

SONA COLLEGE OF TECHNOLOGY, SALEM-5

(An Autonomous Institution)

**B.Tech- Computer Science and Business
System**

CURRICULUM and SYLLABI

[For students admitted in 2025-2026]

B.E / B.Tech Regulations 2023

Approved by BOS and Academic Council meetings

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

S.No	Course Code	Course Title	L	T	P	J	C	Category	Total Contact Hours	Course Type*
Theory courses										
1.	U23ENGI01C	Business Communication and Value Science - I	2	0	2	0	3	HS	60	TL
2.	U23MATI02A	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.	U23CS101	Digital System Design	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	HS	15	T
	U23OL1102	German							15	T
	U23OL1103	Japanese							15	T
	U23OL1104	Korean							15	T
	U23OL1105	Hindi							15	T

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

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

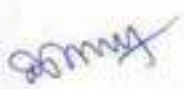
Approved By

				
Chairperson, Science and Humanities BoS	Chairperson, Computer Science and Engineering 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

Prof. Dr. S. R. R. SENTHILKUMAR,
M.E.(Snd), Ph.D., MISTE, FIE, C. ENG(I), MCI,
PRINCIPAL,
SONA COLLEGE OF TECHNOLOGY,
JUNCTION MAIN ROAD, SALEM-636 005.

Copy to:-

HOD/ Computer Science and Engineering, First Semester B.Tech. Computer Science and Engineering,
Staff, COE



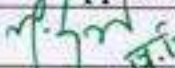



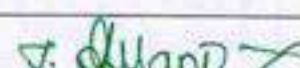
Sona College of Technology, Salem
(An Autonomous Institution)
Courses of Study for B.E/B.Tech. Semester II under Regulations 2023 (CBCS)
Branch: Computer Science and Business Systems

S. No	Course Code	Course Title	L	T	P	J	C	Category	Total Contact Hours	Course Type*	
Theory courses											
1.	U23ENG201C	Business Communication and Value Science – II	2	0	2	0	3	HS	60	TL	
2.	U23MAT202D	Discrete Mathematics	3	1	0	0	4	BS	60	TT	
3.	U23CHE204E	Engineering Chemistry	3	0	0	0	3	BS	45	T	
4.	U23CPR205	Programming in C	3	0	0	0	3	ES	45	T	
5.	U23CB201	Fundamentals of Economics	3	0	0	0	3	ES	45	T	
6.	U23BEE206B	Basics of Electrical and Electronics Engineering	3	0	0	0	3	ES	45	T	
7.	U23TAM201	தமிழரும் தொழில்நுட்பமும் / Tamils and Technology	1	0	0	0	1	HS	15	T	
8.	U23GE201	Basic Aptitude - II	2	0	0	0	0	AC	30	T	
9.	U23GE202	Disaster Management and Preparedness	2	0	0	0	0	AC	30	T	
Practical courses											
10.	U23CPL212	C Programming Laboratory	0	0	2	0	1	ES	30	L	
11.	U23CHL211	Chemistry Laboratory	0	0	2	0	1	BS	30	L	
12.	U23BEEL213B	Basics of Electrical and Electronics Engineering Laboratory	0	0	2	0	1	ES	30	L	
Total Credits							23				
Optional Language Courses**											
13.	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	
	U23OL1205	Hindi - II							15	T	

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

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

Approved By

				
Chairperson, Science and Humanities BoS	Chairperson, Computer Science and Engineering 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/ Computer Science and Engineering, Second Semester B.Tech. CBE
Students and Staff, COE

U23ENG101C	Business Communication and Value Science –I (For CBE branch)		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:	Apply the knowledge of grammar in oral and written communication														
CO2:	Understand the basic tenets of communication														
CO3:	Build strong technical communication skills to meet out the organizational anticipation														
CO4:	Identify own strengths and opportunities														
CO5:	Develop the multivariate skills requisites for life														
Pre-requisite:															
Basics of English Language															
CO/PO, PSO Mapping Correlation Level: 1 - Low, 2 - Medium, 3 – High															
COs	Programme Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	-	-	-	-	1	-	3	-	1	1	-	-
CO2	1	-	-	-	-	-	-	1	-	3	-	1	-	-	-
CO3	1	-	-	-	-	-	-	1	-	3	-	1	1	-	-
CO4	1	-	-	-	-	-	-	1	-	3	-	1	1	-	-
CO5	1	-	-	-	-	-	-	1	-	3	-	1	1	-	-
Course Assessment methods															
Direct						Indirect									
CIE test I (10) (Theory) CIE test II (10) (Theory) CIE test III (10) (Theory) CIE test IV (15) (Practical)						Assignment/seminar/Quiz (5) Total CIE: 50 marks Semester End Examination (50) (SEE - Theory (25 marks + Lab (25 marks)						Course end survey			
Unit 01: Grammar												Periods:10			
Essential Grammar: Parts of Speech – Tenses - Applications of tenses on Functional Grammar -Sentence formation -(General and Technical) - Common Errors-Voices -Sentence Sequence															
Unit 02: Fundamentals in Communication												Periods:10			
Types of communication: Verbal and Non – verbal – Role-play -Importance of Questioning - Listening Skills: Importance - Difference between listening and hearing - Types of listening - Expressing self – connecting with emotions - visualization and experience - Skit based on communication skills - Evaluation on Listening skills															
Unit 03: Organizational Communication												Periods:10			
Email writing: Formal and informal -Verbal communication: Pronunciation - clarity - brevity of speech- Vocabulary Enrichment: General Service List (GSL), Academic word list (AWL) technical terms, phrases, idioms, significant abbreviations, formal business vocabulary - GD - Written Communication -Narrative writing – creating CV –Life skill - Stress management and teamwork															
Unit 04: People Skills and Self-introspection												Periods:15			
List of Exercises Listening															
<ul style="list-style-type: none"> Listen to recording and answer questions, Record conversation between a celebrity and an interviewer- Self-awareness – identity, body awareness - stress management. 															

Speaking <ul style="list-style-type: none"> • Presentation on favourite cricket captain-skills and values they demonstrate • Interviewing a maid- watchman – sweeper- cabdriver- beggar- narrate values Reading <ul style="list-style-type: none"> • Over viewing; business communication Writing <ul style="list-style-type: none"> • Newspaper Report – football- hockey

Unit 05: Incorporating Life Skills with Values	Periods:15
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List of Exercises Listening Life Skills: Movie based learning – identifying skills and values - Critical life skills - Multiple Intelligences Values: Leadership, Teamwork, Managing Stress, Motivation, and Creativity Speaking Work with an NGO and makes a presentation, Table Topics speech Reading Reading Newspapers - Magazine - Journal Writing Accident report - current political scenario Project: Create a pod:cast on a topic

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

LecturePeriods:30	Tutorial Periods:-	Practical Periods:30	Project:-	Total Periods:60
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TEXT BOOKS

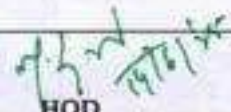
<ol style="list-style-type: none"> 1. Wren & Martin, "High School English Grammar and Composition", S Chandh & Co. Ltd, 2015. 2. Comfort, Jeremy, et al., "Speaking Effectively: Developing Speaking Skills for Business English", Cambridge University Press, Cambridge, Reprint 2011. 3. Boove, Courtland L., "Business Communication Today", Pearson Education, New Delhi, 2002.
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REFERENCES

<ol style="list-style-type: none"> 1. English vocabulary in use – Alan Mc'Carthy and O'dell 2. APAART: Speak Well 1 (English language and communication) 3. APAART: Speak Well 2 (Soft Skills) 4. Business Communication – Dr. Suroj Hiremath Wren, Percival Christopher, and Wren Martin. "High School English Grammar and Composition". S Chand, 2005

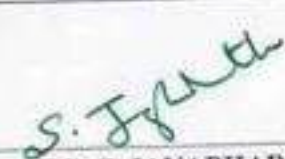
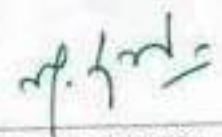
WEB REFERENCES

<ol style="list-style-type: none"> 1. Train your mind to perform under pressure- Simon Sinek https://curiosity.com/videos/simon-sinek-on-training-your-mind-to-perform-under-pressure-capture-your-flag/ 2. Brilliant way one CEO rallied his team in the middle of layoffs https://www.inc.com/video/simon-sinek-explains-why-you-should-put-people-before-numbers.html 3. Will Smith's Top Ten rules for success https://www.youtube.com/watch?v=bBsT9o0mTeh0 4. https://www.coursera.org/learn/learning-how-to-learn https://www.coursera.org/specializations/effective-business-communication
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 HOD

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

SEMESTER - I	LINEAR ALGEBRA AND CALCULUS WITH MATLAB (CIVIL, CSE, EEE, IT, MECH, MCT, ADS, CSE(AIML), CSD, EFE, SCE, CBE ,SFE)										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															
Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)															
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
CO1	3		2	3							2	2		3	
CO2	3		2	3							2	2		3	
CO3	3		2	3							2	2		3	
CO4	3		2	3							2	2		3	
CO5	3		2	3							2	2		3	
Course assessment methods [Theory with laboratory course]															
Direct										Indirect					
CIE test I (10) (Theory)					Total CIE: 50 marks Semester End Examination (50) [SEE- Theory (35) + Lab(15) marks]					Course end survey					
CIE test II (10) (Theory)															
CIE test III (10) (Theory)															
CIE test IV (15) (Practical)															
Assignment/Quiz/Seminar (5)															
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.				
 DR. S. JAYABHARATHI Head / Department of Mathematics			 DR. M. RENUGA BoS Chairperson/S&H		
Dr. S. JAYABHARATHI ASSOCIATE PROFESSOR & HEAD DEPARTMENT OF MATHEMATICS, SONA COLLEGE OF TECHNOLOGY, SALEM-836 005, Tamilnadu. Ph: 0427 - 4099999.			Dr. M. RENUGA, Professor & Head, Department of Humanities & Languages, Sona College of Technology, SALEM - 636 005.		
B.E/B. Tech Regulations 2023					S&H BoS Date: 08-07-2023

U23PHY103B	ENGINEERING PHYSICS (Common to CSE, CSD, CSE(AIML), CBE, SCE, ECE & EXE)					L	T	P	J	C				
						3	0	0	0	3				
Course Outcomes														
At the end of the course, the student will be able to														
CO1:	Analyse the relation between arrangement of atoms and material properties.													
CO2:	Discuss the dual nature of matter and radiation and the application of wave nature of particles.													
CO3:	Describe the basic components of lasers.													
CO4:	Differentiate the electrical and thermal conductivity of metals.													
CO5:	Elucidate the theory and classification of semiconducting materials.													
Pre-requisite:														
Basic knowledge in atomic physics and optics.														
CO/PO, PSO Mapping (3/2/1 indicates the strength of correlation) 3-Strong, 2-Medium, 1-Weak														
COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO 1	3	2	-	-	-	2	2	-	-	2	-	2	-	2
CO 2	3	2	-	-	-	2	2	-	-	2	-	2	-	2
CO 3	3	2	-	-	-	2	2	-	-	2	-	2	-	2
CO 4	3	2	-	-	-	2	2	-	-	2	-	2	-	2
CO 5	3	2	-	-	-	2	2	-	-	2	-	2	-	2
Course Assessment methods														
Direct							Indirect							
CIE test I (9) CIE test II (9) CIE test III (10) Objectives Test (7)							Assignment/seminar/Quiz (5) Total CIE: 40 marks Semester End Examination (60)				Course end survey			
Unit 01: CRYSTAL PHYSICS											9 Hours			
Importance of crystals - Types of crystals - Basic definitions in crystallography (Lattice -space lattice - unit cell - lattice parameters - basis) - Bravais lattices - Lattice planes and Miller indices - Interplanar distance - d spacing in cubic lattice - Calculation of number of atoms per unit cell - Atomic radius - Coordination														

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

Unit 02: QUANTUM PHYSICS

9 Hours

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

Unit 03: LASERS

9 Hours

Energy level - Stimulated absorption - Population inversion - Meta stable state - Spontaneous emission - Stimulated emission - Basic components of a laser - Einstein's theory of spontaneous and stimulated emission of radiation - Types of lasers - Solid state laser - Nd:YAG laser - Gas laser - CO₂ 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.

C. Shanthi
14.6.2025

Dr. C. Shanthi
HOD / Science

Dr. C. SHANTHI, M.Sc., M.E., Ph.D.,
Professor of Physics
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M. Renuga
14/6/25

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

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

U23PPR105	PROBLEM SOLVING USING PYTHON PROGRAMMING (Common to ADS, IT, CSE, CSE(AI/ML), CSD, SCE, CBE, CIVIL, BME, ECE, EXE, EVE, EEE, EFE, MECH, MCT and SFE Branches)											L	T	P	J	C
												3	0	0	0	3
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 (9) CIE test II (9) CIE test III (10) Assignment/seminar/Quiz (5)					Objectives Test (7) Total CIE: 40 marks Semester End Examination (60)					Course end survey						
UNIT I	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 II	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 III	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 IV	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 V	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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U23CS101	DIGITAL SYSTEM DESIGN	L	T	P	J	C
	(Common to B. E CSE (SCE), B. Tech (CBE))	3	0	0	0	3

Course Outcomes

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

CO1:	Simplify the Boolean expressions.
CO2:	Design combinational logic circuits.
CO3:	Design sequential logic circuits
CO4:	Design and implement shift registers and counters
CO5:	Design combinational logic 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

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

Cor	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	1	3	2	-	-	-	1	1	3	1	2	2	2
CO2	3	2	2	1	2	-	-	-	1	-	2	3	2	2	2
CO3	3	2	1	3	1	-	-	-	2	-	1	3	2	2	2
CO4	1	1	2	3	3	-	-	-	3	1	1	1	2	2	2
CO5	1	3	2	3	1	-	-	-	2	1	3	3	2	2	2

Course Assessment methods

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

Unit 01: BOOLEAN ALGEBRA AND LOGIC GATES

9 Hours

Number System – 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 multiplier

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: COMPUTER ORGANIZATION

9 Hours

Processor Organization: General Register Organization- Stack Organization. Input/output Organization: Peripheral Devices, Input Output Interface, Asynchronous Data Transfer, Modes of Transfer, Priority Interrupt, DMA


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, VHDL, and System Verilog", 6 th ed, Pearson Education, 2018.
2.	S. Salivahanan and S. Arivazhagan, "Digital Circuits And Design", 5 th ed, Oxford publisher, 2018

REFERENCES

1.	A Anand Kumar, "Fundamentals of Digital Circuits", 4 th ed, PHI, 2023.
2.	John F Wakerly, "Digital Design: Principles and Practices", 4 th ed, Pearson, 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)						
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

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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 சமணப் பெளத்த 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 பிறப்புகளில் தமிழ்ப் பண்பாட்டின் தாக்கம் - சுயமரியாதை இயக்கம் - இந்திய மருத்துவத்தில், சித்த மருத்துவத்தின் பங்கு - கல்வெட்டுகள் கையெழுத்துப்படிக்கல் - 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)
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12	Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) - Reference Book.


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

Course Outcomes

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

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

Pre-requisite:

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

CO/PO, PSO Mapping

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

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

Course Assessment methods

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

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

S. Anita
11/09/2023

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U23PHL110	ENGINEERING PHYSICS LABORATORY (Common to I Year B.E. CSE, CSE (AIML), CSD, SCE & CBE)	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
CO 1	3	2		1		1			1					2
CO 2	3	2		1		1			1					2
CO 3	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 Rigidity Modulus of given wire using Torsion Pendulum.
9	Determination of coefficient of viscosity of liquid by Poiseuille's method.
10	Determination of band gap of the given semiconductor diode.
	TOTAL : 30 HOURS

C. Shanthi
24.7.2024

Dr. C. Shanthi
HOD - Science

Dr. C. SHANTHI, M.Sc., M.E., Ph.D.,
Professor of Physics
Head, Department of Sciences
Sona College of Technology (Autonomous)
SALEM-636 005.

M. Renuga
24/7/24

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

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

U23PPL112	PYTHON PROGRAMMING LABORATORY (Common to ADS, IT, CSE, CSE(AIIML), CSD, SCE, CBE, CIVIL, BME, ECE, EXE, EVE, EEE, EFE, MECH, MCT and SFE Branches)	L	T	P	J	C
		0	0	2	0	1

Course Outcomes

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

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

Pre-requisite: NIL

CO/PO, PSO Mapping

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

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

Course Assessment methods

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

LIST OF EXPERIMENTS

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

Theory: --

Tutorial: --

Practical: 30Hrs

Project: --

Total Hours: 30 Hs

J. Akilandeswar

Dr. J. AKILANDESWAR, Professor & Head, Department of Information Technology, Sona College of Technology, Salem - 636 005

14.6.2025 Version 1.1

Regulations 2023

Department of Information Technology
 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)		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: 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,
Professor & Head,

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

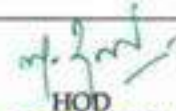
U23OL1102	German				L	T	P	J	C
					1	0	0	0	1
Course Outcomes									
At the end of the course, the student will be able to									
CO1:	Use common, everyday expressions to greet others and introduce themselves.								
CO2:	Construct simple sentences /questions.								
CO3:	Initiate and sustain basic 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
Dr. M. RENUGA,
Professor & Head,
Department of Humanities & Languages,
Sona College of Technology,
SALEM - 67

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)	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: 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, Bhubaneswar, Odisha - 751024

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


FOD

Dr. M. RENUGA,
Professor & Head,

Department of Humanities & Language
College of Technology,
SALEM - 636 012

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

S. No	Course Code	Course Title	L	T	P	J	C	Category	Total Contact Hours	Course Type*	
Theory courses											
1.	U23ENG201C	Business Communication and Value Science – II	2	0	2	0	3	HS	60	TL	
2.	U23MAT202D	Discrete Mathematics	3	1	0	0	4	BS	60	TT	
3.	U23CHE204E	Engineering Chemistry	3	0	0	0	3	BS	45	T	
4.	U23CPR205	Programming in C	3	0	0	0	3	ES	45	T	
5.	U23CB201	Fundamentals of Economics	3	0	0	0	3	ES	45	T	
6.	U23BEE206B	Basics of Electrical and Electronics Engineering	3	0	0	0	3	ES	45	T	
7.	U23TAM201	தமிழரும் தொழில்நுட்பமும் / Tamils and Technology	1	0	0	0	1	HS	15	T	
8.	U23GE201	Basic Aptitude - II	2	0	0	0	0	AC	30	T	
9.	U23GE202	Disaster Management and Preparedness	2	0	0	0	0	AC	30	T	
Practical courses											
10.	U23CPL212	C Programming Laboratory	0	0	2	0	1	ES	30	L	
11.	U23CHL211	Chemistry Laboratory	0	0	2	0	1	BS	30	L	
12.	U23BEEL213B	Basics of Electrical and Electronics Engineering Laboratory	0	0	2	0	1	ES	30	L	
Total Credits							23				
Optional Language Courses**											
13.	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	
	U23OL1205	Hindi - II							15	T	

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

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

Approved By

				
Chairperson, Science and Humanities BoS	Chairperson, Computer Science and Engineering 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/ Computer Science and Engineering, Second Semester B.Tech. CBE
Students and Staff, COE



U23ENG201C	BUSINESS COMMUNICATION AND VALUE SCIENCE - II					L	T	P	J	C					
						2	0	2	0	3					
Course Outcomes															
At the end of the course, the students will be able to															
CO1:	Utilise tools of structured written communication effectively														
CO2:	Apply the mechanics of creative writing with precision and clarity														
CO3:	Work in team and groom the overall personality professionally														
CO4:	Review movies, books, etc., and give constructive feedback														
CO5:	Express ideas with clarity and focus														
Pre-requisite:															
CO / PO, PSO Mapping															
(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak															
Programme Outcomes (POs) and Programme Specific Outcome (PSOs)															
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	1	1	1	3	3	2	3	3	2	3	2	3	3
CO2	1	1	1	1	1	3	3	3	3	3	3	3	3	3	3
CO3	1	2	3	2	2	3	3	2	3	3	3	3	3	3	3
CO4	1	2	1	2	2	3	3	3	3	3	3	3	3	3	3
CO5	1	2	2	3	2	3	3	3	3	3	3	3	3	3	3
Course Assessment methods															
Direct											Indirect				
CIE test I (10) - Theory						Attendance (5)					Course end survey				
CIE test II (10) - Theory						Assignment / Quiz/ Seminar (5)									
CIE test III (10) - Theory						Total CIE: 50 marks									
CIE test IV(10) - Laboratory						Semester End Examination: 50 marks									
						[SEE- Theory (25 marks), Lab (25 marks)]									
Unit 01: SOCIETAL NEEDS AND EXPERTISE WRITING											10 Hours				
Individual identification of social issues - Theory to introduce the participant - Class discussion: Good and Bad Writing - Common errors, punctuation rules, and use of technical words. Refer Catherine Morris and Joanie McMahon's writing techniques-. The personal take away acquired from GD,															
Unit 02: INNOVATIVE DESIGNING SKILLS											10 Hours				
Each group will form an NGO. Create Vision, Mission, Value statement, tagline and Design a logo. Introduction to basic presentation skills & ORAI app. Skimming and Scanning.															
Unit 03: INTERPERSONAL SKILLS											10 Hours				
Ad campaign- Brain storming, , Intro of Dr. Meredith Belbin and his research on team work, Belbin's 8 Team Roles and Lindgren's Big 5 personality traits. Team Falcon Practical to identify individual personality traits with Belbin's 8 team player styles. Design a skit, and Enact the play on interpersonal skills															
Unit 04: REVIEWING											15 Hours				
List of Exercises															
Listening: Awareness related to "Join Hands Movement", A short film on diversity															
Speaking: Debriefing of the Practical.- Film: "The fish and I" by Babak Habibifar" (1.37mins).															
Reading: Research on a book, incident or film based on the topic of your respective NGO and give feedback.															

Writing: Groups to create a story – 10 minutes of a person's life affected by the social issue groups are working on				15 Hours
Unit 05: DIVERSIFIED COMMUNICATION SKILLS				
List of Exercises				
Listening: Teams to video record interviews of people from diverse groups. Share the recordings in FB.- -				
Speaking: Debate - Discussion on TCS values				
Reading: Diversity & Inclusion - Different forms of Diversity in society				
Writing: Write a review in a blog on the topics they are covering in their research				
Theory: 30 Hrs	Tutorial: --	Practical: 30 Hrs	Project:--	Total Hours: 60 Hrs
TEXTBOOKS				
1.	Dr.Kalam , Abdul .A.P.J & Mahapragya .Acharya.,"The Family and the Nation"; 2015.			
2.	Kumar, Sanjay, Pushpalatha," Communication Skills", Oxford University Press, 2018.			
3.	Raman, Meenakshi&Sangeetha Sharma," Communication Skills", New Delhi: OUP,2018.			
REFERENCES				
1.	Peter H. Diamandis,Steven Kotler, "Abundance: The Future is Better Than You Think", : Free Press, 21 Feb, 2012			
2.	Sinek,simon, " Start With Why: How Great Leaders Inspire Everyone to Take Action" Penguin, 6 October 2011			
3.	Grussendorf, Marion, "E nGLISH for Presentations". Oxford University Press, Oxford, 2007.			
4.	Seely John, "The Oxford Guide to Writing and Speaking", Oxford University Press, 2006.			
5.	Dr Kalam , Abdul .A.P.J, " Guiding Souls : Dialogues on the purpose of life" , 2005			
WEB REFERENCES:				
6.	1. https://www.indeed.com/career-advice/finding-a-job/how-to-write-an-application-letter			
	2. https://owlcation.com/humanities/Four-Types-of-Writing			
	3. https://targetstudy.com/languages/english/paragraph-writing.html			
	4. https://www.businessnewsdaily.com/8262-email-etiquette-tips.html			
	5. https://www.youtube.com/watch?v=UOceysteljo			


 HOD 8/11/26

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

SEMESTER - II	DISCRETE MATHEMATICS (Common to CSE, CSD, CSE (AIML), CBE and SCE)										L	T	P	J	C						
U23MAT202D											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-Medrum, 1-Weak																					
Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)																					
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3						
CO1	3	3	3	3	2							2		2	3						
CO2	3	3	3	3	2							2		2	3						
CO3	3	3	3	3	2							2		2	3						
CO4	3	3	3	3	2							2		2	3						
CO5	3	3	3	3	2							2		2	3						
Course Assessment methods																					
Direct										Indirect											
CIE: test I (8) CIE: test II (8) CIE: test III (8) Objectives Test (6)										Attendance (5) Assignment/seminar/Quiz (5) Total CIE: 40 marks Semester End Examination: 60 marks						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 Hours	Tutorial: 15 Hours	Practical: - Project: - Total Hours: 60 Hours
TEXT BOOK:		
1. T. Veerarajan, "Discrete Mathematics", McGraw Hill Publishers, 1 st Edition, 21 st Reprint, 2015.		
REFERENCE BOOKS:		
1. J. P. Tremblay 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 Head / Department of Mathematics Dr. S. JAYABHARATHI ASSOCIATE PROFESSOR & HEAD DEPARTMENT OF MATHEMATICS, SONA COLLEGE OF TECHNOLOGY, SALEM-636 005, Tamilnadu. Ph: 0427 - 4099999.		
 Dr. M. RENUKA Associate Professor, Department of Humanities & Languages, Sona College of Technology, SALEM - 636 005.		
B.E/B. Tech Regulations 2023		S&H BoS Date: 14.06.2025

U23CHE204E	ENGINEERING CHEMISTRY [Common to B.E. CSE (Cyber Security) and B.Tech. Computer Science and Business System]	L	T	P	J	C
		3	0	0	0	3

Course Outcomes

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

CO1:	Understand the principle, applications of electrochemistry and types of corrosion.
CO2:	Summarize the working principle and applications of energy storage devices.
CO3:	Analyze the types of polymers, polymerization reactions and outline the principle, advantages and applications of organic electronic materials in electronic devices.
CO4:	Explain the electrochemical processes carried out in electronic industries.
CO5:	Analyze the need of e-waste management and disposal methods across the globe.

Pre-requisite:

Basic knowledge on the concepts of organic, inorganic and physical chemistry.

CO/PO, PSO Mapping

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

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

Course Assessment methods

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

Unit 01: ELECTROCHEMISTRY AND CORROSION

9 Hours

Introduction – basic terminologies - electrode potential – Nernst Equation – derivation and problems based on single electrode potential calculation – reference electrodes – standard hydrogen electrode – saturated calomel electrode – Ion selective electrode – glass electrode – measurement of pH – electrochemical series – significance – electrolytic and electrochemical cells – reversible and irreversible cells – EMF – measurement of emf – potentiometric titrations (redox – Fe²⁺ vs dichromate) – conductometric titrations (acid-base – HCl vs NaOH) – Corrosion – types – dry and wet corrosion – corrosion control methods of iron sheets by

galvanizing and tinning.				
Unit 02: CHEMISTRY OF ENERGY STORAGE DEVICES				9 Hours
Batteries - types of batteries – battery characteristics-voltage-current-capacity-electricity storage density-power-discharge rate-cycle life-energy efficiency and shelf Life – 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: CHEMISTRY OF POLYMERS AND ORGANIC ELECTRONIC MATERIALS				9 Hours
Introduction to Polymers – classification of polymers - functionality – tacticity, degree of polymerisation, - types of polymerization-addition-condensation and copolymerization, conducting polymers – examples - 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 polymer – structure-properties and applications of Polythiophene – Organic Light Emitting Diodes (OLEDs) - construction-working principle and applications – Organic transistors- construction-working principle and applications.				
Unit 04: ELECTROCHEMICAL PROCESSING IN ELECTRONIC INDUSTRIES				9 Hours
Electroplating – Principle and process - plating parameters- current and energy efficiency - Electroplating of nickel - Fundamentals of electroless deposition – electroless plating of nickel, fabrication of PCB's - electrochemical etching of copper from PCBs - Anodizing - definition, principle and working methodology of aluminium anodizing process – Cyclic voltammetry- basic principles and applications - Sensors – definitions and examples.				
Unit 05: E-WASTE MANAGEMENT				9 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 – salient features of Indian E-waste management rule, 'Rule 2022' - waste minimization techniques for managing E-waste – extraction of gold and copper from printed circuit boards (PCBs) – extraction of and tin metal in tin/lead solder dross - recycling of E-waste – disposal treatment methods of E - waste – global Scenario of E-waste – E-waste in India.				
Theory: 45 Hrs	Tutorial: 0	Practical: 0	Project:0	Total Hours: 45 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, Anwesa Borthakur, "Handbook of Electronic Waste Management", 1st edition - November 21, 2019.

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

Course Outcomes

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

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

Pre-requisite:

CO/PO, PSO Mapping

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

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

Course Assessment methods

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

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


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

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

arrays – Pointers and Functions - Dynamic memory Allocation - Example Programs.					
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.				


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U23CB201		FUNDAMENTALS OF ECONOMICS					L	T	P	J	C				
							3	0	0	0	3				
Course Outcomes															
At the end of the course, the students will be able to															
CO1:	Infer how competitive markets organize the allocation of scarce resources and the distribution of goods and services.														
CO2:	Relate the basic economic theory and principles to current microeconomic issues and evaluate related public policy.														
CO3:	Analyze the various types of markets and compare their efficiency.														
CO4:	Determine the major economic indicators used to assess the state of the macro economy.														
CO5:	Choose an appropriate fiscal and monetary policy for a given state of the economy														
Pre-requisite:															
CO / PO, PSO Mapping															
(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak															
Programme Outcomes (POs) and Programme Specific Outcome (PSOs)															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	-	-	2	1	-	1	-	2	-	2	3	2	2
CO2	3	3	2	-	2	2	1	1	-	2	1	3	3	3	2
CO3	3	3	3	2	2	-	-	2	1	3	1	2	3	2	3
CO4	3	3	2	2	-	2	1	-	-	2	-	2	3	2	2
CO5	3	3	3	2	2	3	2	1	-	3	2	3	3	3	3
Course Assessment methods															
Direct											Indirect				
CIE test I (8)						Assignment/seminar/Quiz (5) Total CIE: 40 marks Semester End Examination: 60 marks					Course end survey				
CIE test II (8)															
CIE test III (8)															
Objectives Test (6)															
Attendance (5)															
Unit 01: DEMAND AND SUPPLY											9 Hours				
Principles of Demand and Supply- Supply Curves of Firms - Elasticity of Supply; Demand Curves of Households- Elasticity of Demand; Equilibrium and Comparative Statics (Shift of a Curve and Movement along the Curve).															
Unit 02: WELFARE ANALYSIS AND CONSUMER BEHAVIOUR											9 Hours				
Consumers' and Producers' Surplus - Price Ceilings and Price Floors; Consumer Behaviour- Axioms of Choice - Budget Constraints and Indifference Curves; Consumer's Equilibrium- Effects of a Price Change, Income and Substitution Effects -Derivation of a Demand Curve; Applications- Tax and Subsidies -Inter temporal Consumption - Suppliers' Income Effect.															
Unit 03: PRODUCTION CONCEPT AND COST CONCEPT											9 Hours				
Theory of Production - Production Function and Iso-quants - Cost Minimization; Cost Curves- Total, Average and															

Marginal Costs - Long Run and Short Run Costs; Equilibrium of a Firm Under Perfect Competition; Monopoly and Monopolistic Competition.				
Unit 04: MACROECONOMIC MEASURES OF PERFORMANCE				9 Hours
National Income and its Components- GNP, NNP, GDP, NDP; Consumption Function; Investment; Simple Keynesian Model of Income Determination and the Keynesian Multiplier; Government Sector- Taxes and Subsidies; External Sector- Exports and Imports				
Unit 05: STABILIZATION POLICY				9 Hours
Money- Definitions; Demand for Money-Transactionary and Speculative Demand; Supply of Money- Bank's Credit Creation Multiplier; Integrating Money and Commodity Markets- IS, LM Model; Business Cycles and Stabilization- Monetary and Fiscal Policy- Central Bank and the Government; The Classical Paradigm- Price and Wage Rigidities - Voluntary and Involuntary Unemployment				
Theory: 45 Hrs	Tutorial: --	Practical: --	Project:--	Total Hours: 45 Hrs
TEXTBOOK				
1.	Pindyck, Robert S., and Daniel L. Rubinfeld, "Microeconomics", Pearson, Eighth Edition, 2012.			
2.	Dornbusch, Fischer and Startz, "Macroeconomics", Tata McGraw Hill, Twelfth Edition, 2018.			
3.	Paul Anthony Samuelson, William D. Nordhaus, "Economics", Tata McGraw Hill, Nineteenth Edition, 2010			
REFERENCES				
1.	Hal R. Varian, "Intermediate Microeconomics: A Modern Approach", W.W. Norton & Company, Eighth Edition, 2010.			
2.	N. Gregory Mankiw, Principles of Macroeconomics, Cengage, Eighth Edition, 2015			
3.	Case, Karl E., and Ray C. Fair, "Principles of microeconomics", Pearson Education, Thirteenth Edition, 2020.			
4.	Koutsoyiannis, Anna. Modern microeconomics. Springer, Second Edition, 1975.			
5.	McConnell, Campbell R., Stanley L. Brue, and Sean Masaki Flynn, "Economics: Principles, problems, and policies", Boston McGraw- Hill/Irwin, 21st Edition, 2018			
6.	Froyen, Richard T., and Stephen J. Perez, "Macroeconomics: Theories and policies", Macmillan, 1990.			
7.	Goodwin, Neva, et al, "Macroeconomics in context", ME Sharpe, Third Edition, 2013.			
WEB REFERENCES				
1.	http://economics.mit.edu/			
2.	http://hbswk.hbs.edu/			
3.	http://www.cbsnews.com/moneywatch/			
4.	http://mruniversity.com/			
5.	http://www.economist.com/			
6.	http://www.bloomberg.com/			
7.	http://www.moneyweek.com/			

U23BEE206B	BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING (Common to CSD,CSE(AI & ML),CBE &SCE)					L	T	P	J	C				
						3	0	0	0	3				
Course Outcomes														
At the end of the course, the students 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	P09	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)		Assignment/seminar/Quiz (5)				Course end survey							
CIE test II	(8)		Total CIE: 40 marks											
CIE test III	(8)		Semester End Examination: 60 marks											
Objectives Test	(6)													
Attendance	(5)													
Unit 01: DC FUNDAMENTALS											9 Hours			
Electrical components and parameters – Resistance, Conductance – Ohm’s law – Kirchhoff’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.														
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.														

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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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U23CPL212	C PROGRAMMING LABORATORY (Common to ADS, IT, CSE,CSE(AIML),CSD,CBE, SCE, ECE,EFE, EVE and EXE Branches)	L	T	P	J	C
		0	0	2	0	1

Course Outcomes

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

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

Pre-requisite:

CO/PO, PSO Mapping

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

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

Course Assessment methods

Direct

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

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


Indirect

Course end survey

List of Experiments:

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

Theory: 0	Tutorial: 0	Practical: 30Hrs	Project:0	Total Hours: 30 Hrs
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U23CHL211	CHEMISTRY LABORATORY (Common to CSE, CSE (AIML), CSD, SCE & CBE 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, determine the amount of ferrous ion by potentiometric titration and estimate the amount of copper from discarded PCBs by EDTA method.													
CO2:	Determine the molecular weight of a polymer by viscosity measurements, estimate the amount of chromium by permanganometry, estimation of hardness, alkalinity in a given sample water by volumetric method and estimate the amount of iron content in water by spectrophotometric method.													
CO3:	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		1					2
CO2	3	2		1		1	2		1					2
CO3	3	2		1		1	2		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 chromium prepared from electroplating sludge by Permanganometry.
8	Estimation of hardness of water sample by EDTA method.
9	Estimation of alkalinity of water sample by indicator method.
10	Estimation of iron content in water by spectrophotometry.
	TOTAL : 30 HOURS

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14.6.25.

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U23BEEL213B	BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING LABORATORY (Common to CSD, CSE(AI & ML),CBE & SCE)					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 Kirchoff'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.

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Theory: --	Tutorial: --	Practical: 30 Hrs	Project:--	Total Hours: 30 Hrs
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U23TAM201	<u>தமிழரும் தொழில்நுட்பமும்</u>	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 குறிப்புகள்.						
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 அச்சுத்தல் - மணி உருவாக்கும் தொழிற்சாலைகள் - கல்மணிகள், கண்ணாடி மணிகள் - கடுமண் மணிகள் - சங்கு மணிகள் - எஃகு உருவாக்கும் தொழிற்சாலைகள் - 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 தாம்பின் முக்கியத்துவம் - கால்நடை பராமரிப்பு - கால்நடைகளுக்காக வடிவமைக்கப்பட்ட கிணறுகள் - வேளாண்மை மற்றும் வேளாண்மைச் சார்ந்த செயல்பாடுகள் - கடல்சார் அறிவு - மீள்வளம் - முத்து மற்றும் முத்துக்குளித்தல் - பெருங்கடல் குறித்த பண்டைய அறிவு - அறிவுசார் சமூகம்.						
Unit 05: SCIENTIFIC TAMIL & TAMIL COMPUTING						3 Hours
அலகு V <u>அறிவியல் தமிழ் மற்றும் கணிததமிழ்:</u> அறிவியல் தமிழின் வளர்ச்சி - கணிததமிழ் வளர்ச்சி - தமிழ் நூல்களை பின்பதிப்பு 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) பொருளை - 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 Thoompu of Chola Period, Animal Husbandry - Wells designed for cattle use - Agriculture and Agro Processing - Knowledge of Sea - Fisheries – Pearl - Conche diving - Ancient Knowledge of Ocean - Knowledge Specific Society						
Unit 05: SCIENTIFIC TAMIL & TAMIL COMPUTING						3 Hours
Development of Scientific Tamil - Tamil computing – Digitalization of Tamil Books – Development of Tamil Software – Tamil Virtual Academy – Tamil Digital Library – Online Tamil Dictionaries –Sorkuvai Project						
Theory: 15 Hrs		Tutorial: --		Practical: --		Project:--
Total Hours: 15 Hrs						
TEXT BOOKS						
1.	தமிழக வரலாறு - மக்களும் பண்பாடும் - கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).					
2.	கணினித் தமிழ் - முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்). கீழடி -வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு) பொருதை - ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு)					

REFERENCES

1.	Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)
2.	Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies).
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	L	T	P	J	C
		2	0	0	0	0

Course Outcomes

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

CO1:	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

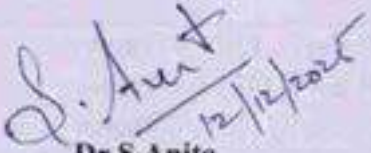
Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)

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

Course Assessment methods

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

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.


Dr.S.Anita
Professor & Head
Department of Training

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

Course Outcomes

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

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

Pre-requisite:

Nil

CO/PO, PSO Mapping

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

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

Course Assessment methods

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

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



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									

M. Renuga
13/2/24
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) CIE test II (30) CIE test III (40)					Total CIE: 100 marks Semester End Examination: NIL Course end survey				
Unit 01: Nominative/accusative case, adjectives							3 Hours		
Unit 02: Modes of transportation, orientation, giving/understanding simple directions							3 Hours		
Unit 03: • Food and beverages, Modal verbs, Separable verbs							3 Hours		
Unit 04: • Simple sentences using modal / separable verbs							3 Hours		
Unit 05: • Articles of clothing							3 Hours		
Theory: 15 Hrs		Tutorial: --		Practical: --		Project:--		Total Hours: 15 Hrs	
TEXT BOOKS									
1.	Netzwerk A1								

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HOD 13/2/24

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Sona College of Technology,
SALEM - 636 :

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

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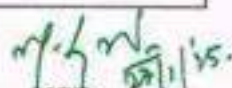
Dr. M. RENUGA,
Professor & Head,
 Department of Humanities & Languages,
 Sena College of Technology,

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


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


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