SONA COLLEGE OF TECHNOLOGY, SALEM-5

(An Autonomous Institution)

B.Tech- Artificial Intelligence and Data Science

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: Artificial Intelligence and Data Science

S.No	Course Code	Course Title	L	T	P	J	C	Category	Total Contact Hours	Course Type*
Theory Courses										
1.	U23ENG101A	Communication Skills in English	2	0	2	0	3	HS	60	TL
2.	U23MAT102A	Linear Algebra and Calculus with MATLAB	3	0	2	0	4	BS	75	TL
3.	U23PHY103A	Physics For Information Science	3	0	2	0	4	BS	75	TL
4.	U23PPR105	Problem Solving using Python Programming	3	0	0	0	3	ES	45	T
5.	U23BEE106A	Basics of Electrical and Electronics Engineering	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.	U23PPL112	Python Programming Laboratory	0	0	2	0	1	ES	30	L
9.	U23BEEL113	Basics of Electrical and Electronics Engineering Laboratory	0	0	2	0	1	ES	30	L
Total Credits							20			
Optional Language Courses**										
10.	U23OL1101	French	1	0	0	0	1	OL	15	T
11.	U23OL1102	German							15	T
12.	U23OL1103	Japanese							15	T
13.	U23OL1104	Korean							15	T
14.	U23OL1105	Hindi							15	T

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

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

Approved By

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

Copy to:-

HOD/Artificial Intelligence and Data Science, First Semester B.Tech. ADS Students and Staff, COE

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

S.No	Course Code	Course Title	L	T	P	J	C	Category	Total Contact Hours	Course Type*
Theory courses										
1.	U23ENG201A	Technical English	2	0	0	0	2	HS	30	T
2.	U23MAT202A	Discrete Mathematical Structures	3	1	0	0	4	BS	60	TT
3.	U23CHE204A	Chemistry for Information Science	2	0	2	0	3	BS	60	TL
4.	U23CPR205	Programming in C	3	0	0	0	3	ES	45	T
5.	U23IT201	Microprocessor and Microcontroller	2	0	0	0	2	ES	30	T
6.	U23EGR207	Engineering Graphics	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.	U23IT202	Microprocessor and Microcontroller Laboratory	0	0	2	0	1	ES	30	L
Total Credits							**20**			
Optional Language Courses**										
12.	U23OL1201	French -II	1	0	0	0	1	OL	15	T
13.	U23OL1202	German -II							15	T
14.	U23OL1203	Japanese -II							15	T
15.	U23OL1204	Korean -II							15	T
16.	U23OL1205	Hindi-II							15	T

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

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

Approved By

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

Copy to:- HOD/IT , Second Semester B. Tech ADS Students, Staff and COE

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

Course Outcomes

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

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

Pre-requisite:

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

CO/PO, PSO Mapping

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

COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12	PSO1	PSO2
CO1	1	1	1	1	1	3	3	2	3	3	2	3	2	3
CO2	1	1	1	1	1	3	3	3	3	3	3	3	3	3
CO3	1	2	3	2	2	3	3	2	3	3	3	3	3	3
CO4	1	2	1	2	2	3	3	3	3	3	3	3	3	3
CO5	1	2	2	3	2	3	3	3	3	3	3	3	3	3

Course Assessment methods

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

Unit 01: **6 Hours**

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

Unit 02:	6 Hours
• Tenses, Sentence Patterns • Instructions • Letter Writing - calling for quotations, placing orders	
Unit 03:	**6 Hours**
• Prefixes and Suffixes • Cover letter and resume writing	
Unit 04:	**6 Hours**
• Modal verbs, concord • Checklist • Letter Writing - Business communication, complaints, replies to queries from business customers	
Unit 05:	**6 Hours**
• If conditionals • Letter Writing - inviting dignitaries, accepting and declining invitations	

Lab component:

1. Self-introduction, personal information, name, home background, study details, area of interest, hobbies, strengths and weaknesses, projects and paper presentations, likes and dislikes in food, travel, clothes, special features of home town.
2. Mini presentation - Office Arrangements, Facilities, Office Functions, Sales, Purchases, Training Recruitment, Advertising, Applying for financial assistance, applying for a job.
3. Listening - understanding short conversations or monologues, taking down phone messages, orders, notes, etc.
4. Listening – entering information in tabular form
5. Loud Reading

Theory: 30 Hrs	Tutorial: --	Practical: 30 hours-	Project:--	Total Hours: 60 Hrs

TEXT BOOKS

1.	Technical English I & II, Dr. M. Renuga et al. Sonaversity, 2016
2.	**Extensive Reading** 1. She is Dancing Back to Life – A Short Story 2. The Story of Google – Sara Gilbert, published by Jaico 3. The Story of Amazon.com- Sara Gilbert, published by Jaico

REFERENCES

1.	Norman Whitby, Business Benchmark – Pre-Intermediate to Intermediate, Students Book, Cambridge University Press, 2006.
2.	A Course in Communication Skills, P. Kiranmai Dutt, Geetha Rajeevan, C. L. N. Prakash, published by Cambridge University Press India Pvt. Ltd.

HOD

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SALEM - 6

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:

- Fundamentals of elementary algebra
- Fundamentals of calculus
- Fundamentals of geometry
- Fundamentals of trigonometry

CO/PO, PSO Mapping

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

COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3		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) CIE test II (10) (Theory) CIE test III (10) (Theory) CIE test IV (15) (Practical) Assignment/Quiz/Seminar (5)	Total CIE: 50 marks Semester End Examination (50) [SEE- Theory (35) + Lab(15) marks]	Course end survey

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, 1st Edition, 2018.
2. T. Veerarajan, "Engineering Mathematics for Semesters I & II", McGraw Hill Publishers, 1st 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, 1st Edition, 2017.

REFERENCE BOOKS:

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

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BoS Chairperson/S&H

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U23PHY103A	PHYSICS FOR INFORMATION SCIENCE (Common to IT & ADS)	L	T	P	J	C
		3	0	2	0	4

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	P09	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 (10) CIE test II (10) CIE test III (10) CIE test IV (Practical) (15)	Assignment/Seminar/Quiz (5) Total CIE: 50 marks Semester End Examination (50) [SEE- Theory (35 marks), Lab (15 marks)]	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) - Seven crystal systems and fourteen 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 and 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 - Particle nature of radiation - Compton effect - Expression for Compton shift (no derivation) - Wave nature of matter - de Broglie waves - Heisenberg's Uncertainty principle - Schrödinger's time independent and time dependent wave equations - Physical significance of wave function - Energy and wave function of an electron trapped in one dimensional box - Application of wave nature of particles - Electron microscope - Comparison of optical and electron microscope - Scanning electron microscope - Limitations of electron microscope.

Unit 03: LASERS	9 Hours

Energy level - Stimulated absorption - population inversion - meta stable state - spontaneous emission - stimulated emission - Basic components of a laser - Einstein's theory of spontaneous and stimulated emission of radiation - Types of lasers - Solid state laser - Nd:YAG laser - Gas laser - CO_2 laser - Semiconductor laser - Homojunction and hetero junction laser - Holography - Construction and reconstruction of hologram - Application of laser in industry – Cutting, welding and drilling – Medical applications – Lasik.

Unit 04: CONDUCTING MATERIALS	9 Hours

Basic definitions - Classical free electron theory of metals - Expression for electrical conductivity - Expression for 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: 30	Project:--	Total Hours: 75 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.	Arthur Beiser, Shobhit Mahajan, S. Rai Choudhury, "Concepts of Modern Physics", McGraw-Hill (Indian Edition), 2017.
4.	R.Wolfson, "Essential University Physics", Volume 1 & 2. Pearson Education (Indian Edition), 2009.
5.	William D. Callister Jr., David G. Rethwisch, "Callister's Materials Science and Engineering", 10th Edition, Global Edition 2019.

LIST OF EXPERIMENTS		**30 Hours**
1.	Determination of the thickness of a thin wire by forming interference fringes using air wedge apparatus.	
2.	Determination of the velocity of ultrasonic waves in the liquid and also the compressibility of the liquid using ultrasonic interferometer.	
3.	Determination of laser wavelength using diode laser.	
4.	Determination of particle size of lycopodium powder using diode laser.	
5.	Determination of acceptance angle and numerical aperture of an optical fibre using diode laser.	
6.	Determination of specific resistance of a given wire using Carey Foster's bridge.	
7.	Determination of Rigidity Modulus of given wire using Torsion Pendulum.	
8.	Determination of Wavelength of Mercury spectrum using spectrometer.	
9.	Determination of band gap of the given semiconductor diode.	
10.	Determination of coefficient of viscosity of liquid by Poiseuille's method.	

14.6.2025

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HOD / Science
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14/6/25

Dr.M. Renuga
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Science and Humanities
Dr. M.RENUGA,
Professor & Head,
Department of Humanities & Languages,
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U23PPR105	PROBLEM SOLVING USING PYTHON PROGRAMMING (Common to ADS, IT, CSE, CSE(AIML), 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	P09	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, globall 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, 2nd 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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EEE
I

U23BEE106A	BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING (Common to CSE,IT & ADS)	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 (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 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, 28th 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 Subramaniyam, "Basic concepts of Electrical and Electronics Engineering ". BS Publications. I Edition, 2016.

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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 Thinai Concept of Tamils
CO5:	Analyse Contribution of Tamils to Indian National Movement and Indian Culture

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: **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 வரலொறு – மக்களும் பண் பொடும் – மக.மக. பிள்மள (தவளியீடு: தமிழ்நொடு பொடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).
2	கணினித ் தமிழ் – முமனவர ்இல. சுந்தரம் . (விகடன் பிரசுரம்).

3	கீழடி – மவமக நதிக்கமரயில் ெங்ககொல நகர நொகரிகம் (ததொல்லியல் துமறதவளியீடு)
4	பொருமந – ஆற்றங்கமர நொகரிகம். (ததொல்லியல் துமற தவளியீடு)
5	Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)
6	Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies
7	Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
8	The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)
9	Keeladi - 'Sangam City C ivilization 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 Thinai Concept of Tamils
CO5:	Analyse Contribution of Tamils to Indian National Movement and Indian Culture

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

அலகு 1 : மொழி மற்றும் இலக்கியம் — 3 Hours

இந்திய மொழிக் குடும்பங்கள் - திராவிட மொழிகள் - தமிழ் ஒரு செம்மொழி -தமிழ் செவ்விலக்கியங்கள் - சங்க இலக்கியத்தின் சமயச் சார்பற்ற தன்மை - சங்க இலக்கியத்தில் பகிர்தல் அறம் - திருக்குறளில் மேலாண்மைக் கருத்துக்கள் - தமிழ்க் காப்பியங்கள், தமிழகத்தில் சமண பௌத்த சமயங்களின் தாக்கம் - பக்தி இலக்கியம், ஆழ்வார்கள் மற்றும் நாயன்மார்கள் - சிற்றிலக்கியங்கள் - தமிழில் நவீன இலக்கியத்தின் வளர்ச்சி - தமிழ் இலக்கிய வளர்ச்சியில் பாரதியார் மற்றும் பாரதிதாசன் ஆகியோரின் பங்களிப்பு.

அலகு 2 : மரபு – பாறை ஓவியங்கள் முதல் ஓவியங்கள் வரை – சிற்பக் கலை — 3 Hours

நடுகல் முதல் சிற்பங்கள் வரை – ஐம்பொன் சிலைகள் - பழங்குடியினர் மற்றும் அவர்கள் தயாரிக்கும் கைவினைப் பொருட்கள், பொம்மைகள் - தேர் செய்யும் கலை- சுடுமண் சிற்பங்கள் - நாட்டுப்புறத் தெய்வங்கள் - குமரிமுனையில் திருவள்ளுவர் 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, ஒயிலாட்டம், 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 பிறப்பகுதிகளில் தமிழ்ப் பண்பாட்டின் தாக்கம் - சுயமரியாதை இயக்கம் - இந்திய மருத்துவத்தில், சித்த மருத்துவத்தின் பங்கு – கல்வெட்டுகள் கையெழுத்துப்படிகள் - தமிழ்ப் புத்தகங்களின் அச்சு வரலாறு.				
Theory: 15 Hrs	**Tutorial: --**	**Practical: --**	**Project:--**	**Total Hours: 15 Hrs**

REFERENCES

1	தமிழக வரலாறு – மக்களும் பண்பாடு – கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).
2	கணினித் தமிழ் - முனைவர் இல.சுந்தரம்.(விகடன் பிரசுரம்).
3	கீழடி – வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)
4	பொருநை –ஆற்றங்னரை நாகரிகம். (தொல்லியல் துறை வெளியீடு)
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9	Keeladi - 'Sangam City C ivilization 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.

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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	P09	PO10	PO 11	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 CIE test II (30) - Theory CIE test III (40) – Theory	Total CIE: 100 marks Semester End Examination – NIL	Course end survey

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.

15/09/2023

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U23PPL112	PYTHON PROGRAMMING LABORATORY (Common to ADS, IT, CSE, CSE(AIML), 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	P09	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	3	2	1								1
CO2	3	3	3	3	2	2								1
CO3	3	3	3	3	2	2								1

Course Assessment methods

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

LIST OF EXPERIMENTS

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

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U23BEEL113	BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING LABORATORY (Common to CSE, IT& ADS)	L	T	P	J	C
		0	0	2	0	1

Course Outcomes

At the end of the course, the students 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	P09	PO10	PO11	PO12	PSO1	PSO2
CO1	3		2			3	2		3		3	3	3	3
CO2	2	2	2		3				3		2	3	2	3
CO3	3	2	2		3				3		2	3	3	3

Course Assessment methods

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

LIST OF EXPERIMENTS

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

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

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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 annoncement, describe about neighbours, write a small portrait
CO4:	Express one's wishes, talk about one's hobbies, ask time, describe one's status of life in a blog, justify a choice, express one's preferences, write a list of needs
CO5:	Suggest to do something, appreciate something, talk about a movie, write a postal card

Course Assessment methods

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

Unit 01: **3 Hours**

Hr 2: Alphabets, Basic wishes, self-introduction, basic verbs: avoir and être
Hr 4: Nationalities and countries, colors, days & months
Hr 6: Definite articles, numbers 0-20, write about one's identification

Unit 02: **3 Hours**

Hr 8: Professions, conjugation: 1st group verbs, indefinite articles
Hr 10: Preposition of place, identity card, negative sentence
Hr 12: Things around us, subjective and ephatitic pronouns, self-introduction online

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, cachier d'activités)
3.	Reference books : La conjugaison, Dondon, Echo

HOD
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U23OL1102	German	L	T	P	J	C
		1	0	0	0	1

Course Outcomes

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

CO1:	Use common, everyday expressions to greet others and introduce themselves.
CO2:	Construct simple sentences /questions.
CO3:	Initiate and sustain basic conversation based on family, professions,
CO4:	Hobbies and food.
CO5:	Identify differences in using nouns based on gender.

Course Assessment methods

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

Unit 01:	**3 Hours**
• Greeting and taking leave, introducing oneself, introducing others	
Unit 02:	**3 Hours**
• Alphabets, spelling, numbers	
Unit 03:	**3 Hours**
• Age, Telephone/mobile numbers, Month, Date, Time	
Unit 04:	**3 Hours**
• Languages, Family, Asking/giving information about family members	
Unit 05:	**3 Hours**
• Hobbies, Professions	

Theory: 15 Hrs	Tutorial: --	Practical: --	Project:--	Total Hours: 15 Hrs

TEXT BOOKS

1.	Netzwerk A1

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U23OL1103	Japanese	L	T	P	J	C
		1	0	0	0	1

Course Outcomes

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

CO1:	Use words and phrases of greeting in Japanese, write the letters of the alphabet, identify names of objects and do a self-introduction using short and simple sentences
CO2:	Demonstrate the use of time-related words and verb conjunctions and make light conversation asking for directions and answering questions
CO3:	Use different kinds of verbs through the day and those used for giving things, and demonstrate the use of adjectives
CO4:	Express liking for the Japanese language, describe the locations of different things and demonstrate counting in Japanese
CO5:	Make comparisons of stated things, express a willingness to go to Japan and use 'Te-form' verbs

Course Assessment methods

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

Unit 01:	**3 Hours**
Hr 1-2: Greeting words and phrases; the Japanese alphabet: 104 Hiragana and 104 Katakana letters Hr 3-4: Identifying words from pictures or objects shown Hr 5-6: Self-introduction	
Unit 02:	**3 Hours**
Hr 7-8: Asking for directions when shopping Hr 9-10: Time words and Verb Conjugations Hr 11-12: Making light conversation	
Unit 03:	**3 Hours**
Hr 13-14: Expressions to use verbs from morning to night Hr 15-16: Verbs used for giving things Hr 17-18: Adjectives	
Unit 04:	**3 Hours**
Hr 19-20: Ways to show liking for the Japanese language Hr 21-22: Describing the location of things (or where things are) Hr 23-24: Japanese numbers and counting	
Unit 05:	**3 Hours**
Hr 25-26: Making comparisons Hr 27-28: Expressions wishing for something, like 'I want to go to Japan …!' Hr 29-30: Using 'Te-form' Verb	

Theory: 15 Hrs	Tutorial: --	Practical: --	Project:--	Total Hours: 15 Hrs

TEXT BOOKS

1.	The course faculty will provide handouts / notes / course material.
2.	Books on Basic Japanese language available in the college library.

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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) CIE test II (30) CIE test III (40)	Total CIE: 100 marks Semester End Examination: NIL	Course end survey

Unit 01: Hangeul	3 Hours
Single Vowels & Consonants Syllable Structure Tense Consonants Aspirated Consonants Double Vowels Final Consonants Double Final Consonants Liaison	
Unit 02: Introduction	**3 Hours**
Greetings Talking about names Self-introduction Introducing my family members	
Unit 03: Time and Date	**3 Hours**
Talking about location Talking about dates and days of the week Talking about doing something in the past	
Unit 04: Location and Places	**3 Hours**
Talking about location Talking about doing something at a location Talking about directions	
Unit 05: Future	**3 Hours**
Talking about doing something in the future Talking about plans for the future Talking about hope for the future	

Theory: 15 Hrs	Tutorial: --	Practical: --	Project:--	Total Hours: 15 Hrs

REFERENCES

1	Vitamin Korean - 1

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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)

HOD

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

S.No	Course Code	Course Title	L	T	P	J	C	Category	Total Contact Hours	Course Type*
Theory courses										
1.	U23ENG201A	Technical English	2	0	0	0	2	HS	30	T
2.	U23MAT202A	Discrete Mathematical Structures	3	1	0	0	4	BS	60	TT
3.	U23CHE204A	Chemistry for Information Science	2	0	2	0	3	BS	60	TL
4.	U23CPR205	Programming in C	3	0	0	0	3	ES	45	T
5.	U23IT201	Microprocessor and Microcontroller	2	0	0	0	2	ES	30	T
6.	U23EGR207	Engineering Graphics	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.	U23IT202	Microprocessor and Microcontroller Laboratory	0	0	2	0	1	ES	30	L
Total Credits							**20**			
Optional Language Courses**										
12.	U23OL1201	French -II	1	0	0	0	1	OL	15	T
13.	U23OL1202	German -II							15	T
14.	U23OL1203	Japanese -II							15	T
15.	U23OL1204	Korean -II							15	T
16.	U23OL1205	Hindi-II							15	T

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

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

Approved By

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

Copy to:- HOD/IT , Second Semester B. Tech ADS Students, Staff and COE

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

Course Outcomes

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

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

Pre-requisite:

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

CO/PO, PSO Mapping

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

COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12	PSO1	PSO2
CO1	1	1	2	2	2	3	3	2	3	3	3	3	3	3
CO2	1	2	2	3	2	3	3	2	3	3	2	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	1	3	1	2	2	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Course Assessment methods

Direct		Indirect
CIE test I (8) 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)	Course end survey

Unit 01: **6 Hours**

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

Unit 02: **6 Hours**

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

Unit 03 **6 Hours**

- Collocations, direct and indirect speech

- Memo
- Proposal: establishing a lab, introducing a subject in the curriculum, training programme for students
- Short reading passage: gap-filling exercise related to grammar

Unit 04: **6 Hours**

- Cause and effect
- Technical report writing – feasibility report, accident report, survey report
- Short reading passages for sentence matching exercises, picking out specific information in a short text

Unit 05: **6 Hours**

- Active, Passive and Impersonal Passive Voices
- Transcoding – bar chart, pie chart, tabular column, graph, flow chart

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

TEXT BOOKS

1. Technical English I & II, Dr. M. Renuga et al. Sonaversity, 2016
2. **Extensive Reading**
   1. Who Moved my Cheese? – Spencer Johnson-G. P. Putnam's Sons
   2. Discover the Diamond in You – Arindham Chaudhari – Vikas Publishing House Pvt. Ltd.

REFERENCES

1. Norman Whitby, Business Benchmark – Pre-Intermediate to Intermediate, Students Book, Cambridge University Press, 2006.
2. A Course in Communication Skills, P. Kiranmai Dutt, Geetha Rajeevan, C. L. N. Prakash, published by Cambridge University Press India Pvt. Ltd.

HOD 8/1/26.

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SEMESTER - II	DISCRETE MATHEMATICAL STRUCTURES (Common to IT and ADS)	L	T	P	J	C
U23MAT202A		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:	apply the combinatorics techniques to count, enumerate, or represent possible solutions in the process of solving application problems in the field of communication networks and string searching algorithm.
CO4:	analyze and simplify the digital (logic) circuits using the concept of relations.
CO5:	apply the concept of various types of functions in the field of sorting algorithm, parallel computing and image processing,

Pre-requisites:

- Fundamentals of elementary algebra
- Fundamentals of calculus
- Fundamentals of geometry

CO/PO, PSO Mapping

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

COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	2							2		3
CO2	3	3	3	3	2							2		3
CO3	3	3	3	3	2							2		3
CO4	3	3	3	3	2							2		3
CO5	3	3	3	3	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	**COMBINATORICS**	**12 Hours**
Counting principle – Sum and product rule – Principle of inclusion and exclusion - Pigeonhole principle – Permutations and combinations – Mathematical induction – Recurrence relation – Solution of recurrence relation using generating functions.		
Unit 04	**RELATIONS**	**12 Hours**
Relations – domain and range of a relation - Types of relations (reflexive, symmetric, transitive, antisymmetric and irreflexive relations) 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 05	**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.		

Theory: 45 Hours	Tutorial: 15 Hours	Practical: -	Project: -	Total Hours: 60 Hours

TEXT BOOKS:

1. K. H. Rosen, "Discrete Mathematics and its Applications", McGraw Hill Publishers, 8th Edition, 2019.
2. J. P. Trembly and R. Manohar, "Discrete Mathematical Structures with Applications to Computer Science", McGraw Hill Publishers, 1st Edition, 2017.

REFERENCE BOOKS:

1. T. Veerarajan, "Discrete Mathematics with Graph Theory and Combinatorics", McGraw Hill Publishers, 19th Reprint, 2014.
2. R. P. Grimaldi, "Discrete and Combinatorial Mathematics: An Applied Introduction", Pearson Publishers, 5th Edition, 2006.
3. https://nptel.ac.in/courses/106/106/106106094/

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Head / Department of Mathematics

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U23CHE204A	CHEMISTRY FOR INFORMATION SCIENCE (Common to B.Tech. AI & DS and IT)	L	T	P	J	C
		2	0	2	0	3

Course Outcomes

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

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

Pre-requisite:

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

CO/PO, PSO Mapping

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

COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2					2						3	2
CO2	3	2					2						2	2
CO3	3	2					2						3	2
CO4	3	2					2						3	2
CO5	3	2					3						3	2

Course Assessment methods

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

Unit 01: ELECTROCHEMISTRY — **6 Hours**

Electrode potential-Nernst equation - derivation and problems based on single electrode potential calculation-Reference electrodes - Standard hydrogen electrode - Calomel electrode - Glass electrode - measurement of pH - Electrochemical series – Significance - Potentiometric titrations (redox Fe^{2+} Vs Dichromate) - Conductometric titrations (HCl vs NaOH).

Unit 02: CHEMISTRY OF ENERGY STORAGE DEVICES	6 Hours

Reversible and irreversible Cells – Batteries - types of batteries – Fabrication and working of alkaline battery-Lead-acid battery-Ni-Cd-Lithium ion batteries and Solar cells – Fuel Cells – Hydrogen-Oxygen fuel cell – Nano batteries- construction-working-advantages and applications.

Unit 03: CHEMISTRY OF POLYMERS AND ORGANIC ELECTRONIC MATERIALS	6 Hours

Introduction to polymers – types of polymerization reactions - conducting polymers, types - Organic semiconducting materials – working principle and examples - advantages over inorganic semiconducting materials - Organic dielectric material-definition and examples – Organic Light Emitting Diodes (OLEDs) - construction-working principle and applications – Organic transistors- construction-working principle and applications.

Unit 04: ELECTROCHEMICAL PROCESSING IN ELECTRONIC INDUSTRIES	6 Hours

Electroplating-Principle and process-Plating parameters-Current and energy efficiency-Electroplating of Cu - Fundamentals of electroless deposition - Electroless plating of Cu - Fabrication of PCB's - Electrochemical etching of copper from PCB's - Anodizing-Definition-Principle and working methodology of aluminium anodizing and its applications – Sensors – Definition and types.

Unit 05: E-WASTE MANAGEMENT	6 Hours

Introduction-E-Waste – definition – sources of e-waste– hazardous substances in e-waste – effects of E-waste on environment and human health- need for E-waste management– E-waste handling rules - waste minimization techniques for managing E-waste – extraction of gold and copper from printed circuit boards (PCBs) - recycling of E-waste – disposal treatment methods of E – waste.

List of Experiments **30 Hours**

1) Estimation of HCl by pH metry.
2) Estimation of HCl by conductometry (HCl Vs NaOH).
3) Estimation of mixture of acids by conductometry (HCl + CH_3COOH Vs NaOH).
4) Estimation of ferrous ion by potentiometric titration.
5) Estimation of copper content from discarded PCBs by EDTA method.
6) Estimation of chromium prepared from electroplating sludge by Permanganometry.
7) Determination of molecular weight of a polymer by viscosity measurements.
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.

Theory: 30 Hrs	Tutorial: 0	Practical: 30 Hrs	Project: 0	Total Hours: 60 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, Anwesha Borthakur, "Handbook of Electronic Waste Management", 1st edition - November 21, 2019.

8.1.2026

Dr. C. Shanthi
HOD / Science

Dr. C. SHANTHI, M.Sc.,M.E.,Ph.D.
Professor of Physics
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8.1.2026

Dr. M. Renuga
BoS - Chairperson
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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	P09	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	3	2	2	2	-	2	-	2	2	3	3	2	2
CO2	2	2	3	2	2	1	-	2	-	2	2	3	2	2	2
CO3	2	3	3	2	2	1	-	2	-	2	2	3	3	2	2
CO4	2	3	3	2	2	1	-	2	-	2	1	3	3	2	2
CO5	2	3	3	2	2	2	-	2	-	2	2	3	3	2	2

Course Assessment methods

Direct		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

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

Unit 02:	CONTROL STATEMENTS, ARRAYS AND STRING	9 Hours

Conditional statements, Unconditional statements, branching and looping statements - Arrays – Initialization – Declaration – One dimensional and Two dimensional arrays. String- String operations – String Arrays. Simple programs- sorting- searching – matrix operations.

Unit 03:	FUNCTIONS AND POINTERS	9 Hours

Function – Library functions and user-defined functions – Function prototypes and function definitions – Call by value – Call by reference – Recursion – Pointers - Definition – Initialization – Pointers arithmetic – Pointers and

arrays – Pointers and Functions - Dynamic memory Allocation - Example Programs.					
Unit 04:	**STRUCTURES AND UNIONS**				**9 Hours**
Need for structure data type – structure definition – Structure declaration – Structure within a structure – Passing structures to functions – Array of structures – Pointers to structures – Union - Programs using structures and Unions					
Unit 05:	**FILE MANIPULATIONS**				**9 Hours**
Files-File operations- Binary files and text files – Types of File processing-Sequential access -Random Access File - Command line arguments.					
Theory: 45 Hrs	**Tutorial: 0**	**Practical: 0**	**Project: 0**		**Total Hours: 45 Hrs**

TEXT BOOKS

1. Deitel and Deitel, "C How to Program", Pearson Education, New Delhi, 2011.
2. Yashavant P. Kanetkar. "Let Us C", BPB Publications, 14th edition, 2016.

REFERENCES

1. Kernighan,B.W and Ritchie,D.M, "The C Programming language", Second Edition, Pearson Education, 2006.
2. Byron S Gottfried, "Programming with C", Schaum's Outlines, Second Edition, Tata McGraw-Hill, 2006.
3. Anita Goel and Ajay Mittal, "Computer Fundamentals and Programming in C", Dorling Kindersley (India) Pvt. Ltd., Pearson Education in South Asia, 2011.
4. E. Balagurusamy, "Programming in ANSI C", seventh edition, Tata McGraw Hill, 2016.

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U23IT201	MICROPROCESSOR AND MICROCONTROLLER (Common to B Tech- IT & B Tech- AI&DS)	L	T	P	J	C
		2	0	0	0	2

Course Outcomes

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

CO1	Analyze the architecture, instruction set, and assembly language programs of 8085 processors.
CO2	Understand the internal organization of the 8086 processors.
CO3	Demonstrate the interfacing devices with the processors.
CO4	Analyse the multiprocessor configurations and advanced processors.
CO5	Describe the architecture of 8051 microcontroller.

Pre-requisite:

CO/PO, PSO Mapping
(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak

Cos	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12	PSO1	PSO2
CO1	2	3	3									2	1	2
CO2	2	3	3									2	1	2
CO3	2	3	3	2								2	1	2
CO4	2	3	3	2								2	1	2
CO5	2	3	3	3								2	1	2

Course Assessment methods

Direct		Indirect
CIE Test I – 8 CIE Test II – 8 CIE Test III– 8 Objective Test – 6	Attendance (5) Assignment / Seminar / Quiz – 5 Total CIE – **40 Marks** Semester End Examination – **60 Marks**	Course end survey

UNIT I:	8085 MICROPROCESSOR	6 Hours

Introduction - 8085 Microprocessor- Architecture – Signals - Addressing modes - Instruction set – Programming the 8085.

UNIT II:	8086 MICROPROCESSOR	6 Hours

8086 microprocessor –Register organization of 8086- Architecture – Signal description of 8086 – Minimum and maximum mode of 8086 system - Instruction Set - Assembly Language Programming.

UNIT III:	INTERFACING WITH MICROPROCESSORS	6 Hours

Memory interfacing with Microprocessors – Parallel Communication Interface (8255) – Serial Communication Interface (8251) – Timer (8253) - Keyboard/display controller (8279).

UNIT IV:	MULTIPROCESSOR AND ADVANCED MICROPROCESSORS	6 Hours
Coprocessor Configuration – Closely Coupled Configuration – Loosely Coupled Configuration –Numeric Data Processor (8087) – Architecture of 8087 – Microarchitecture of I3 Processor - Microarchitecture of I5 Processor.		
UNIT V:	**MICROCONTROLLER**	**6 Hours**
8051 Microcontroller- Architecture – signals descriptions of 8051– Register set of 8051- Addressing modes - memory addressing by 8051 – I/O addressing by 8051.		

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

TEXT BOOKS

1.	Ramesh S. Gaonkar," Microprocessor – Architecture, Programming and Applications with the 8085" Penram International Publisher , 6th Edition, 2013.(Unit-1)
2.	A.K.Ray & K.M Bhurchandi, "Advanced Microprocessor and Peripherals – Architecture, Programming and Interfacing", 3rd edition, Tata Mc Graw Hill, 2017.(Unit 2-5)

REFERENCES

1.	Douglas V.Hall and SSSP Rao, " Microprocessors and Interfacing", third edition , Tata Mc Graw Hill ,2012.
2.	Yn-cheng Liu,Glenn A.Gibson, "Microcomputer systems: The 8086 / 8088 Family architecture, Programming and Design", second edition, Prentice Hall of India , 2011 .
3.	Mohamed Ali Mazidi,Janice Gillispie Mazidi," The 8051 microcontroller and embedded systems using Assembly and C", 2nd edition, Pearson education /Prentice hall of India , 2011.
4.	Kenneth J.Ayala, "The 8051 microcontroller and Embedded systems using assembly and C", 1st edition, Cengage learning publisher,2018.
5.	A.Nagoor Kani, "Microprocessors and Microcontrollers", 2nd edition,TMH,2015.

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U23EGR207	ENGINEERING GRAPHICS (Common to ADS, BME, CSE, ECE, FT, IT branches)	L	T	P	J	C
		3	0	0	0	3

Course Outcomes

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

CO1:	Construct –Ellipse, Parabola, Hyperbola, Cycloids and Involutes.
CO2:	Draw the projection of Point, Line and Plane surfaces.
CO3:	Draw the projection of simple solids by rotating object method.
CO4:	Develop the section of simple solids and lateral surface of truncated solids.
CO5:	Draw the isometric view to orthographic projection.

Pre-requisite: Nil

CO/PO, PSO Mapping

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

COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12	PSO1	PSO2
CO1	1							3		2			1	
CO2					3			2		2		2		2
CO3					3			2		2		2	1	2
CO4					3			2		2		2	1	2
CO5			2					2		2		2	1	

Course Assessment methods

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

CONCEPTS AND CONVENTIONS - (Not for Examination).

Importance of graphics in engineering applications - Use of drafting instruments - BIS conventions and specifications — Size, layout and folding of drawing sheets — Lettering and dimensioning.

Unit 01: PLANE CURVES - (Manual drafting). **9 Hours**

Basic Geometrical constructions, Curves used in engineering practices: Conics — Construction of ellipse, parabola and hyperbola by eccentricity method — Construction of cycloid — construction of Involute of circle — Drawing of tangents and normal to the above curves.

Unit 02: PROJECTION OF POINTS, LINES AND PLANE SURFACES (CAD software). Orthographic projection- principles-principal planes-First angle projection-projection of points. Projection of straight lines (only First angle projections) inclined to both the principal planes -Determination of true lengths and true inclinations by rotating line method. Projection of planes (polygonal and circular surfaces) inclined to one of the principal plane by rotating object method.	**9 Hours**
Unit 03: PROJECTION OF SOLIDS (CAD software). Projection of simple solids - prisms, pyramids, cylinder, cone and truncated solids when the axis is inclined to one of the principal planes and parallel to the other by rotating object method.	**9 Hours**
Unit 04: PROJECTION OF SECTIONED SOLIDS AND DEVELOPMENT OF SURFACES (CAD software). Section of solids in simple vertical position when the cutting plane is inclined to one of the principal planes and perpendicular to the other — (obtaining true shape of section is not required). Development of lateral surfaces of truncated solids — Prisms, pyramids cylinders and cones.	**9 Hours**
Unit 05: ISOMETRIC TO ORTHOGRAPHICS PROJECTION- (Manual drafting). Representation of three dimensional objects – General Principles - Need for importance of multiple views – First angle projection – layout of views – Conversion of isometric view to orthographic views. Practicing three dimensional modelling of simple objects using CAD Software **(Not for examination)**	**9 Hours**

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

TEXT BOOKS

1.	Bhatt N.D. and Panchal V.M., "Engineering Drawing", Charotar Publishing House, 53rd Edition, 2019.
2.	Natrajan K.V., "A Text Book of Engineering Graphics", Dhanalakshmi Publishers, Chennai, 2018.
3.	Parthasarathy, N. S. and Vela Murali, "Engineering Drawing", Oxford University Press, 2015
4.	P.Suresh., "Engineering Graphics and Drawing", Sonaversity, Sona College of Technology, Salem, Revised edition, 2012.

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

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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	P09	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		Indirect
CIE test I (15) Quiz 1- (5) CIE test II (15) Quiz 2- (5)	RTPS (10) Record (10) Total CIE: **60 marks** Semester End Examination: **40 marks**	Course end survey

List of Experiments:

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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U23IT202	MICROPROCESSOR AND MICROCONTROLLER LABORATORY (Common to B Tech- IT & B Tech- AI&DS)	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	Write ALP programs for arithmetic manipulations using Microprocessors.
CO2	Interface different I/Os with microprocessors and perform arithmetic manipulations using Microcontroller.
CO3	Solve real time industry-based problems with Microprocessors and Microcontrollers.

Pre-requisite:

CO / PO, PSO Mapping
(3/2/1 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak

Cos	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12	PSO1	PSO2
CO1	2	3	3	2								2	1	1
CO2	2	3	3	2								2	1	1
CO3	2	3	3	2								2	1	1

Course Assessment methods

Direct		Indirect
CIE Test I – 15 Quiz 1 – 5 CIE Test II – 15 Quiz 2 – 5 RTPS – 10	Record – 10 Total CIE – **60 Marks**, Semester End Examination – **40 Marks**	Course end survey

LIST OF EXPERIMENTS — **30 Hours**

1. 8-bit and 16 bit Manipulations- Addition, Subtraction, Multiplication and Division using Microprocessors.
2. Code conversions - BCD to Binary and Binary to BCD using Microprocessors.
3. Decimal Arithmetic and Bit Manipulation using Microprocessors.
4. Double precision – Addition and subtraction using Microprocessors.
5. 8255 Interface -Experiments with mode 0 and mode1 using Microprocessors.
6. 8279 Interface -Keyboard/ Display Interface with Microprocessors.
7. 8253 Interface -Timer Interface with Microprocessors.
8. 8251 Interface -Programmable Communication Interface with Microprocessors.
9. 8-bit and 16-bit Manipulations- Addition, Subtraction and Multiplication using 8051.
10. Array Operations-Sum of N Elements using 8051.
11. Applications – Traffic light controller and stepper motor using Microprocessors and Microcontroller.

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

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U23TAM201	தமிழரும் தொழில்நுட்பமும்	L	T	P	J	C
		1	0	0	0	1

Course Outcomes

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

CO1:	Describe the weaving and ceramic technology
CO2:	Explain the design and construction technology
CO3:	Analyse the manufacturing technology
CO4:	Describe the agriculture and irrigation technology
CO5:	Explain the Scientific Tamil and Tamil Computing

Course Assessment methods

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

Unit 01: WEAVING AND CERAMIC TECHNOLOGY — **3 Hours**

அலகு I நெசவு மற்றும் பானைத் தொழில்நுட்பம்: 3

சங்க காலத்தில் நெசவுத் தொழில் - பானைத் தொழில்நுட்பம் – கருப்பு சிவப்பு பாண்டங்கள் பாண்டங்களில் கீறல் குறியீடுகள்.

Unit 02: DESIGN AND CONSTRUCTION TECHNOLOGY — **3 Hours**

அலகு II வடிவமைப்பு மற்றும் கட்டிடத் தொழில்நுட்பம்: 3

சங்க காலத்தில் வடிவமைப்பு மற்றும் கட்டுமானங்கள் & சங்க காலத்தில் வீட்டுப் பொருட்களில் வடிவமைப்பு– சங்க காலத்தில் கட்டுமான பொருட்களும் நடுகல்லும் – சிலப்பதிகாரத்தில் மேடை அமைப்பு பற்றிய விவரங்கள் – மாமல்லபுரச் 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 உற்பத்தித் தொழில் நுட்பம்: 3

கப்பல் கட்டும் கலை - உலோகவியல் - இரும்புத் தொழிற்சாலை - இரும்பை உருக்குதல், எஃகு - வரலாற்றுச் சான்றுகளாக செம்பு மற்றும் தங்க நாணயங்கள் - நாணயங்கள் அச்சடித்தல் - மணி உருவாக்கும் தொழிற்சாலைகள் - கல்மணிகள், கண்ணாடி மணிகள் - சுடுமண் மணிகள் - சங்கு மணிகள் - எலும்புத்துண்டுகள் - தொல்லியல் சான்றுகள் – சிலப்பதிகாரத்தில் மணிகளின் வகைகள்.

Unit 04: AGRICULTURE AND IRRIGATION TECHNOLOGY — **3 Hours**

அலகு IV வேளாண்மை மற்றும் நீர்ப்பாசனத் தொழில் நுட்பம்: 3

அணை, ஏரி, குளங்கள், மதகு - சோழர்காலக் குமுழித் தூம்பின் முக்கியத்துவம் - கால்நடை பராமரிப்பு - கால்நடைகளுக்காக வடிவமைக்கப்பட்ட கிணறுகள் - வேளாண்மை மற்றும் வேளாண்மைச் சார்ந்த செயல்பாடுகள் - கடல்சார் அறிவு - மீன்வளம் - முத்து மற்றும் முத்துக்குளித்தல் - பெருங்கடல் குறித்த பண்டைய அறிவு - அறிவுசார் சமூகம்.

Unit 05: SCIENTIFIC TAMIL & TAMIL COMPUTING — **3 Hours**

அலகு V அறிவியல் தமிழ் மற்றும் கணித்தமிழ்: 3

அறிவியல் தமிழின் வளர்ச்சி -கணித்தமிழ் வளர்ச்சி – தமிழ் நூல்களை மின்பதிப்பு செய்தல் - தமிழ் மென்பொருட்கள் உருவாக்கம் - தமிழ் இணையக் கல்விக்கழகம் - தமிழ் மின் நூலகம் - இணையத்தில் தமிழ் அகராதிகள் - சொற்குவைத் திட்டம்.

Theory: 15 Hrs	Tutorial: --	Practical: --	Project:--	Total Hours: 15 Hrs

TEXT BOOKS	
1.	தமிழக வரலாறு –மக்களும் பண்பாடும் – கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).
2.	கணினித் தமிழ் –முனைவர் இல. சுந்தரம். (விகடன் பிரகரம்). கீழடி –வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு) பொருநை –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) CIE test II (30) CIE test III (40)	Total CIE: 100 marks Semester End Examination: NIL	Course end survey

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)
பொருநை –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 C ivilization 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

COs	Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12
CO1	3	3	3	2	1	1	1	3	3	3	2	3
CO2	3	3	3	2	1	1	1	3	3	3	2	3
CO3	3	3	3	2	1	1	1	3	3	3	2	3
CO4	3	3	3	2	1	1	1	3	3	3	2	3
CO5	3	3	3	2	1	1	1	3	3	3	2	3

Course Assessment methods

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

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.

12/12/2025

Dr.S.Anita
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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	P09	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.

Sona College of Technology Autonomous
APPROVED Board of Studies
Civil Engineering Chairperson

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) CIE test II (30) CIE test III (40)	Total CIE: 100 marks Semester End Examination: NIL	Course end survey

Unit 01:	**3 Hours**
Hr 2: 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, cachier d'activités)
3.	Reference books : La conjugaison, Dondon, Echo

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:	3 Hours
Nominative/accusative case, adjectives	

Unit 02:	3 Hours
Modes of transportation, orientation, giving/understanding simple directions	

Unit 03:	3 Hours
• Food and beverages, Modal verbs, Separable verbs	

Unit 04:	3 Hours
• Simple sentences using modal / separable verbs	

Unit 05:	3 Hours
• Articles of clothing	

Theory: 15 Hrs	Tutorial: --	Practical: --	Project:--	Total Hours: 15 Hrs

TEXT BOOKS

1. Netzwerk A1

HOD 13/2/2024

Dr. M.RENUGA,
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U23OL1203	Japanese - II	L	T	P	J	C
		1	0	0	0	1

Course Outcomes

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

CO1:	Use verbs in polite conversation or for dissuasion and describe two different activities
CO2:	Demonstrate the application of causative verbs and those that express ability or possibility, and describe experiences
CO3:	Use plain-style expressions, those that state opinions, and verbs and adjectives that go with nouns
CO4:	Express sentences that use 'when' and 'if' and those that describe how services are given and received
CO5:	Read 126 letters of Kanji, and demonstrate adequate knowledge of the lessons learnt in Levels I and II to pass the Japanese Language Proficiency Test (JLPT) for the N5 Level

Course Assessment methods

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

Unit 01:	**3 Hours**
Hr 1-2: Words and verbs expressing requests / Kanji 1-10 Hr 3-4: Asking for permission; making statements to prohibit something / Kanji 11-20 Hr 5-6: Describing two activities / Kanji 21-30	
Unit 02:	**3 Hours**
Hr 7-8: Verbs that express 'I have to ...' / Kanji 31-40 Hr 9-10: Verbs which express ability or possibility / Kanji 41-50 Hr 11-12: Describing experience / Kanji 51-60	
Unit 03:	**3 Hours**
Hr 13-14: Plain-style expressions / Kanji 61-70 Hr 15-16: Expressions like 'I think that ...' / Kanji 71-80 Hr 17-18: Qualifying nouns with verbs and adjectives / Kanji 81-90	
Unit 04:	**3 Hours**
Hr 19-20: Expressions using 'When ...' / Kanji 91-100 Hr 21-22: Describing the giving and receiving of services / Kanji 101-110 Hr 23-24: Expressions using 'If ...' / Kanji 111-126	
Unit 05:	**3 Hours**
Hr 25-26: Preparing for JLPT N5 Hr 27-28: Preparing for JLPT N5 Hr 29-30: Preparing for JLPT N5	

Theory: 15 Hrs	Tutorial: --	Practical: --	Project:--	Total Hours: 15 Hrs

TEXT BOOKS

1.	The course faculty will provide handouts / notes / course material.
2.	Books on Basic Japanese language available in the college library.

HOD

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U23OL1204	Korean - II	L	T	P	J	C
		1	0	0	0	1

Course Outcomes

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

CO1:	Identify time
CO2:	Identify the date and days of the week
CO3:	Explain location and places
CO4:	Explain destination
CO5:	Construct simple sentences / questions.

Course Assessment methods

Direct		Indirect
CIE test I (30) 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

13/2/24.

HOD

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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) CIE test II (30) CIE test III (40)	Total CIE: 100 marks Semester End Examination: NIL	Course end survey

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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