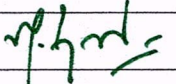
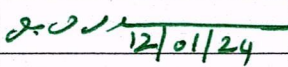
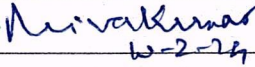
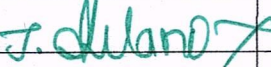
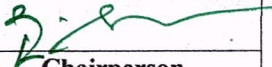
Branch: Electronics and Communication Engineering

S.No	Course Code	Course Title	L	T	P	J	C	Category	Total Contact Hours	Course Type*
Theory courses										
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.	U23PHY203C	Physics for Electronics and Communication Engineering	2	0	2	0	3	BS	60	TL
4.	U23EGR207	Engineering Graphics	3	0	0	0	3	ES	45	T
5.	U23EC201	Electronic Devices and Circuits	3	0	0	0	3	PC	45	T
6.	U23CPR205	Programming in C	3	0	0	0	3	ES	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
Total Credits 21										
Optional Language Courses**										
11.	U23OL1201	French-II	1	0	0	0	1	OL	15	T
12.	U23OL1202	German-II							15	T
13.	U23OL1203	Japanese-II							15	T
14.	U23OL1204	Korean-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 with additional one credit (Not accounted for CGPA calculation)

Approved By

	 12/01/24	 12-2-24		
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

PRINCIPAL
SONA COLLEGE OF TECHNOLOGY
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Copy to:-

HOD/ Electronics and Communication Engineering, Second Semester B.E.ECE, Students and Staff, COE

U23ENG201A	Technical English (Common to ADS, AIML, BME, CSD, CSE, CIVIL, ECE, EEE, MCT, FT, IT Branches)	L	T	P	J	C
		2	0	0	0	2

Course Outcomes

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

CO1:	Frame sentences correctly, both in written and spoken forms of language with accuracy and fluency
CO2:	Develop effective reading skills and reinforce language skills required for using grammar and building vocabulary
CO3:	Organise ideas and supporting arguments logically
CO4:	Develop skills for writing conversations, proposals, reports and transcoding
CO5:	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	2	1	2	3	2	3	3	3	3	3	3	3	3	3
CO2	2	2	2	3	2	3	3	3	3	3	3	3	3	3
CO3	3	2	2	3	2	3	3	3	3	3	3	3	3	3
CO4	3	3	2	3	2	3	3	3	3	3	3	3	3	3
CO5	3	3	2	3	2	3	3	3	3	3	3	3	3	3

Course Assessment methods

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

Unit 01:

6 Hours


- Comparative adjectives
- Recommendations
- Conversation writing
- Reading passages for specific information transfer

Unit 02:				6 Hours
<ul style="list-style-type: none"> • Prepositions, adverbs • Note making • Reading passage with multiple choice questions, reading for gist and reading for specific information 				
Unit 03:				6 Hours
<ul style="list-style-type: none"> • Collocations, direct and indirect speech • Memo • Proposal: establishing a lab, introducing a subject in the curriculum, training programme for students • Short reading passage: gap-filling exercise related to grammar 				
Unit 04:				6 Hours
<ul style="list-style-type: none"> • Cause and effect • Technical report writing – feasibility report, accident report, survey report • Short reading passages for sentence matching exercises, picking out specific information in a short text 				
Unit 05:				6 Hours
<ul style="list-style-type: none"> • Pronouns • Transcoding – bar chart, pie chart, tabular column 				
Theory: 30 Hrs	Tutorial: --	Practical: -	Project:--	Total Hours: 30 Hrs
TEXT BOOKS				
1.	Technical English I & II, Dr. M. Renuga et al. Sonaversity, 2016			
2.	Extensive Reading <ol style="list-style-type: none"> 1. Who Moved my Cheese? – Spencer Johnson-G. P. Putnam's Sons 2. Discover the Diamond in You – Arindham Chaudhari – Vikas Publishing House Pvt. Ltd. 3. Grandma's Bag of Stories – Sudha Murthy – Penguin Random House, India. 			
REFERENCES				
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 13/2/24

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College of Technology,
M - 62

SEMESTER - II	TRANSFORMS AND DIFFERENTIAL EQUATIONS										L	T	P	J	C								
U23MAT202B	Common to BIOMEDICAL, ELECTRONICS AND COMMUNICATION & ELECTRICAL AND ELECTRONICS ENGINEERING										3	1	0	0	4								
Course Outcomes																							
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.																						
Pre-requisites:																							
<ul style="list-style-type: none"> Fundamentals of elementary algebra Fundamentals of calculus 								<ul style="list-style-type: none"> Fundamentals of trigonometry Fundamentals of geometry 															
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		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										
Course assessment methods [Theory with tutorial course]																							
Direct								Indirect															
CIE test I (8) (Theory) CIE test II (8) (Theory) CIE test III (8) (Theory) Objectives Test (6)								Attendance (5) Assignment/Quiz/Seminar (5) Total CIE: 40 marks Semester End Examination: 60marks								Course end survey							
Unit 01	ORDINARY DIFFERENTIAL EQUATIONS												12 Hours										
Higher order linear ordinary differential equations with constant coefficients – Cauchy's and Legendre's linear ordinary differential equations – Method of variation of parameters.																							
Unit 02	LAPLACE TRANSFORMS												12 Hours										
Laplace transform: 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.																							

Inverse Laplace transform: 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	FOURIER SERIES			12 Hours
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	FOURIER TRANSFORMS			12 Hours
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	PARTIAL DIFFERENTIAL EQUATIONS			12 Hours
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.				
Theory: 45 Hrs		Tutorial: - 15	Practical: -	Project:--
Total Hours: 60 Hrs				
TEXT BOOKS:				
1.	T. Veerarajan, “Transforms and Partial Differential Equations”, McGraw Hill Publishers, 3 rd Edition, 2016.			
2.	T. Veerarajan, “Engineering Mathematics for Semesters I & II”, McGraw Hill Publishers, 1 st Edition, 2019.			
REFERENCE BOOKS:				
1.	E. Kreyszig, “Advanced Engineering Mathematics”, Wiley Publishers, 10 th Edition, Reprint, 2017.			
2.	C. Prasad and R. Garg, “Advanced Engineering Mathematics”, Khanna Publishers, 1 st Edition, 2018.			
3.	B. S. Grewal, “Higher Engineering Mathematics”, Khanna Publishers, 44 th Edition, 2018.			
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BoS Date: 08. 07. 2023			HoD / Mathematics	

U23PHY203C	PHYSICS FOR ELECTRONICS AND COMMUNICATION 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 magnetic field.
CO4:	Distinguish the types of magnetic materials.
CO5:	Evaluate the novel properties of metallic glasses and nanomaterials.

Pre-requisite:

Basic Knowledge in electricity and magnetism

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

Unit 01: ELECTROSTATICS

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 infinite 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.

Unit 02: DIELECTRIC MATERIALS ✓				6 Hours	
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).					
Unit 03: MAGNETOSTATICS ✓				6 Hours	
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.					
Unit 04: MAGNETIC MATERIALS ✓				6 Hours	
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.					
Unit 05: NEW ENGINEERING MATERIALS ✓				6 Hours	
Shape memory alloys (SMA) - Characteristics, properties of NiTi alloy, application, advantages and disadvantages of SMA - Nanoscience and Nanotechnology - Significance of nanoscale - Different types of nanostructures (0-D, 1-D, 2-D and 3-D) - Fabrication of nanomaterials - Ball milling and Chemical vapour deposition technique (CVD) - Carbon nanotubes - Structure, properties and applications - Fabrication - Pulsed laser deposition method.					
Theory: 30 Hrs		Tutorial: --	Practical: 30	Project: --	Total Hours: 60 Hrs
TEXT BOOKS					
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.				
REFERENCES					
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.				

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 the thermal conductivity of a bad conductor using Lee's Disc apparatus.	
3.	Determination of specific resistance of a given wire using Carey Foster's bridge.	
4.	Determination of the wavelength of a diode laser.	
5.	Determination of particle size of lycopodium powder using diode laser.	
6.	Determination of acceptance angle and numerical aperture of an optical fibre using diode laser.	
7.	Determination of hysteresis using B-H curve method.	
8.	Determination of band gap of the given semiconductor diode.	

C. Shanthi
12.1.2024

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U23EGR207	ENGINEERING GRAPHICS (Common to ADS, IT, BME, CSE, ECE, and FT 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:	Construct –Ellipse, Parabola, Hyperbola, Cycloids and Involutes.													
CO2:	Draw the projection of Point, Line and Plane surfaces.													
CO3:	Draw the projection of simple solids by rotating object method.													
CO4:	Develop the section of simple solids and lateral surface of truncated solids.													
CO5:	Draw the isometric view to orthographic projection.													
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	1							3		2			1	
CO2					3			2		2		2		2
CO3					3			2		2		2	1	2
CO4					3			2		2		2	1	2
CO5			2					2		2		2	1	
Course Assessment methods														
Direct						Indirect								
CIE test I (8) CIE test II (8) CIE test III (8) Assignment/seminar/Quiz (5)						Objectives Test (6) Attendance (5) Total CIE: 40 marks Semester End Examination (60)					Course end survey			
CONCEPTS AND CONVENTIONS - (Not for Examination). Importance of graphics in engineering applications - Use of drafting instruments - BIS conventions and specifications – Size, layout and folding of drawing sheets – Lettering and dimensioning.											9 Hours			
Unit 01: PLANE CURVES - (Manual drafting). Basic Geometrical constructions, Curves used in engineering practices: Conics – Construction of ellipse, parabola and hyperbola by eccentricity method – Construction of cycloid – construction of Involute of circle – Drawing of tangents and normal to the above curves.														

Unit 02: PROJECTION OF POINTS, LINES AND PLANE SURFACES. (CAD Software) Orthographic projection- principles-principal planes-First angle projection-projection of points. Projection of straight lines (only First angle projections) inclined to both the principal planes -Determination of true lengths and true inclinations by rotating line method. Projection of planes (polygonal and circular surfaces) inclined to one of the principal plane by rotating object method.	9 Hours
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Unit 03: PROJECTION OF SOLIDS (CAD Software) Projection of simple solids - prisms, pyramids, cylinder, cone and truncated solids when the axis is inclined to one of the principal planes and parallel to the other by rotating object method.	9 Hours
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Unit 04: PROJECTION OF SECTIONED SOLIDS AND DEVELOPMENT OF SURFACES. (CAD Software) Section of solids in simple vertical position when the cutting plane is inclined to one of the principal planes and perpendicular to the other – (obtaining true shape of section is not required). Development of lateral surfaces of truncated solids – Prisms, pyramids cylinders and cones.	9 Hours
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Unit 05: ISOMETRIC TO ORTHOGRAPHICS PROJECTION- (Manual drafting). Representation of three dimensional objects – General Principles - Need for importance of multiple views – First angle projection – layout of views – Conversion of isometric view to orthographic views. Practicing three dimensional modelling of simple objects using CAD Software (Not for examination)	9 Hours
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Theory: 45 Hrs	Tutorial: --	Practical: --	Project: --	Total Hours: 45 Hrs
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TEXT BOOKS	
1.	Bhatt N.D. and Panchal V.M., “Engineering Drawing”, Charotar Publishing House, 53rd Edition, 2019.
2.	Natrajan K.V., “A Text Book of Engineering Graphics”, Dhanalakshmi Publishers, Chennai, 2018.
3.	Parthasarathy, N. S. and Vela Murali, “Engineering Drawing”, Oxford University Press, 2015
4.	P.Suresh., “Engineering Graphics and Drawing”, Sonaversity, Sona College of Technology, Salem, Revised edition, 2012.


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U23EC201	ELECTRONIC DEVICES AND CIRCUITS	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: Understand the concepts of power supply and wave shaping circuits
- CO2: Illustrate the transistor biasing and its stabilization.
- CO3: Analyze the construction and characteristics of FETs and MOSFETs.
- CO4: Analyze the mid-frequency operation of BJT amplifier circuits.
- CO5: Examine the frequency response characteristics of amplifiers.

Pre-requisite:

Fundamental of Electrical and Electronics

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	3	3	3	3	3	2			2	1	2	3	3
CO 2	3	3	3	3	3	3	2			2	1	2	3	3
CO 3	3	3	3	3	3	3	2			2	1	2	3	3
CO 4	3	3	3	3	3	3	2			2	1	2	3	3
CO 5	3	3	3	3	3	3	2			2	1	2	3	3

Course Assessment methods

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

Unit 01: POWER SUPPLY AND WAVE SHAPING CIRCUITS

9 Hours

Diode Rectifiers - Half-wave, full-wave and bridge rectifiers with resistive load- Filters C, L, LC and CLC – Voltage Regulators using 78XX -Diode Clippers – Series – Shunt – Diode Clamper – Positive – Negative – RC Differentiator – RC Integrator.

Unit 02: TRANSISTOR BIASING				9 Hours
BJT – Need for biasing -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- self bias as a constant current circuit				
Unit 03: FIELD EFFECT TRANSISTORS				9 Hours
JFETs (P-channel, N-channel) Construction – Drain and Transfer characteristics -Current Equations - Pinch off voltage and its significance- MOSFET (Enhancement-mode MOSFET, depletion-mode MOSFET) Construction - Drain and Transfer characteristics - Threshold voltage - Channel length modulation, Comparison of MOSFET with JFET- Basics of CMOS - Merits and Demerits – Application - FINFET				
Unit 04: MID-BAND ANALYSIS OF SMALL SIGNAL AMPLIFIERS				9 Hours
Method of drawing small-signal equivalent circuit-CE, CB and CC (h Parameter) amplifiers - Comparison –Analysis of CE Configuration using Approximate model - Miller’s theorem - Methods of increasing input impedance using Darlington connection and bootstrapping.				
Unit 05: FREQUENCY RESPONSE OF AMPLIFIERS				9 Hours
General shape of frequency response of amplifiers - Definition of cut-off frequencies and bandwidth - Low frequency analysis of amplifiers to obtain lower cut-off frequency - Hybrid equivalent circuit of BJTs - High frequency analysis of BJT amplifiers to obtain upper cut-off frequency – Gain Bandwidth Product.				
Theory: 45 Hrs	Tutorial: --	Practical: --	Project:--	Total Hours: 45 Hrs
TEXT BOOKS				
1.	Salivahanan S. and Sureshkumar N., “Electronic Devices and Circuits”, 5th Edition, McGraw-Hill, 2022			
2.	David A. Bell, “Electronic devices and circuits” 5th edition, Prentice-Hall, 2018			
REFERENCES				
1.	Charles K. Alexander and Matthew N. O. Sadiku, “Fundamentals of Electric Circuits”, McGraw Hill; Standard Edition, 2022			
2.	Varsha Agrawal Anil K. Maini, “Electronic Devices and Circuits”, 2 Edition, Wiley, 2019			
3.	Adel S. Sedra (Author), Kenneth C. Smith (Author), Arun N. Chandorkar, “Microelectronic Circuits: Theory and Applications”, Second Hand & Used Book (S), Oxford University Press,2018			
4.	Donald A. Neamen, “Electronic Circuit Analysis and Design”, Tata McGraw Hill, 2nd Edition,2017.			
5.	Robert L. Boylestad Electronic Devices and Circuit Theory, 11e 11th Edition, Kindle Edition,2014			

U23CPR205	PROGRAMMING IN C (Common to CSE, CSE(AIML), CSD, ADS, IT and ECE 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	P09	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

CIE test I (8)
CIE test II (8)
CIE test III (8)
Assignment/seminar/Quiz (5)

Objectives Test (6)
Attendance (5)
Total CIE: 40 marks
Semester End Examination (60)

Indirect

Course end survey

Unit 01: C PROGRAMMING BASICS

9 Hours

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.

Unit 02: CONTROL STATEMENTS, ARRAYS AND STRING

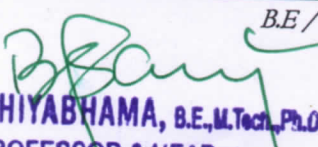
9 Hours

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.

Unit 03: FUNCTIONS AND POINTERS

9 Hours

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


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arrays – Pointers and Functions - Dynamic memory Allocation - Example Programs.					
Unit 04: STRUCTURES AND UNIONS					9 Hours
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					
Unit 05: FILE MANIPULATIONS					9 Hours
Files-File operations- Binary files and text files – Types of File processing-Sequential access -Random Access File - Command line arguments.					
Theory: 45 Hrs	Tutorial: 0	Practical: 0	Project:0		Total Hours: 45 Hrs
TEXT BOOKS					
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.				
REFERENCES					
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.				

U23TAM201	தமிழரும் தொழில்நுட்பமும்	L	T	P	J	C
		1	0	0	0	1
Course Outcomes						
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					
Course Assessment methods						
Direct				Indirect		
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: WEAVING AND CERAMIC TECHNOLOGY						3 Hours
அலகு I <u>நெசவு மற்றும் பாணைத் தொழில்நுட்பம்:</u> சங்க காலத்தில் நெசவுத் தொழில் - பாணைத் தொழில்நுட்பம் - கரும்பு சிவப்பு பாண்டங்கள் பாண்டங்களில் கீறல் குறியீடுகள்.						
Unit 02: DESIGN AND CONSTRUCTION TECHNOLOGY						3 Hours
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.						
Unit 03: MANUFACTURING TECHNOLOGY						3 Hours
அலகு III <u>உற்பத்தித் தொழில் நுட்பம்:</u> கப்பல் கட்டும் கலை - உலோகவியல் - இரும்புத் தொழிற்சாலை - இரும்பை உருக்குதல், எஃகு - வரலாற்றுச் சான்றுகளாக செம்பு மற்றும் தங்க நாணயங்கள் - நாணயங்கள் அச்சடித்தல் - மணி உருவாக்கும் தொழிற்சாலைகள் - கல்மணிகள், கண்ணாடி மணிகள் - கடுமண் மணிகள் - சங்கு மணிகள் - எலும்புத்துண்டுகள் - தொல்லியல் சான்றுகள் - சிலப்பதிகாரத்தில் மணிகளின் வகைகள்.						
Unit 04: AGRICULTURE AND IRRIGATION TECHNOLOGY						3 Hours
அலகு IV <u>வேளாண்மை மற்றும் நீர்ப்பாசனத் தொழில் நுட்பம்:</u> அணை, ஏரி, குளங்கள், மதுகு - சோழர்காலக் குழுவித் தூம்பின் முக்கியத்துவம் - கால்நடை பராமரிப்பு - கால்நடைகளுக்காக வடிவமைக்கப்பட்ட கிணறுகள் - வேளாண்மை மற்றும் வேளாண்மைச் சார்ந்த செயல்பாடுகள் - கடல்சார் அறிவு - மீன்வளம் - முத்து மற்றும் முத்துக்குளித்தல் - பெருங்கடல் குறித்த பண்டைய அறிவு - அறிவுசார் சமூகம்.						
Unit 05: SCIENTIFIC TAMIL & TAMIL COMPUTING						3 Hours
அலகு V <u>அறிவியல் தமிழ் மற்றும் கணித்தமிழ்:</u> அறிவியல் தமிழின் வளர்ச்சி - கணித்தமிழ் 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
TEXT BOOKS				
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) பொருதை - ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு)			
REFERENCES				
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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Sona College of Technology,
SALEM - 636 005.

U23TAM201	TAMILS AND TECHNOLOGY	L	T	P	J	C
		1	0	0	0	1
Course Outcomes						
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					
Course Assessment methods						
Direct				Indirect		
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: WEAVING AND CERAMIC TECHNOLOGY						3 Hours
Weaving Industry during Sangam Age – Ceramic technology – Black and Red Ware Potteries (BRW) – Graffiti on Potteries						
Unit 02: DESIGN AND CONSTRUCTION TECHNOLOGY						3 Hours
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.						
Unit 03: MANUFACTURING TECHNOLOGY						3 Hours
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.						
Unit 04: AGRICULTURE AND IRRIGATION TECHNOLOGY						3 Hours
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						
Unit 05: SCIENTIFIC TAMIL & TAMIL COMPUTING						3 Hours
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						
Theory: 15 Hrs		Tutorial: --	Practical: --	Project:--	Total Hours: 15 Hrs	
TEXT BOOKS						
1.	தமிழக வரலாறு – மக்களும் பண்பாடும் – கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).					
2.	கணினித் தமிழ் – முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்). கிழங்கு – வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு) பொருநரை – 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).
3.	Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
4.	The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)
5.	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)
6.	Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published by: The Author)
7.	Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
8.	Journey of Civilization Indus to Vaigai (R.Ramakrishna) (Published by: RMRL) – Reference Book.


HOD

Dr. M.RENUGA,
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U23GE201	BASIC APTITUDE-II (Common to All Departments)	L	T	P	J	C
		2	0	0	0	0

Course Outcomes

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

CO1:	Solve the problems in Percentage, Conversion of Percentage to Ratio and Ratio into Percentage and work on verbal aptitude questions
CO2:	Elucidate the problems in Profit and loss and percentage of profit and loss. Choose appropriate sentence fillers and Idioms and phrase
CO3:	Crack the problems involving Geometry, Area, Perimeter/Circumference, Surface area and Volume. Comprehend the given passages for Reading Comprehension activity and answer the questions correctly.
CO4:	Deduce the problems involving Trigonometry and exhibit good expertise in detecting errors in the given sentences.
CO5:	Interpret the problems on Ages & logarithm and work on logical reasoning and demonstrate good vocabulary skill by spotting errors.

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		

Unit 01				6 Hours	
Percentage: Conversion of a Percentage into a Fraction – Conversion of a Percentage into a Ratio – Conversion of a Ratio into a Percentage - Percentage Change – Successive percentage – Problems					
Verbal Aptitude: Jumbled sentences & Reconstructions of sentences (PQRS)					
Unit 02				6 Hours	
Profit Loss: Types of prices – Profit – Loss – Percentage of Profit and Loss - Common Gain or Loss – Selling Price and Cost Price Equality – Successive Profit and Loss – Problems					
Verbal Aptitude: Sentence fillers two words & Idioms and phrase					
Unit 03				6 Hours	
Geometry: Angles – Complementary and Supplementary angles – Lines – Triangle – Types of triangles – Properties of Triangles – Problems					
Area, Perimeter / Circumference: Triangles - Rectangles and Squares – Parallelogram, Rhombus and Trapezium – Circles – Problems					
Surface area, curved surface area & Volume: Cuboid – Cube – Right circular cylinder – Right circular cone – Sphere – Hemisphere– Problems					
Verbal Aptitude: Reading comprehension.					
Unit 04				6 Hours	
Trigonometry: Value of Trigonometry ratios for particular values – Sign of Trigonometrical ratios – Trigonometrical ratios for sum or difference of angles Problems					
Verbal Aptitude: Spotting errors					
Unit 05				6 Hours	
Averages – Problems on ages – Logarithm - Logical Reasoning: Alpha Series – Venn diagram – Problems					
Verbal Aptitude: Writing captions for given pictures.					
Theory: 30 Hrs		Tutorial: 0	Practical: 0	Project: 0	Total Hours: 30 Hrs
TEXT BOOKS					
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
6/02/2024

Dr.S.Anita
Professor & Head
Department of Training
Dr. S. ANITA
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SONA COLLEGE OF TECHNOLOGY,
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U23CPL212	C PROGRAMMING LABORATORY (Common to ADS, IT, CSE, CSE(AIML), CSD and ECE 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)	RTPS (10) Record (10) Total CIE: 60 marks Semester End Examination (40 marks)
Quiz 1- (5)	
CIE test II (15)	
Quiz II- (5)	

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 Hrs	Tutorial: 0	Practical: 30 Hrs	Project: 0	Total Hours: 30 Hrs
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U23EC202	ELECTRONIC DEVICES AND 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 frequency response of BJT amplifiers.																			
Pre-requisite:																				
Fundamental of Electrical and Electronics																				
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	P09	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) Quiz 1 (5) CIE test II (15) Quiz 2 (5)							RTPS (10) Record (10) Total CIE: 60 marks Semester End Examination: 40 marks							Course end survey						

List of Experiments
<ol style="list-style-type: none"> Design and construct the half-wave rectifier with and without a filter, and plot its input and output waveforms. Design and construct the Bridge rectifier with and without a filter, and plot its input and output waveforms. Construct Positive Series Clipper and Positive Clamper and obtain its waveforms.

4. Construct Differentiator and Integrator circuit by using passive element and obtain the output waveform for the input signal i) Sine ii) Square.
5. Design, construct, and test a Voltage Regulator with a Zener Diode and plot its load and line regulation.
6. Design and construct a 5-volt fixed-voltage Power supply using a linear regulator IC.
7. Construct a Fixed bias circuit and calculate I_B , I_C , and V_{CE} .
8. Construct a Voltage divider bias and calculate I_B , I_C , and V_{CE} .
9. Verify the Drain and Transfer characteristics of JFETs.
10. Verify the Drain and Transfer characteristics of MOSFETs.
11. Design and construct MOSFETs as a switch.
12. Construct a CE Amplifier using Voltage divider bias and obtain its frequency response.

Theory: 0	Tutorial: 0	Practical:30 Hrs	Project: 0	Total Hours: 30 Hrs
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 Professor & Head of the Department,
 Department of Electronics and Communication Engineering,
 Sona College of Technology,
 Salem - 636 005. Tamil Nadu.

U23OL1201	French - II				L	T	P	J	C
					1	0	0	0	1
Course Outcomes									
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								
Course Assessment methods									
Direct					Indirect				
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:								3 Hours	
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									
Unit 02:								3 Hours	
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									
Unit 03:								3 Hours	
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									
Unit 04:								3 Hours	
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									
Unit 05:								3 Hours	
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	
TEXT BOOKS									
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								

HOD

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 Salem

U23OL1202	German - II			L	T	P	J	C
				1	0	0	0	1
Course Outcomes								
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							
Course Assessment methods								
Direct					Indirect			
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:						3 Hours		
Nominative/accusative case, adjectives								
Unit 02:						3 Hours		
Modes of transportation, orientation, giving/understanding simple directions								
Unit 03:						3 Hours		
<ul style="list-style-type: none"> Food and beverages, Modal verbs, Separable verbs 								
Unit 04:						3 Hours		
<ul style="list-style-type: none"> Simple sentences using modal / separable verbs 								
Unit 05:						3 Hours		
<ul style="list-style-type: none"> Articles of clothing 								
Theory: 15 Hrs		Tutorial: --		Practical: --		Project:--		Total Hours: 15 Hrs
TEXT BOOKS								
1.	Netzwerk A1							

M. Renuga
HOD 13/12/24

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Department of Humanities & Languages,
Sona College of Technology,
SALEM - 636 :

U23OL1203	Japanese - II	L	T	P	J	C
		1	0	0	0	1
Course Outcomes						
At the end of the course, the student will be able to						
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					
Course Assessment methods						
Direct				Indirect		
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:					3 Hours	
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						
Unit 02:					3 Hours	
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						
Unit 03:					3 Hours	
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						
Unit 04:					3 Hours	
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						
Unit 05:					3 Hours	
Hr 25-26: Preparing for JLPT N5						
Hr 27-28: Preparing for JLPT N5						
Hr 29-30: Preparing for JLPT N5						
Theory: 15 Hrs		Tutorial: --		Practical: --		Project:--
						Total Hours: 15 Hrs
TEXT BOOKS						
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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Sona College of Technology,

U23OL1204		Korean - II			L	T	P	J	C
					1	0	0	0	1
Course Outcomes									
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.								
Course Assessment methods									
Direct					Indirect				
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: 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	
REFERENCES									
1	Vitamin Korean - 1								


 13/2/24
 HOD

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