

SONA COLLEGE OF TECHNOLOGY, SALEM-5

(An Autonomous Institution)

B.E- CSE(Artificial Intelligence and Machine Learning)

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)

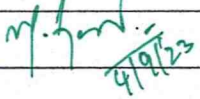

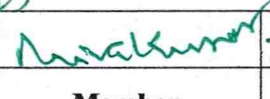
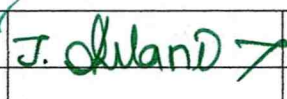

Branch: BE Computer Science and Engineering (Artificial Intelligence and Machine Learning)

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.	U23MAT102A	Linear Algebra and Calculus with MATLAB	3	0	2	0	4	BS	75	TL
3.	U23PHY103B	Engineering Physics	3	0	0	0	3	BS	45	T
4.	U23PPR105	Problem Solving using Python Programming	3	0	0	0	3	ES	45	T
5.	U23EGR107	Engineering Graphics	3	0	0	0	3	ES	45	T
6.	U23TAM101	தமிழர் மரபு / Heritage of Tamils	1	0	0	0	1	HS	15	T
7.	U23GE101	Basic Aptitude-I	2	0	0	0	0	AC	30	T
Practical Courses										
8.	U23PHL110	Engineering Physics Laboratory	0	0	2	0	1	BS	30	L
9.	U23PPL112	Python Programming Laboratory	0	0	2	0	1	ES	30	L
Total Credits							19			
Optional Language Courses**										
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, CSE BoS	Member Secretary, Academic Council	Dean-Academics	Chairperson, Academic Council & Principal
Dr.M.Renuga	Dr B.Sathiyabhama	Dr.R.Shivakumar	Dr.J.Akilandeswari	Dr.S.R.R.Senthil Kumar

Copy to:-

HOD/CSE (Artificial Intelligence and Machine Learning), First Semester B.E. AIML 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)

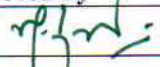

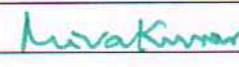
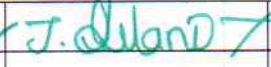

Branch: BE Computer Science and Engineering (Artificial Intelligence and Machine Learning)

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	HL	30	T
2.	U23MAT202D	Discrete Mathematics	3	1	0	0	4	BS	60	TT
3.	U23CHE204C	Applied Chemistry	2	0	0	0	2	BS	30	T
4.	U23CPR205	Programming in C	3	0	0	0	3	ES	45	T
5.	U23BEE206B	Basics of Electrical and Electronics Engineering	3	0	0	0	3	ES	45	T
6.	U23EC203	Digital Principles and System Design	3	0	0	0	3	PC	45	T
7.	U23TAM201	தமிழரும் தொழில்நுட்பமும்/ Tamil and Technology	1	0	0	0	1	HS	15	T
8.	U23GE201	Basic Aptitude- II	2	0	0	0	0	AC	30	T
Practical courses										
9.	U23CPL212	C Programming Laboratory	0	0	2	0	1	ES	30	L
10.	U23CHL211	Chemistry Laboratory	0	0	2	0	1	BS	30	L
11.	U23BEEL213B	Basics of Electrical and Electronics Engineering Laboratory	0	0	2	0	1	ES	30	L
Total Credits							21			
Optional Language Courses**										
12	U23OL1201	French - II	1	0	0	0	1	OL	15	T
	U23OL1202	German - II							15	T
	U23OL1203	Japanese - II							15	T
	U23OL1204	Korean - II							15	T

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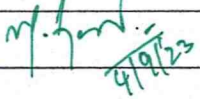

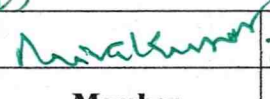
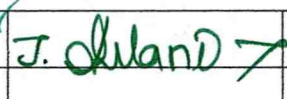

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4.	U23PPR105	Problem Solving using Python Programming	3	0	0	0	3	ES	45	T
5.	U23EGR107	Engineering Graphics	3	0	0	0	3	ES	45	T
6.	U23TAM101	தமிழர் மரபு / Heritage of Tamils	1	0	0	0	1	HS	15	T
7.	U23GE101	Basic Aptitude-I	2	0	0	0	0	AC	30	T
Practical Courses										
8.	U23PHL110	Engineering Physics Laboratory	0	0	2	0	1	BS	30	L
9.	U23PPL112	Python Programming Laboratory	0	0	2	0	1	ES	30	L
Total Credits							19			
Optional Language Courses**										
10.	U23OL1101	French	1	0	0	0	1	OL	15	T
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Copy to:-

HOD/CSE (Artificial Intelligence and Machine Learning), First Semester B.E. AIML 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. CSE (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)																
SEMESTER - I		LINEAR ALGEBRA AND CALCULUS WITH MATLAB										L	T	P	J	C
U23MAT102A												3	0	2	0	4
Course Outcomes																
At the end of the course, the student will be able to																
CO1:	find the rank of the matrix and solve linear system of equations by direct and indirect methods															
CO2:	apply the concepts of vector spaces and linear transformations in real world applications															
CO3:	apply the concepts of eigenvalues and eigenvectors of a real matrix and their properties to diagonalize the matrix.															
CO4:	find the Taylor's series expansion, Jacobians and the maxima and minima of functions of two variables															
CO5:	apply the appropriate techniques of multiple integrals 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	PSO3	
CO1	3	3		3	2							2	2	2	3	
CO2	3	3		3	2							2	2	2	3	
CO3	3	3		3	2							2	2	2	3	
CO4	3	3		3	2							2	2	2	3	
CO5	3	3		3	2							2	2	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	LINEAR SYSTEM OF EQUATIONS										9 Hours					
Rank of a matrix – solution of linear system of equations by matrix method, Gauss elimination, Gauss-Jordan, Gauss-Jacobi and Gauss-Seidel methods.																
Unit 02	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 03	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 04	MULTIVARIABLE CALCULUS	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 05	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.		
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.	

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Dr. S. JAYABHARATHI
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M. Renuka
Dr. M. RENUKA
 BoS - Chairperson
 Science and Humanities
 Sona College of Technology
 Salem – 636 005

Dr. M. RENUKA,
 B.E./B.Tech. Regulations 2023
 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.,
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Dr. M. RENUGA,
Professor & Head,
Department of Humanities & Languages,
Sona College of Technology,
SALEM - 636 005.

U23PHL110	ENGINEERING PHYSICS LABORATORY (Common to I Year B.E. CSE, CSE (AIML), & CSD)	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: | Determine the optical, thermal and electrical properties of materials by various physics laboratory equipment. |
| CO2: | Access, process and analyse scientific information. |
| CO3: | Solve problems individually and collaboratively. |

Pre-requisite: Capable of using Screw gauge, Vernier calliper, Travelling microscope, Spectrometer, able to handle burette.

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		1		1			1					2
CO2	3	2		1		1			1					2
CO3	3	2		1		1			1					2

Course Assessment methods

Direct		Indirect
CIE test I (15)	RTPS (10)	Course end survey
Quiz 1 (5)	Record (10)	
CIE test II (15)	Total CIE:60 marks	
Quiz 2 (5)	Semester End Examination (40 marks)	

LIST OF EXPERIMENTS

1	Determination of the thickness of a thin wire by forming interference fringes using air wedge apparatus.
2	Determination of velocity of ultrasonic waves and compressibility of the given liquid using ultrasonic interferometer.
3	Determination of specific resistance of a given wire using Carey Foster's bridge.
4	Determination of laser wavelength using 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 Wavelength of Mercury spectrum using spectrometer.
8	Determination of band gap of the given semiconductor diode.
	TOTAL : 30 HOURS

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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					

U23EGR107		ENGINEERING GRAPHICS					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
Unit 03: PROJECTION OF SOLIDS (CAD software). Projection of simple solids - prisms, pyramids, cylinder and cone, when the axis is inclined to one of the principal planes and parallel to the other by change of position method.					9 Hours
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
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
Theory: 45 Hrs	Tutorial: --	Practical: --	Project:--	Total Hours: 45 Hrs	
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.				

REFERENCES	
1.	BasantAgarwal and Agarwal C.M., "Engineering Drawing", McGraw Hill, 2nd Edition, 2019.
2.	Gopalakrishna K.R., "Engineering Drawing" (Vol. I&II combined), Subhas Publications, Bangalore, 27thEdition, 2017.
3.	Luzzader, Warren.J. and Duff, John M., "Fundamentals of Engineering Drawing with an introduction to Interactive Computer Graphics for Design and Production, Eastern Economy Edition, Prentice Hall of India Pvt. Ltd, New Delhi, 2005.
4.	Parthasarathy N. S. and Vela Murali, "Engineering Graphics", Oxford University, Press, New Delhi, 2015.
5.	Shah M.B., and Rana B.C., "Engineering Drawing", Pearson Education India, 2nd Edition, 2009.
6.	Venugopal K. and Prabhu Raja V., "Engineering Graphics", New Age International (P) Limited, 2008.


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


HOD

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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	கணினித் தமிழ் – முமனவர ஂில. சுந்தரம் . (விகடன் பிரசுரம்).								

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


HOD

Dr. M. RENUGA,
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Department of Humanities & Languages,
Sona College of Technology,
SALEM - 636 001

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


Dr. M. RENUGA,
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Department of Humanities & Languages,
Sona College of Technology,
SALEM - 636 007

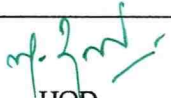
U23OL1102	German				L	T	P	J	C
					1	0	0	0	1
Course Outcomes									
At the end of the course, the student will be able to									
CO1:	Use common, everyday expressions to greet others and introduce themselves.								
CO2:	Construct simple sentences /questions.								
CO3:	Initiate and sustain basic 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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Sona College of Technology,
SALEM - 637 002

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
Dr. M. RENUGA,
 Professor & Head,
 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								


HOD
Dr. M. RENUGA,
Professor & Head,
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)

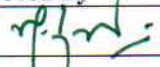

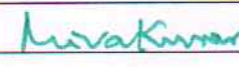
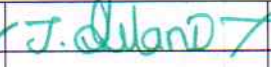

Branch: BE Computer Science and Engineering (Artificial Intelligence and Machine Learning)

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	HL	30	T
2.	U23MAT202D	Discrete Mathematics	3	1	0	0	4	BS	60	TT
3.	U23CHE204C	Applied Chemistry	2	0	0	0	2	BS	30	T
4.	U23CPR205	Programming in C	3	0	0	0	3	ES	45	T
5.	U23BEE206B	Basics of Electrical and Electronics Engineering	3	0	0	0	3	ES	45	T
6.	U23EC203	Digital Principles and System Design	3	0	0	0	3	PC	45	T
7.	U23TAM201	தமிழரும் தொழில்நுட்பமும்/ Tamil and Technology	1	0	0	0	1	HS	15	T
8.	U23GE201	Basic Aptitude- II	2	0	0	0	0	AC	30	T
Practical courses										
9.	U23CPL212	C Programming Laboratory	0	0	2	0	1	ES	30	L
10.	U23CHL211	Chemistry Laboratory	0	0	2	0	1	BS	30	L
11.	U23BEEL213B	Basics of Electrical and Electronics Engineering Laboratory	0	0	2	0	1	ES	30	L
Total Credits							21			
Optional Language Courses**										
12	U23OL1201	French - II	1	0	0	0	1	OL	15	T
	U23OL1202	German - II							15	T
	U23OL1203	Japanese - II							15	T
	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

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

Copy to:- HOD/CSE (Artificial Intelligence and Machine Learning), Second Semester B.E. AIML 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

Dr. M. RENUGA,
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Department of Humanities & Languages,
College of Technology,
M - 62

SEMESTER - II	DISCRETE MATHEMATICS											L	T	P	J	C							
U23MAT202D	Common to COMPUTER SCIENCE AND ENGINEERING, CSE(ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING) & COMPUTER SCIENCE AND DESIGN											3	1	0	0	4							
Course Outcomes																							
At the end of the course, the student will be able to																							
CO1:	check the validity of the arguments in the field of data base and artificial intelligence using the rules of logic.																						
CO2:	apply the concept of logical theory to validate the correctness of software specifications.																						
CO3:	analyze and simplify the digital (logic) circuits using the concept of relations.																						
CO4:	apply the concept of various types of functions in the field of sorting algorithm, parallel computing and image processing,																						
CO5:	apply the concepts of group theory in the field of coding theory and cryptography.																						
Pre-requisites:																							
<ul style="list-style-type: none"> Fundamentals of elementary algebra Fundamentals of calculus 								<ul style="list-style-type: none"> 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)																						
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3								
CO1	3	3		3	2							2		2	3								
CO2	3	3		3	2							2		2	3								
CO3	3	3		3	2							2		2	3								
CO4	3	3		3	2							2		2	3								
CO5	3	3		3	2							2		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	PROPOSITIONAL CALCULUS														12 Hours								
Proposition (statement) – Simple (atomic / primitive) and Compound propositions – Logical connectives / operators (negation, conjunction, disjunction, negation of compound propositions, conditional and bi conditional propositions, converse, contra positive and inverse) – Truth tables – Tautology and contradiction – Logical equivalences and implications (consequences) – De Morgan's laws – Normal forms – Principal conjunctive and disjunctive normal forms – Rules of inference – Arguments – Validity of arguments by truth table technique and rules of inference – Methods of proof (direct and indirect).																							

Unit 02	PREDICATE CALCULUS	12 Hours
Predicates – Propositional (Statement) function – Quantifiers (Universal and Existential quantifiers) – Variables – Free and bound variables – Scope of the formula – Negation – Logical equivalences and implications for quantified statements – Theory of inference – Rules of universal specification and generalization – Rules of existential specification and generalization – Validity of arguments.		
Unit 03	RELATIONS	12 Hours
Relations – domain and range of a relation - Types of relations (reflexive, symmetric, transitive, antisymmetric irreflexive relation) and their properties – Relation matrix – Graph of a relation - Partition of a set - Equivalence relations – Equivalence Classes – Quotient set – Partial order relation - Poset – Hasse diagram.		
Unit 04	FUNCTIONS	12 Hours
Functions – Classification of functions (algebraic and transcendental) – Types of functions (injective, surjective and bijective) – Composition of functions and its properties (statement only) – Inverse functions – Characteristic function of a set and its properties (with proof) - Permutation functions.		
Unit 05	GROUPS AND GROUP CODES	12 Hours
Algebraic structures – Groups – Cyclic groups – Subgroups – Group homomorphism – Normal subgroups and Cosets – Lagrange’s theorem – Codes and group codes – Basic notions of error detection and error correction.		
Theory: 45 Hrs	Tutorial: - 15	Practical: - Project:-- Total Hours: 60 Hrs
TEXT BOOK:		
1.	T. Veerarajan, “Discrete Mathematics”, McGraw Hill Publishers, 1 st Edition, 21 st Reprint, 2015.	
REFERENCE BOOKS:		
1.	J. P. Trembly and R. Manohar, “Discrete Mathematical Structures with Applications to Computer Science”, McGraw Hill Publishers, 1 st Edition, 2017.	
2.	K. H. Rosen, “Discrete Mathematics and Its Applications”, McGraw Hill Publishers, 8 th Edition, 2019.	
3.	B. Kolman, R. C. Busby and S. C. Ross, “Discrete Mathematical Structures”, Pearson Publishers, 6 th Edition, 2006.	
 Dr. S. JAYABHARATHI ASSOCIATE PROFESSOR & HEAD DEPARTMENT OF MATHEMATICS, SONA COLLEGE OF TECHNOLOGY, SALEM-636 005, Tamilnadu. Ph: 0427 - 4099999.		
BoS Date: 08. 07. 2023		HoD / Mathematics

U23CHE204C	APPLIED CHEMISTRY (Common to B.E. CSE (AIML) and CSD)	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:	Outline the principle of electrochemistry and its engineering applications.
CO2:	Describe the construction, working principle and applications of energy storage devices for electronic appliances.
CO3:	Analyze the types of polymers, polymerization reactions, polymerization techniques and fabrication methods of polymers for engineering applications.
CO4:	Discuss the principle, advantages and applications of organic electronic materials in electronic devices.
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	P09	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2					2						3	3
CO2	2	2					2						2	3
CO3	3	2					2						3	3
CO4	3	3					2						3	2
CO5	3	3					3						3	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: ELECTROCHEMISTRY

6 Hours

Introduction – basic terminologies - electrode potential – Nernst Equation – derivation and problems based on single electrode potential calculation – reference electrodes – types and examples – Ion selective electrode – glass electrode – measurement of pH – electrochemical series – significance – electrolytic and electrochemical cells – EMF – measurement of emf – potentiometric titrations (redox – Fe²⁺ vs dichromate) – conductometric titrations (acid-base – HCl vs NaOH).

Unit 02: CHEMISTRY OF ENERGY STORAGE DEVICES				6 Hours
Reversible and irreversible Cells – Batteries - types of batteries – Fabrication and working of alkaline battery-Lead-acid battery-Ni-Cd-Lithium ion batteries and Solar cells – Fuel Cells – Hydrogen-Oxygen fuel cell – Nano batteries- construction-working-advantages and applications.				
Unit 03: POLYMER CHEMISTRY				6 Hours
Introduction to Polymers – classification of polymers - functionality – tacticity, degree of polymerisation, glass transition temperature in polymers - types of polymerization-addition-condensation and copolymerization – free radical mechanism of addition polymerization – Plastics – moulding constituents of plastic – moulding of plastics into articles-Injection and Compression moulding – Thermoplastic and Thermosetting Resins.				
Unit 04: CHEMISTRY OF ORGANIC ELECTRONIC MATERIALS				6 Hours
Conducting polymers, types and conducting mechanism - Organic semiconducting materials – working principle and advantages over inorganic semiconducting materials - p-type and n-type organic semiconducting materials - Pentacene Fullerenes-C-60 – Organic dielectric material-definition-working principle and examples - Polystyrene – PMMA – – Organic Light Emitting Diodes (OLEDs) - construction-working principle and applications – Organic transistors- construction-working principle and applications.				
Unit 05: E-WASTE MANAGEMENT				6 Hours
Introduction-E-Waste – definition – sources of e-waste– hazardous substances in e-waste – effects of E-waste on environment and human health- need for E-waste management– E-waste handling rules - waste minimization techniques for managing E-waste – extraction of gold and copper from printed circuit boards (PCBs) - recycling of E-waste – disposal treatment methods of E – waste.				
Theory: 30 Hrs	Tutorial: 0	Practical: 0	Project:0	Total Hours: 30 Hrs
TEXT BOOKS				
1.	P.C.Jain and Monica Jain, "Engineering Chemistry" Dhanpat Rai Pub, Co., New Delhi , 17th Edition, 2018.			
2.	Wiley Editorial Board, "Wiley Engineering Chemistry", 2nd Edition, Wiley India Pvt.Ltd, New Delhi, Reprint 2019.			
REFERENCES				
1.	Gowariker V.R. , Viswanathan N.V. and Jayadev Sreedhar, "Polymer Science", New Age International P (Ltd.), Chennai, 2006.			
2.	Stergios Logothetidis "Handbook of Flexible Organic Electronics Materials - Manufacturing and Applications", WoodHead publishing., 1st edition, London, 2015. .			

3.	Sam-Shajing Sun, Larry R. Dalton "Introduction to Organic Electronic and Optoelectronic Materials and Devices", CRC press., 2nd edition, London, 2017.
4.	Majeti Narasimha Var Prasad, Meththika Vithanage, Anwasha Borthakur, "Handbook of Electronic Waste Management", 1st edition - November 21, 2019.

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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	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	3	2	2	2	-	2	-	2	2	3	3	2	2
CO2	2	2	3	2	2	1	-	2	-	2	2	3	2	2	2
CO3	2	3	3	2	2	1	-	2	-	2	2	3	3	2	2
CO4	2	3	3	2	2	1	-	2	-	2	1	3	3	2	2
CO5	2	3	3	2	2	2	-	2	-	2	2	3	3	2	2

Course Assessment methods

Direct

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

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.				

U23BEE206B	BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING (Common to CSD & CSE(AI & ML))	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 basic circuit laws and find the DC circuit parameters.
CO2:	Analyse the AC circuits and determine the various parameters of AC circuits.
CO3:	Explain the construction and working principle of Electrical machines and Transformer.
CO4:	Describe the working principles and characteristics of semiconductor devices.
CO5:	Describe the working principles of operational amplifiers and UPS with applications.

Pre-requisite:

Physics

CO/PO, PSO Mapping

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

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


9 Hours

Electrical components and parameters – Resistance, Conductance – Ohm's law – Kirchoff's law – Resistors in series and parallel – Comparison of series and parallel circuits – Star-Delta transformation.


Unit 02: AC FUNDAMENTALS

9 Hours

AC waveforms – standard terminologies – RMS and average values of Sinusoidal, Triangular and Square waveforms – Form factor, Peak factor – Resistance, Inductance, Capacitance in AC circuits – Impedance – RL, RC, RLC series circuits.


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Unit 03: ELECTRICAL MACHINES				9 Hours
DC Generator: Construction and Working principle - EMF equation, Types and Applications. DC Motor: Working Principle of DC motor, Types and Applications. Single Phase Transformer: Construction, Working principle and Applications.				
Unit 04: SEMICONDUCTOR DEVICES				9 Hours
Introduction to semiconductors – PN junction diode, Zener diode, BJT - Operations of NPN and PNP Transistors – Characteristics of Transistors in CE, CB and CC configuration, SCR, MOSFET, I-V characteristics. Diode Rectifiers: Working principle of half wave rectifier, Full wave rectifier, and Bridge rectifier.				
Unit 05: POWER SUPPLY AND OPERATIONAL AMPLIFIERS				9 Hours
UPS: Components of UPS – Working principle of UPS – Types of UPS - Applications. SMPS - Block diagram- Principle of operation – Applications. Operational Amplifier: Ideal characteristics of Op-Amp – Inverting amplifier, non-Inverting amplifier – Voltage follower – Summing amplifier.				
Theory: 45 Hrs	Tutorial: --	Practical: --	Project:--	Total Hours: 45 Hrs
TEXT BOOKS				
1.	B.L. Theraja, “Fundamentals of Electrical Engineering & Electronics”, S. Chand & Co Ltd, 28 th Edition 2018			
2.	J.B. Gupta, “Fundamentals of Electrical and Electronics Engineering”, Revised edition 2012, S.K. Kataria & Sons.			
REFERENCES				
1.	Mehta V.K, Rohit Mehta, “Principles of Electrical Engineering & Electronics”, S.Chand& Co. Ltd., 2016.			
2.	D. Roy Choudhury and Shail Jain, “Linear Integrated Circuits”, sixth edition, New age international, 2021.			
3.	S. Padma, C. Santhana Lakshmi, S. Purushotham, “Basic Electrical and Electronics Engineering”, Sonaversity, Revised edition 2016.			
4.	P S Subramaniam, “Basic concepts of Electrical and Electronics Engineering “, BS Publications, I Edition, 2016.			


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U23EC203	DIGITAL PRINCIPLES AND SYSTEM DESIGN (COMMON TO B.E CSE,AI ML,CSD)	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:	Explain number systems, logic gates and simplify Boolean expressions
CO2:	Design of combinational logic circuits
CO3:	Design of sequential logic circuits
CO4:	Design and implement shift registers and counters.
CO5:	Implementation of combinational circuits using Programmable Logic 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	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	3	2	2	1	1		2	3	3	3
CO2	3	3	3	3	3	2	2	1	1		2	3	3	3
CO3	3	3	3	3	3	2	2	1	1		2	3	3	3
CO4	3	3	3	3	3	2	2	1	1		2	3	3	3
CO5	3	3	3	3	3	2	2	1	1		2	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: BOOLEAN ALGEBRA AND LOGIC GATES	9 Hours
Review of Number systems – Boolean Algebra – Boolean postulates and theorems- Digital Logic Gates - NAND and NOR Implementation –SOP and POS - Simplification of Boolean functions using K-Map Method – Four Variable K-map – POS Simplification – Don't Care Conditions – Quine McCluskey method.	
Unit 02: COMBINATIONAL LOGIC CIRCUITS	9 Hours

Design of Half and Full Adders, Half and Full Subtractors – Parallel Adders and Subtractors – BCD Adder – Code converters: BCD to XS-3, XS-3 to BCD - Magnitude Comparator – Decoders – Encoders – Multiplexers – Demultiplexers - Design of ALU using adders - Introduction to Verilog HDL - Verilog HDL for 2 – bit adder – 2:1 multiplexer.

Unit 03: SEQUENTIAL LOGIC CIRCUITS	9 Hours
Flip-Flops – SR – D- JK-T- Master Slave JK Flip-Flop – Conversion of Flip Flops – Design of Clocked Sequential Circuits – State Diagram – State Table – State Reduction and Assignment.	

Unit 04: REGISTERS AND COUNTERS	9 Hours
Registers – Shift Registers – SISO – SIPO – PIPO – Synchronous Counters – Up-down Binary Counter – Ring Counter – Johnson Counters – Asynchronous Counters – Asynchronous Design Procedure – Race Free State Assignment – Hazards	

Unit 05: MEMORY AND PROGRAMMABLE LOGIC	9 Hours
Classification of memories: RAM - Static and Dynamic RAM, ROM - PROM, EPROM, EEPROM - Design of Memory using flip-flops - Implementation of combinational logic using PROM - Programmable Logic Array – Programmable Array Logic.	

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

1. M. Morris Mano and Michael D. Ciletti – ‘Digital Design with an Introduction to the Verilog HDL’, 6th Edition, Pearson Education, 2018.
2. S. Salivahanan and S. Arivazhagan, “Digital Circuits And Design”, Oxford University Press, Fifth edition, 2018.

REFERENCES

1. A.Anandkumar, ‘Fundamentals of digital circuits, 4th Edition, Prentice Hall India, Paper back’2016.
2. John F Wakerly – ‘Digital Design Principles and Practices’, 4th Edition, Prentice Hall India, 2008.


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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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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.	கணிணித் 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

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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	P09	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

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U23CHL211	CHEMISTRY LABORATORY (Common to CSE, CSE (AIML), & CSD 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:	Analyze the amount of hydrochloric acid in a given solution by pH metry and amount of hydrochloric acid and acetic acid by conductometric titration.
CO2:	Estimate the amount of copper from discarded PCBs, determine the molecular weight of a polymer and estimation of chromium in electroplating sludge by Permanganometry.
CO3:	Determine the amount of ferrous ion in a given solution by potentiometer, determine the iron content in water by spectrophotometric method and estimate the amount of hardness, alkalinity present in house hold water by volumetric method.

Pre-requisite:

Capable of handling burette, pipette, beaker, conical flask and standard measuring flask.

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		1		1			1					2
CO2	3	2		1		1	1		1					2
CO3	3	2		1		1	1		1					2

Course Assessment methods

Direct		Indirect
CIE test I (15)	RTPS (10)	Course end survey
Quiz 1 (5)	Record (10)	
CIE test II (15)	Total CIE:60 marks	
Quiz 2 (5)	Semester End Examination (40 marks)	

LIST OF EXPERIMENTS

1	Estimation of HCl acid by pH metry.
2	Estimation of HCl by conductometry. (HCl vs NaOH)

3	Estimation of mixture of acids by conductometry. (HCl + CH ₃ COOH vs NaOH)
4	Estimation of ferrous ion by potentiometric titration.
5	Estimation of copper content from discarded PCBs by EDTA method.
6	Determination of molecular weight of a polymer by viscosity measurements.
7	Estimation of hardness of water sample by EDTA method.
8	Estimation of alkalinity of water sample by indicator method.
9	Estimation of chromium prepared from electroplating sludge by Permanganometry.
10	Determination of iron content in water by spectrophotometric method.
	TOTAL : 30 HOURS

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12.1.2024

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12/1/24

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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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U23BEEL213B	BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING LABORATORY (Common to CSD & CSE(AI & ML))	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:	Apply the basic circuit laws and calculate various parameters of DC and AC circuits.
CO2:	Analyse the performance characteristics of electronic devices, DC Motor and Single Phase transformer.
CO3:	Apply the basic concepts of electrical and electronics for real time problem solving.

CO/PO, PSO Mapping

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

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

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

1. Verification of Ohm's Law and Kirchhoff's Law.
2. Measurement of power and power factor for RLC series circuit.
3. Characteristics of PN Junction Diode and Zener Diode.
4. Characteristics of BJT in CB and CE Configurations.
5. Characteristics of SCR
6. Characteristics of MOSFET.
7. Measurement of ripple factor for half wave and full wave rectifier circuits.
8. Characteristics of operational amplifier as inverting and non-inverting amplifiers.
9. Load test on shunt motor.
10. Load test on single phase transformer.
11. Line and load regulation of SMPS.

Theory: --	Tutorial: --	Practical: 30 Hrs	Project:--	Total Hours: 30 Hrs
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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

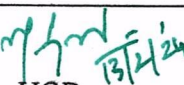
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U23OL1202	German - II			L	T	P	J	C
				1	0	0	0	1
Course Outcomes								
At the end of the course, the student will be able to								
CO1:	Use grammatical expressions appropriately in day-to-day conversation.							
CO2:	Make them frame simple sentences /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 13/2/24

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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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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 Semester End Examination: NIL		Course end survey				
CIE test II (30)									
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								


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