



SASURIE
COLLEGE OF ENGINEERING
(Autonomous)
Vijayamangalam, Tiruppur - 638056



CURRICULUM AND SYLLABI

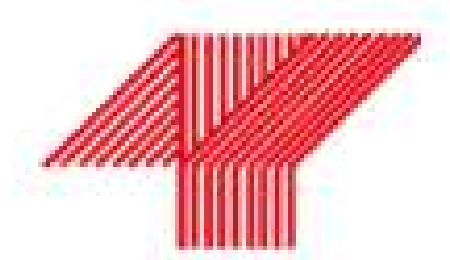
REGULATION 2026

DEPARTMENT OF
ELECTRICAL AND ELECTRONICS ENGINEERING



SASURIE COLLEGE OF ENGINEERING

(Autonomous Institution, Affiliated to Anna University, Chennai)



CURRICULUM & SYLLABI – 2026

CHOICE BASED CREDIT SYSTEM AND OUTCOME BASED EDUCATION

(For the students admitted from the academic year 2026 - 2027)

BACHELOR OF ENGINEERING

IN

ELECTRICAL AND ELECTRONICS ENGINEERING

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

VISION AND MISSION OF THE INSTITUTE

VISION

To become a leading professional institution by offering high-quality education, fostering successful graduates with strong employability prospects, advancing sustainable research through ethical practices and empowering young minds to contribute to the nation's growth in Engineering, Technology and Management.

MISSION

- To deliver high-quality education that empowers students with the knowledge, skills and ethical values necessary for success in Engineering, Technology and Management.
- To develop graduates with strong employability potential, fostering innovation, leadership and a commitment to continuous learning.
- To advance sustainable research and development that addresses real-world challenges and drives societal progress.
- To inspire and shape young minds into responsible professionals dedicated to contributing to the nation's growth and development.

VISION AND MISSION OF THE DEPARTMENT

VISION

To emerge as a centre of excellence in Electrical and Electronics Engineering education and research, fostering innovation, sustainable technologies, and rural empowerment by developing competent engineers to meet the evolving challenges of the global engineering environment.

MISSION

- To impart strong fundamentals and advanced knowledge in Electrical and Electronics Engineering through innovative teaching-learning and practical exposure.
- To promote industry-oriented research, green energy solutions, and emerging technologies addressing real-world and rural challenges.
- To nurture technical competence, leadership qualities, ethical values, and entrepreneurship skills for holistic professional growth.
- To develop engineers committed to sustainable development and rural empowerment through technology-driven solutions

Program Outcomes (POs)

PO1: Engineering Knowledge: Apply math, science, and engineering fundamentals to complex problems.

PO2: Problem Analysis: Identify and analyze complex problems using research and sustainability principles.

PO3: Design Solutions: Design systems and processes considering health, safety, cost, culture, and Environment.

PO4: Investigations: Use experiments, modelling, and data analysis to reach valid conclusions.

PO5: Engineering Tools: Apply modern tools for modelling and problem-solving, recognizing their limits.

PO6: Society & Environment: Assess societal, legal, and environmental impacts of engineering solutions.

PO7: Ethics: Commit to ethics, human values, diversity, and legal compliance.

PO8: Teamwork: Work effectively as an individual and in multidisciplinary teams.

PO9: Communication: Communicate clearly in reports, presentations, and documentation across diverse groups.

PO10: Management & Finance: Apply management and economic principles in projects and teamwork.

PO11: Lifelong Learning: Engage in continuous learning, adapt to new technologies, and think critically.

Program Educational Objectives (PEOs)

PEO 1:

Apply core knowledge in Electrical and Electronics Engineering to design, analyze, and implement solutions in power systems, renewable energy, and allied domains.

PEO 2:

Pursue higher education, research, and continuous learning, adapting to emerging technologies and contributing through innovation and entrepreneurship.

PEO 3:

Exhibit leadership, teamwork, ethical values, and social responsibility, addressing societal and rural challenges through sustainable engineering practices.

Program Specific Outcomes (PSOs)

PSO1:

Ability to design, analyze, and optimize electrical systems, including power generation, transmission, distribution, electric vehicles, and renewable energy technologies.

PSO2:

Ability to develop smart control systems, power electronics, and AI-enabled solutions for modern electrical applications and industrial automation.

**B.E-ELECTRICAL AND ELECTRONICS ENGINEERING
REGULATIONS 2026
For the students admitted from 2026 onwards
CHOICE BASED CREDIT SYSTEM
CURRICULUM FOR I - VIII SEMESTERS**

SEMESTER I

SL. NO.	COURSE CODE	COURSE TITLE	COURSE TYPE	CATEGORY	L	T	P	J	C
1	U26EN121	English Proficiency – I	L	HSMC	0	0	2	0	1
2	U26MA101	Matrices and Calculus	T	BSC	3	1	0	0	4
3	U26CY111	Chemistry for Electrical and Electronics engineering	TWL	BSC	2	0	2	0	3
4	U26ME101	Basic Civil and Mechanical Engineering	T	ESC	3	0	0	0	3
5	U26CS112	Problem Solving using C Programming	TWL	ESC	3	0	2	0	4
6	U26ME111	Engineering Graphics	TWL	ESC	2	0	2	0	3
7	U26ME121	Engineering Practices Laboratory	L	ESC	0	0	4	0	2
Total					13	1	12	0	20
MANDATORY CREDIT COURSES (MCC - Non CGPA) / MANDATORY NON-CREDIT COURSES (MNC)									
8	U26MC101	Induction Program – Universal Human Values – I	T	MCC	3	0	0	0	3
9	U26TA101	தமிழர்மரபு / Heritage of Tamils	T	MCC	1	0	0	0	1

SEMESTER II

SL. NO.	COURSE CODE	COURSE TITLE	COURSE TYPE	CATEGORY	L	T	P	J	C
1	U26EN221	English Proficiency – II	L	HSMC	0	0	2	0	1
2	U26MA201	Differential Equation and Complex Analysis	T	BSC	3	1	0	0	4
3	U26PH211	Physics for Electronics Engineering	TWL	BSC	2	0	2	0	3
4	E26EE211	Electric Circuit Analysis	TWL	PCC	3	0	2	0	4
5	U26CS211	Python programming and its applications	TWL	ESC	3	0	2	0	4
6	U26EE212	AI for Electrical Engineers	TWL	ESC	2	0	2	0	3
7	U26CEC01	Design Thinking	TWL	PCC	1	0	2	0	2
Total					14	1	12	0	21
MANDATORY CREDIT COURSES (MCC - Non CGPA) / MANDATORY NON-CREDIT COURSES (MNC)									
8	U26MC201	Universal Human Values – II	T	MCC	3	0	0	0	3
9	U26TA201	தமிழரும் தொழில்நுட்பமும் / Tamils and Technology	T	MCC	1	0	0	0	1

F T I T L E	C O U R S E	C A
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SE TITLE	COURSE	C
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*Lateral Entry Students Only

SEMESTER V

Sl. NO.	COURSE CODE	COURSE TITLE	COURSE TYPE	CATEGORY	L	T	P	J	C
1		Transmission and Distribution	T	PCC	3	0	0	0	3
2		Control Systems	T	PCC	3	1	0	0	4
3		Measurements and Instrumentation	T	PCC	3	0	0	0	3
4		Microprocessor and Microcontrollers	TWL	PCC	2	0	2	0	3
5		Professional Elective – I	T	PEC	3	0	0	0	3
6		Open Elective – II	T	OEC	3	0	0	0	3
7		Control and Instrumentation Laboratory	L	PCC	0	0	4	0	2
8		Design and Prototype II	J	EEC	0	0	0	4	2
9		Professional Skill Training – II	L	EEC	0	0	4	0	2
Total					17	1	10	4	25

SEMESTER VI

Sl. NO.	COURSE CODE	COURSE TITLE	COURSE TYPE	CATEGORY	L	T	P	J	C
1		Power System Analysis	T	PCC	3	1	0	0	4
2		Power Electronics	T	PCC	3	0	0	0	3
3		Electric Vehicle Technology	TWL	PCC	2	0	2	0	3
4		Power System Operation and Control	T	PCC	3	0	0	0	3
5		Solid State Drives	T	PCC	3	0	0	0	3
6		Embedded Systems	T	PCC	3	0	0	0	3
7		Professional Elective – II	T	PEC	3	0	0	0	3
8		Power System Laboratory	L	PCC	0	0	4	0	2
Total					20	1	6	0	24

SEMESTER VII

SL. NO.	COURSE CODE	COURSE TITLE	COURSE TYPE	CATEGORY	L	T	P	J	C
1		High Voltage Engineering	T	PCC	3	0	0	0	3
2		Protection and Switchgear	T	PCC	3	0	0	0	3
3		Professional Ethics	T	HSMC	3	0	0	0	3
4		Total Quality Management	T	HSMC	3	0	0	0	3
5		Professional Elective – III	T	PEC	3	0	0	0	3
6		Professional Elective – IV	T	PEC	3	0	0	0	3
7		Project work Phase – I	J	EEC	0	0	0	4	2
Total					18	0	0	4	20

SEMESTER VIII

SL.NO	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	J	C
1		Internship / Industrial Training*	EEC	0	0	0	0	2
2		Project work Phase – II	EEC	0	0	0	20	10
Total				0	0	0	20	12

TOTAL CREDITS:165

SEMESTER I

U26EN121	ENGLISH PROFICIENCY – I (common to all programmes)	Category: HSMC				
		L	T	P	J	C
		0	0	2	0	1

PRE-REQUISITES:

- Nil

COURSE OBJECTIVES:

- To build basic English communication skills through practical language activities.
- To improve pronunciation, vocabulary, and grammar for effective communication.

COURSE OUTCOMES:

COURSE OUTCOMES:		BT Mapped (Highest Level)
On completion of the course, the students will be able to		
CO1	Demonstrate the ability to understand and use basic English in everyday communication.	Understand
CO2	Apply appropriate grammar, vocabulary, and pronunciation in simple spoken and written contexts.	Apply
CO3	Interpret technical documents and case studies and communicate key insights gained from the life stories of scientists, innovators and entrepreneurs	Analyze

CO PO MAPPING

[illegible]

SYLLABUS:**UNIT I - READING AND INTERPRETATION****10**

Vocabulary in context-Discourse Markers-Reading Techniques-Oral, Reading: Rhythm and Intonation- Analytical Interpretation-Comprehension and story Analysis-Evaluative Reading of Summaries and Findings from Journals / Articles / Online Content.

UNIT II - PRINT MEDIA AND LITERATURE**10**

Print Media Study: Editorials, Views and Features Articles-Short Story: The Last Leaf-OHenry-Science Fiction: The Time Machine-H.G.Wells .

UNIT III - CASE STUDIES AND INSPIRING INNOVATORS**10**

Reading Technical Documents (Guidelines & Manuals)-Case Study Review (Field Based Learning)-A Case Analysis-Life Stories of Renowned Scientists and Innovators-Inspiring Journeys of Entrepreneurs and Emerging Ventures.

Contact Periods:

Lecture: -

Tutorial: -

Practical: 30 Periods

Total: 30 Periods**TEXT BOOKS:**

1. O. Henry. *The Complete Short Stories of O. Henry*. Dover Publications, 2019. Comprehensive collection of O. Henry's stories, including *The Last Leaf*.

2.H.G.Wells. *The Time Machine* Penguin Classics 2018. Standard academic edition with notes and analysis for study.

REFERENCES:

1.Well.H.G *The Time Machine* Penguin Classics 2012 [http://library.org/books/OL26970973M/The time machine_%28Penguin_Classics%29](http://library.org/books/OL26970973M/The%20time%20machine_%28Penguin_Classics%29).

2.McWhorter, Kathleen, and Brette M. Sember. *College Reading and Study Skills*. 14th ed., Pearson, 2021. <https://www.pearson.com/en-us/pearsonplus/p/9780137530809>

EVALUATION PATTERN:

Continuous Internal Assessments		End Semester Examinations (practical)	
Practical		Test/Report Evaluation	Presentation & Viva
Evaluation of students work, Observation, Record, etc.	Lab test (model practical)		
45 (100)	15 (100)	30 (80)	10 (20)
60		40	
Total		100	

U26MA101	MATRICES AND CALCULUS (common to all programmes)	Category: BSC				
		L	T	P	J	C
		3	1	0	0	4

PRE-REQUISITES:

- Nil

COURSE OBJECTIVES:

- To develop the use of matrix algebra techniques that is needed by engineers for practical applications
- To familiarize the students with differential calculus
- Analyze vector fields using gradient, divergence, and curl; verify and apply Green's, Gauss divergence in practical problems
- To make the students understand various techniques of integration
- To acquaint the student with mathematical tools needed in evaluating multiple integrals and their applications.

COURSE OUTCOMES:

On completion of the course, the students will be able to		BT Mapped (Highest Level)
CO1	Use the matrix algebra methods for solving practical problems	Apply
CO2	Apply differential calculus tools in solving various application problems.	Apply
CO3	Compute the total derivatives and extreme values of multivariable functions	Apply
CO4	Compute double and triple integrals in Cartesian coordinates to determine geometric areas and volumes.	Apply
CO5	Analyze vector fields using gradient, divergence, and curl; verify and apply Green's, Gauss divergence in engineering problems	Apply

CO PO MAPPING

[illegible]

SYLLABUS:**UNIT -I MATRICES****9**

Characteristic equation - Eigen values and Eigenvectors of a real matrix – Properties of Eigen Values and Eigen Vectors - Cayley - Hamilton theorem – Orthogonal transformation of a real symmetric matrix to the diagonal form – Quadratic form – Nature of Quadratic forms - Reduction of quadratic form to the canonical form by orthogonal transformation. – Applications: Stretching of an elastic membrane.

UNIT-II DIFFERENTIAL CALCULUS**9**

Functions - graph of functions - Limit of a function – Continuity - Limits at infinity - Maxima and Minima of functions of single variable - Mean value theorem - Effect of derivatives on the shape of a graph.

UNIT III FUNCTIONS OF SEVERAL VARIABLES**9**

Functions of two or more variables – Partial derivatives – Homogeneous functions and Euler's theorem- Total differential –Chain Rule- Applications: Maxima and minima – Constrained maxima and minima – Lagrange's multiplier method.

UNIT IV MULTIPLE INTEGRALS**9**

Double integration in cartesian coordinates – Change of order of integration – Application: Area between two curves – Triple integration in cartesian coordinates – Volume as triple integrals.

UNIT V VECTOR CALCULUS**9**

Gradient, divergence and curl – Directional derivative – Irrotational and Solenoid vector fields - Green's theorem in a plane - Gauss divergence theorem (excluding proofs) – Verification of theorem and simple applications.

Contact Periods:

Lecture: 45 Periods

Tutorial: 15 Periods

Practical: -

Total: 60 Periods**TEXT BOOKS:**

1. George B. Thomas Jr., Maurice D. Weir and Joel R. Hass, Thomas' Calculus: Early Transcendentals, 13th Edition, Pearson Education, 2014
2. P. Kandasamy, K. Thilagavathi and K. Gunavathi, Engineering Mathematics, Reprint Edition, S.Chand and Co., New Delhi, 2026

REFERENCES:

1. Engineering Mathematics – S. Narayanan, T. K. Manicavachagom Pillay & G. Ramanaiah, (Latest Reprint), S. Viswanathan Publishers.

2. Engineering Mathematics – B. K. Pal & K. Das, (Latest Edition), Oxford University Press India.
3. Advanced Engineering Mathematics, Erwin Kreyszig, 10th Edition (2018), Wiley India
4. Grewal B.S., “Higher Engineering Mathematics” 45th Edition, Khanna Publishers, New Delhi, 2024

EVALUATION PATTERN:

Continuous Assessments			End Semester Examinations
CIAT 1	CIAT 2	Activities	
40%			60%
16(60)	16(60)	8(40)	60(100)

- Nil

- To understand the principles of electrochemistry and EMF calculations.
- To learn corrosion mechanisms and methods of prevention.
- To study batteries and fuel cells for energy applications.
- To Analyze organic electronic materials and their device applications
- To learn insulating materials and their properties for engineering use.

On completion of the course, the students will be able to		BT Mapped (Highest Level)
CO1	Apply electrochemical concepts to analyze cells and calculate EMF.	Apply
CO2	Analyze corrosion and select suitable control methods.	Analyze
CO3	Analyze the process of combustion and their fabrication.	Evaluate
CO4	Analyze organic electronic materials and their device applications	Analyze
CO5	Apply knowledge of insulating materials in electrical and electronic applications.	Apply

[illegible]

1. Estimation of total hardness of water by EDTA method.
2. Determination of rate of corrosion of mild steel by weight loss method.

3. Determination of chloride content in water sample by argentometric method.
4. Determination of pKa of a weak acid using glass electrode (pH sensor).
5. Determination of strength of HCl acid by using pH meter.
6. Estimation of Ferrous iron by potentiometric Titration.
7. To find Viscosity of a Transparent Liquid (Virtual lab) (<https://bop-iitk.vlabs.ac.in/exp/liquid-viscosity/index.html>)

Contact Periods:

Lecture: 30 Periods

Tutorial: -

Practical: 30 Periods

Total: 60 Periods**TEXT BOOKS:**

1. Engineering Chemistry, P. C. Jain & Trishla Jain, 2023, 17th Edition, Dhanpat Rai & Co. (P) Ltd., New Delhi. ISBN-13: 978-9352165728
2. Engineering Chemistry, S. S. Dara & S. S. Umare, 2022 Edition, S. Chand Publications, New Delhi. ISBN-13: 978-9352533241.

REFERENCES:

1. Friedrich Emich, "Engineering Chemistry", 2nd Edition, Scientific International Pvt. Ltd, New Delhi, 2014.
2. Prasanta Rath, "*Engineering Chemistry*", 1st Edition, Cengage Learning India, Pvt. Ltd, Delhi, 2015
3. V. Raghavan & J. R. Gopalakrishnan, *Engineering Chemistry*, McGraw-Hill Education.
4. Linden & Reddy, Handbook of Batteries, McGraw-Hill Education.
5. *Energy storage and conversion devices*, Anurag Gaur, A. L. Sharma, Anil Arya, 1st Edition, 2021, CRC Press, Taylor and Francis Group, ISBN: 9781003141761.
6. <https://nptel.ac.in/courses/113/104/113104008>
7. https://onlinecourses.nptel.ac.in/noc24_me34/preview%20%20
8. <https://www.vlab.co.in/broad-area-chemical-sciences>

EVALUATION PATTERN:

Continuous Assessments					End Semester Examinations
Theory			Practical / Project		Theory
CIAT 1	CIAT 2	Activities	Evaluation of Student's work, Observation, Record, etc.	Lab Test	
35%			15%		50%
15(60)	15(60)	5(40)	10(75)	5(25)	50(100)

U26ME101	BASIC CIVIL AND MECHANICAL ENGINEERING	Category: ESC				
		L	T	P	J	C
		3	0	0	0	3

PRE-REQUISITES:

1. Day to day knowledge on the Civil and Mechanical systems
2. Properties of basic materials
3. Elementary information of building construction.
4. Basic knowledge on different forms of energy.
5. Fundamentals of different states of fluids

COURSE OBJECTIVES:

- To impart basic knowledge on Civil and Mechanical Engineering.
- To familiarize the materials and measurements used in Civil Engineering.
- To provide the exposure on the fundamental elements of civil engineering structures.
- To enable the students to distinguish the components and working principle of power plant units, IC engines, and R & AC system.
- To provide the expose on the components and working principle of R & AC system.

COURSE OUTCOMES:

On completion of the course, the students will be able to		BT Mapped (Highest Level)
CO1	Appreciate the Civil and Mechanical Engineering components of Projects.	Understand
CO2	Explain the usage of construction material and measure distances and area by surveying	Understand
CO3	Demonstrate the different building components and structures.	Apply
CO4	Identify the components used in power plant cycle. Demonstrate working principles of petrol and diesel engine.	Apply
CO5	Elaborate the components of refrigeration and Air conditioning cycle.	Apply

CO PO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
C01	2	-	-		-	3	2	2	-	-	-	1	1
C02	2	2	-	1	3	-	-	-	-	-	-	1	-
C03	2	2	-	1	3	-	-	-	-	-	-	1	-
C04	2	2	-	-	3	-	-	-	-	-	-	3	1
C05	2	2	-	-	3	-	-	-	-	-	-	2	1

Correlation Levels; 1.Slight (low) 2. Moderate (Medium) 3. Substantial (High)

SYLLABUS:

Unit I	SCOPE OF CIVIL AND MECHANICAL ENGINEERING	9
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Overview of Civil Engineering - Civil Engineering contributions to the welfare of Society – Specialized sub disciplines in Civil Engineering – Structural, Construction, Geotechnical, Environmental, Transportation and Water Resources Engineering

Overview of Mechanical Engineering - Mechanical Engineering contributions to the welfare of Society – Specialized sub disciplines in Mechanical Engineering - Production, Automobile, Energy Engineering - Interdisciplinary concepts in Civil and Mechanical Engineering.

Unit II **SURVEYING AND CIVIL ENGINEERING MATERIALS** **9**

Surveying: Objects – classification – principles – measurements of distances – angles – leveling – determination of areas– contours - examples.

Civil Engineering Materials: Bricks – stones – sand – cement – concrete – steel - timber - modern Materials

Unit III **BUILDING COMPONENTS AND STRUCTURES** **9**

Foundations: Types of foundations - Bearing capacity– Requirement of good foundations.

Civil Engineering Structures: Brick masonry – stonemasonry – beams – columns – lintels – roofing
– flooring – plastering – floor area, carpet area - Types of Bridges and Dams –water supply - sources and
quality of water - Rainwater harvesting - introduction to high way and railway

Unit IV **INTERNAL COMBUSTION ENGINES AND POWER PLANTS** **9**

Classification of Power Plants - Working principle of steam, wind, solar, Hydro - electric and Nuclear Power plants — working principle of Boilers, Turbines, Reciprocating Pumps (single acting and double acting) and Centrifugal Pumps. Internal combustion engines as automobile power plant – Working principle of Petrol and Diesel Engines – Four stroke and two stroke cycles – Comparison of four stroke and two stroke engines

Unit V REFRIGERATION AND AIR CONDITIONING SYSTEM**9**

Terminology of Refrigeration and Air Conditioning, Principle of vapour compression and absorption system–
Layout of typical domestic refrigerator–Window and Split type room Air conditioner

Contact Periods:

Lecture: 45 Periods

Tutorial: -

Practical: -

Total: 45 Periods**TEXT BOOKS:**

1. G. Shanmugam, M. S. Palanichamy, S Ravindran, Basic Civil and Mechanical Engineering 2nd Edition, McGraw Hill Publishing Co, 2024
2. S.S. Bhavikatti, Basic Civil and Mechanical Engineering, New Age International (P) Ltd., Publishers, 2024

REFERENCES:

1. Anop Geol, Basic Civil and Mechanical Engineering, Technical Publications, 2026
2. S.S. Bhavikatti, Introduction to Civil Engineering, New Age International Publishers. 2022, First Edition
3. Omni Srikanth & M. Sreenivasa Reddy, Basic Civil and Mechanical Engineering, Imprint : S Chand Publishing, 2024
4. K. Venugopal, Dr. V. Prabhu Raja, G. Sreekanjana , Basic Civil and Mechanical Engineering
5. Anuradha Publications, 2017

EVALUATION PATTERN:

Continuous Assessments			End Semester Examinations
CIAT 1	CIAT 2	Activities	
40%			60%
16 (60)	16 (60)	8 (40)	60 (100)

U26CS111	PROBLEM SOLVING USING C PROGRAMMING	Category: ESC				
		L	T	P	J	C
		3	0	2	0	4

PRE-REQUISITES:

- Nil

COURSE OBJECTIVES:

- Understand the fundamentals of algorithms, flowcharts, and structured programming concepts.
- Develop C programs using decision making and iterative constructs.
- Apply arrays, strings, functions, and pointers for engineering problem solving.
- Implement structures and file handling for real-world data processing.
- Develop practical programming skills through laboratory implementation.

COURSE OUTCOMES:

On completion of the course, the students will be able to		BT Mapped (Highest Level)
CO1	Explain algorithms, flowcharts, and C programming fundamentals	Understanding
CO2	Develop C programs using decision making and looping constructs	Apply
CO3	Apply arrays and strings for engineering problem solving.	Apply
CO4	Implement functions and pointers in modular programming	Apply
CO5	Develop complete applications using structures and file handling	Apply

CO PO MAPPING

[illegible]

SYLLABUS:

UNIT I – PROBLEM SOLVING BASICS AND C FUNDAMENTALS 9

Introduction to problem solving – steps in problem solving – algorithm – flowchart – pseudocode – structure of C program – character set – tokens – keywords – identifiers – constants – variables – data types – operators – input and output statements.

UNIT II – DECISION MAKING AND LOOPING 9

Conditional statements – if, if-else, nested if, switch – looping statements – for, while, do-while – jump statements – break, continue.

UNIT III – ARRAYS AND STRINGS 9

One-dimensional arrays – two-dimensional arrays – matrix operations – string declaration – string handling functions – applications.

UNIT IV – FUNCTIONS AND POINTERS 9

Function declaration and definition – call by value – call by reference – recursion – pointers – pointer arithmetic – pointers with arrays.

UNIT V – STRUCTURES AND FILE HANDLING 9

Structures – nested structures – arrays of structures – file handling – file opening and closing – read, write and append operations.

LIST OF EXPERIMENTS

1. Write a C program to find the sum, average, and percentage of three numbers
2. Write a C program to swap two numbers with and without temporary variable
3. Write a C program to calculate simple interest and compound interest
4. Write a C program to find the largest of three numbers.
5. Write a C program to generate Fibonacci series up to n terms
6. Write a C program to sort array elements in ascending order
7. Write a C program using function to find GCD of two numbers
8. Write a C program using structure to store student details and display mark sheet
9. Write a C program to write and read data from a file
10. Write a mini program for electricity bill calculation using file handling

Contact Periods:

Lecture: 45 Periods

Tutorial: -

Practical: 30 Periods

Total: 75 Periods**TEXT BOOKS:**

1. E. Balagurusamy, *Programming in ANSI C*, McGraw Hill Education, 8th Edition.
2. Brian W. Kernighan & Dennis M. Ritchie, *The C Programming Language*, Pearson Education, 2nd Edition.

REFERENCES:

1. Brian W. Kernighan & Dennis M. Ritchie, *The C Programming Language*, Pearson Education, 2nd Edition.
2. Yashavant Kanetkar, *Let Us C*, BPB Publications, Latest Edition.
3. Herbert Schildt, *C: The Complete Reference*, McGraw Hill Education.
4. Paul Deitel & Harvey Deitel, *C: How to Program*, Pearson Education.

EVALUATION PATTERN:

Continuous Assessments					End Semester Examinations
Theory			Practical / Project		Theory
CIAT 1	CIAT 2	Activities	Evaluation of Student's work, Observation, Record, etc.	Lab Test	
35 %			15 %		50%
15(60)	15(60)	5(40)	10(75)	5(25)	50(100)

U26ME111	ENGINEERING GRAPHICS	Category: ESC				
		L	T	P	J	C
		2	0	2	0	3

COURSE OBJECTIVES:

- To impart knowledge on dimensions and drawing standards.
- To explore the orthographic projection of lines and solids.
- To provide the understanding of orthographic, isometric and perspective views.

COURSE OUTCOMES:

Upon completion of the course, the student will be able to		BTMapped (Highest Level)
CO1	Explain the advantages of engineering drawing in engineering applications.	Understand
CO2	Apply the concepts of projections in formulating various solid parts in engineering systems.	Apply
CO3	Analyse the various view and interpret the engineering drawings	Analyze
CO4	Use CAD tools for creation of various models.	Apply
CO5	Critically think and develop innovative models.	Apply

CO PO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	1	2	-	2	-	-	-	-	3	2	2	2
CO2	3	1	2	-	2	-	-	-	-	3	2	2	2
CO3	3	1	2	-	2	-	-	-	-	3	2	2	2
CO4	3	1	2	-	2	-	-	-	-	3	2	2	2
CO5	3	1	2	-	2	-	-	-	-	3	2	2	2
Correlation Levels; 1.Slight (low) 2. Moderate (Medium) 3. Substantial (High)													

SYLLABUS:**MODULE I: Fundamentals****12**

Drawing instruments, Drawing standards (BIS), Lettering in engineering, Sheet layout, elements of dimensioning, Systems of dimensioning. Free hand sketching of 2D & 3D objects, Conics – Ellipse, Parabola and Hyperbola.

Activities: Virtual Demonstration of Conics and Cycloids.

MODULE II: Orthographic Projection 12

First angle projection, Projection of points, straight lines and planes.

Activities: Virtual Demonstration of Points, Lines and Planes.

MODULE III: Projection of Solids 12

Simple Solids, Section of Solids, Development of Surfaces.

Activities: Development of models of various solids and virtual demonstration of sectioning, CAD modelling of 2D objects.

MODULE IV: Isometric Projection 12

Isometric Scale, Projection of Simple solids.

Activities: Conversion of 3D into 2D orthographic views, CAD modelling of 3D objects.

MODULE V: Perspective Projection 12

Simple solids projection.

Activities: Virtual demonstration of perspective views.

Contact Periods:

Lecture: 30 Periods

Tutorial: -

Practical: 30 Periods

Total: 60 Periods

REFERENCES:

1. Natarajan, K. V. (2025). A Text Book of Engineering Graphics. Dhanalakshmi Publisher.
2. Venugopal, K., & Prabhu Raja, V. (2022). Engineering Drawing + AutoCAD. New Age International Publishers.

E-Resources:

1. CAD Software – <https://www.freecadweb.org/>
2. Engineering Drawing and Computer Graphics, Prof. Rajaram Lakkaraju (IIT Kharagpur) – https://onlinecourses.nptel.ac.in/noc22_me105/preview.
3. MIT Design Handbook: Engineering Drawing and Sketching – https://ocw.mit.edu/courses/2-007-design-and-manufacturing-i-spring-2009/pages/related-resources/drawing_and_sketching/

EVALUATION PATTERN:

Continuous Assessments					End Semester Examinations
Theory			Practical / Project		Theory
CIAT 1	CIAT 2	Activities	Evaluation of Student's work, Observation, Record, etc.	Lab Test	
35%			15%		50%
15(60)	15(60)	5(40)	10(75)	5(25)	50(100)

U26ME121	ENGINEERING PRACTICES LABORATORY	Category: PCC				
		L	T	P	J	C
		0	0	4	0	2

PRE-REQUISITES:

- Nil

COURSE OBJECTIVES:

The course aims to:

1. Drawing pipe line plan; laying and connecting various pipe fittings used in common household plumbing work; Sawing; planing; making joints in wood materials used in common household wood work.
2. Welding various joints in steel plates using arc welding work; Machining various simple processes like turning, drilling, tapping in parts; Assembling simple mechanical assembly of common household equipments; Making a tray out of metal sheet using sheet metal work.
3. Soldering and testing simple electronic circuits; Assembling and testing simple electronic components on PCB Wiring various electrical joints in common household electrical wire work.

COURSE OUTCOMES:

On completion of the course, the students will be able to		BT Mapped (Highest Level)
CO1	Draw pipe line plan; lay and connect various pipe fittings used in common household plumbing work; Saw; plan; make joints in wood materials used in common household woodwork.	Apply
CO2	Wire various electrical joints in common household electrical wire work	Apply
CO3	Weld various joints in steel plates using arc welding work; Machine various simple processes like turning, drilling, tapping in parts; Assemble simple mechanical assembly of common household equipments; Make a tray out of metal sheet using sheet metal work.	Apply
CO4	Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.	Apply

CO PO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	-	-	1	1	1	-	-	-	-	2	-
CO2	3	2	-	3	1	1	1	-	-	-	-	2	-
CO3	3	2	-	2	1	1	1	-	-	-	-	2	-
CO4	3	2	-	2	1	1	1	-	-	-	-	2	-

Correlation Levels; 1.Slight (low) 2. Moderate (Medium) 3. Substantial (High)

SYLLABUS:

GROUP – A (CIVIL & ELECTRICAL)

PART I CIVIL ENGINEERING PRACTICES

15

PLUMBING WORK

- a) Connecting various basic pipe fittings like valves, taps, coupling, unions, reducers, elbows and other components which are commonly used in household.
- b) Preparing plumbing line sketches.
- c) Laying pipe connection to the suction side of a pump
- d) Laying pipe connection to the delivery side of a pump.
- e) Connecting pipes of different materials: Metal, plastic and flexible pipes used in household appliances

WOOD WORK

- a) Sawing.
- b) Planing.
- c) Making joints like T-Joint, Mortise joint, Tenon joint and Dovetail joint.

Wood Work Study:

- a) Studying joints in door panels and wooden furniture.
- b) Studying common industrial trusses using models.

PART II ELECTRICAL ENGINEERING PRACTICES

15

- a) Introduction to switches, fuses, indicators and lamps - Basic switch board wiring with lamp, fan and three pin socket
- b) Staircase wiring
- c) Fluorescent Lamp wiring with introduction to CFL and LED types.
- d) Energy meter wiring and related calculations/ calibration
- e) Study of Iron Box wiring and assembly
- f) Study of Fan Regulator (Resistor type and Electronic type using Diac/Triac/quadrac)
- g) Study of emergency lamp wiring/Water heater

PART III MECHANICAL ENGINEERING PRACTICES

15

WELDING WORK:

Welding of Butt Joints, Lap Joints, and Tee Joints using arc welding.

- b) Practicing gas welding.

BASIC MACHINING WORK:

- a) simple Turning.
- b) simple Drilling.
- c) simple Tapping

ASSEMBLY WORK:

- a) Assembling a centrifugal pump.
- b) Assembling a household mixer.
- c) Assembling an airconditioner.

SHEET METAL WORK:

- a) Making of a square tray

FOUNDRY WORK:

- a) Demonstrating basic foundry operations.

PART IV ELECTRONICS ENGINEERING PRACTICES**15****SOLDERING WORK:**

- a) Soldering simple electronic circuits and checking continuity.

ELECTRONIC ASSEMBLY AND TESTING WORK:

- a) Assembling and testing electronic components on a small PCB.

ELECTRONIC EQUIPMENT STUDY:

- a) Study an elements of smart phone.
- b) Assembly and dismantle of LED TV.
- c) Assembly and dismantle of computer/ laptop

Contact Periods:

Lecture: -

Tutorial :

Practical: 60 Periods

Total: 60 Periods**EVALUATION PATTERN:**

Continuous Internal Assessments		End Semester Examinations (practical)	
		Test/Report Evaluation	Presentation & Viva
Practical			
Evaluation of students work, Observation, Record, etc.	Lab test (model practical)		
45(100)	15(100)	30(80)	10(20)
60		40	
Total		100	

U26MC101	INDUCTION PROGRAM - UNIVERSAL HUMAN VALUES – I	Category: MCC				
		L	T	P	J	C
		3	0	0	0	3

PRE-REQUISITES:

- Nil

COURSE OBJECTIVES:

- Development of a holistic perspective based on self-exploration about themselves (human beings), family, society, and nature/existence
- Understanding (or developing clarity) of the harmony in the human being, family, society, and nature/existence
- Strengthening of self-reflection

COURSE OUTCOMES:

On completion of the course, the students will be able to		BT Mapped (Highest Level)
CO1	Recognize the essentials of human values and skills	Understand
CO2	Analyse connection between profession and happiness	Understand
CO3	Develop appropriate technologies and management patterns to create harmony in family and society	Understand
CO4	Evaluate the significance of trust, mutually satisfying human behaviour, and enriching interaction with nature	Understand
CO5	Demonstrate professional and ethical responsibility	Understand

CO PO MAPPING

[illegible]

SYLLABUS:**UNIT I: INTRODUCTION - NEED, BASIC GUIDELINES, CONTENT, AND PROCESS FOR VALUE EDUCATION 9**

Purpose and motivation for the course – Self-Exploration: what is it – Its content and process; ‘Natural Acceptance’ and Experiential Validation as the mechanism for self-exploration – Continuous Happiness and Prosperity – A look at basic Human Aspirations – Right understanding, Relationship, and Physical Facilities – the basic requirements for the fulfillment of aspirations of every human being with their correct priority – Understanding Happiness and Prosperity correctly – A critical appraisal of the current scenario – Method to fulfill the above human aspirations: understanding and living in harmony at various levels

UNIT II: HARMONY IN THE HUMAN BEING - HARMONY IN MYSELF 9

Understanding human beings as a co-existence of the sentient ‘I’ and the material ‘Body’ – Understanding the needs of Self (‘I’) and ‘Body’ – Happiness and Convenience – Understanding the Body as an instrument of ‘I’ (I being the doer, seer, and enjoyer) – Understanding the harmony of I with the Body: Self-control and Welfare; correct appraisal of Physical needs – Meaning of Prosperity in detail – Programs to ensure Self-control and Welfare

UNIT III: HARMONY IN THE FAMILY AND SOCIETY 9

Understanding values in human – Human relationships: the meaning of Justice (nine universal values in relationships) and the program for its fulfillment to ensure satisfaction – Trust and Respect as the foundational values of relationship – Understanding the meaning of Trust – Difference between intention and competence – Understanding the meaning of Respect – The difference between respect and differentiation; and the other salient values in relationship – Understanding the harmony in the society (society being an extension of the family): Peace, Prosperity, Courage, and Coexistence as comprehensive Human Goals – Visualizing a universal harmonious order in society – Undivided Society – Universal Order from family to world family

UNIT IV: HARMONY IN THE NATURE AND EXISTENCE 9

Understanding the harmony in Nature, Interconnectedness, and mutual fulfillment among the four orders of nature – Recyclability and self-regulation in nature – Understanding Existence as a Co-existence of mutually interacting units in an all-pervasive space – Holistic perception of harmony at all levels of existence – Practice sessions to discuss human beings as the cause of imbalance in nature (film “Home” can be used), pollution, depletion of resources and role of technology, etc

UNIT V: HARMONY ON PROFESSIONAL ETHICS 9

Natural acceptance of human values – Definiteness of Ethical Human Conduct – Basis for Humanistic Education – Humanistic Constitution, and Humanistic Universal Order – Competence in professional ethics – Ability to utilize the professional competence for augmenting universal human order, Ability to identify the scope and characteristics of people, friendly and eco-friendly production systems, and Ability to identify and develop appropriate technologies and management patterns for the above production systems – Case studies of typical holistic technologies, management models, and production systems – Strategy for a transition from

the present state to Universal Human Order – At the level of the individual: as socially and ecologically responsible engineers, technologists, and managers – At the level of society: as mutually enriching institutions and organizations

Contact Periods:

Lecture: 45 Periods

Tutorial: -

Practical: -

Total: 45 Periods**TEXT BOOKS:**

1. R R Gaur, R. Asthana, G P Bagaria, *A Foundation course in Human Values and Professional Ethics*, 3rd Edition, Excel Books, New Delhi, 2024
2. Prof. K. V. Subba Raju, *Success Secrets for Engineering Students*, Smart Student Publications, 3rd Edition, 2013

REFERENCES:

1. Ivan Illich, *Energy & Equity*, The Trinity Press, Worcester, and HarperCollins, USA, 1974
2. E. F. Schumacher, *Small is Beautiful: a study of economics as if people mattered*, Blond & Briggs, Britain, 1973

EVALUATION PATTERN:

Continuous Internal Assessments	
Assessment 1 (100 Marks)	
Total	100

[illegible]

SYLLABUS:**UNIT I LANGUAGE AND LITERATURE 3**

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 II HERITAGE - ROCK ART PAINTINGS TO MODERN ART - SCULPTURE 3

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 III FOLK AND MARTIAL ARTS 3

Tattooing, basket weaving, Therukoothu, Karagattam, Villu Pattu, Kaniyan Koothu, Oyillattam, Leatherpuppetry, Silambattam, Valari, Tiger dance - Sports and Games of Tamils.

UNIT IV THINAI CONCEPT OF TAMILS 3

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 V CONTRIBUTION OF TAMILS TO INDIAN NATIONAL MOVEMENT AND INDIAN CULTURE 3

Contribution of Tamils to Indian Freedom Struggle - The Cultural Influence of Tamils over the other parts of India - SelfRespect Movement - Role of Siddha Medicine in Indigenous Systems of Medicine - Inscriptions & Manuscripts - Print History of Tamil Books.

Contact Periods:

Lecture: 15 Periods Tutorial: - Practical: - **Total: 15 Periods**

TEXT BOOKS:

1. Ravikrishna K, Heritage of Tamils, Sri Krishna publications, First Edition, 2023.
2. S. Priyadharshini, Heritage of Tamils, V. K. Publications.

REFERENCES:

1. History, People and Culture of Tamil Nadu – K.K. Pillai, International Institute of Tamil Studies, C.P.T Campus, Chennai.
2. Computer Tamil – Dr. Il. Sundaram, Vikatan Publications, Anna Salai, Chennai, December 2016.

- Nil

- தமிழின் செம்மொழி தன்மையையும் அதன் விரிவான இலக்கிய பாரம்பரியத்தை கற்றறிதல்.
- தமிழர் கலாச்சாரத்தில் உள்ள நுண்கலை மரபுகளைப் பரிசீலித்தல்.
- இந்திய விடுதலைப் போராட்டத்தில் தமிழர்களின் பங்களிப்பை உணர்தல்.

On completion of the course, the students will be able to		BT Mapped (Highest Level)
CO1	தமிழ் மொழியின் விரிவான இலக்கியத்தையும் அதன் செம் மொழி தன்மையையும் புரிந்து கொள்ளுதல்.	Understand
CO2	பழங்கால மக்களின் சிற்பக்கலை, ஓவியக்கலை மற்றும் இசைக்கருவிகளின் பாரம்பரியத்தை புரிந்து கொள்ளுதல்.	Understand
CO3	தமிழர் நாட்டுப்புறக் கலைகள் மற்றும் போர்க்கலைகளை ஆய்வு செய்தல்.	Understand
CO4	திணை கருத்துக்கள், வர்த்தகம் மற்றும் சோழர் பேரரசின் வெற்றிகளை உணர்தல்.	Understand
CO5	இந்திய விடுதலைப் போராட்டத்தில் தமிழர்களின் பங்களிப்பு, சுயமரியாதை இயக்கம் மற்றும் சித்த மருத்துவத்தின் முக்கியத்துவத்தை புரிந்து கொள்ளுதல்	Understand

[illegible]

SYLLABUS:**UNIT I மொழி மற்றும் இலக்கியம் 3**

இந்தியமொழிக் குடும்பங்கள்- திராவிட மொழிகள் -தமிழ் ஒரு செம்மொழி-தமிழ் செவ்விலக்கியங்கள் -சங்க இலக்கியத்தின் சமய சார்பற்ற தன்மை சங்க இலக்கியத்தில் பகிர்தல் அறம்- திருக்குறள் மேலாண்மை கருத்துக்கள்- தமிழ்காப்பியங்கள்- தமிழகத்தில் சமண பௌத்தவ சமயங்களில் தாக்கம் -பக்தி இலக்கியம் ஆழ்வார்கள் மற்றும் நாயன்மார்கள் சிற்றிலக்கியங்கள்- தமிழில் நவீன இலக்கியத்தின் வளர்ச்சி- தமிழ் இலக்கிய வளர்ச்சியில் பாரதியார் மற்றும் பாரதிதாசன் ஆகியோரின் பங்களிப்பு.

UNIT II மரபு-பாறை ஓவியங்கள் முதல் நவீன ஓவியங்கள் வரை- சிற்பக்கலை 3

நடு கல் முதல் நவீன சிற்பங்கள் வரை ஐம்பொன் சிலைகள் பழங்குடியினர் மற்றும் அவர்கள் தயாரிக்கும் கைவினைப் பொருட்கள் பொம்மைகள் தேர் செய்யும் கலை சுடுமண் சிற்பங்கள் நாட்டுப்புற தெய்வங்கள் குமரிமுனையில் திருவள்ளுவர்சிலைஇசைக்கருவிகள்மிருதங்கம்,பறை,வீணை,யாழ்,நாதஸ்வரம், தமிழர்களின் சமூக பொருளாதார வாழ்வில் கோயில்களின் பங்கு.

UNIT III நாட்டுப்புறக் கலைகள் மற்றும்வீரவிளையாட்டுக்கள் 3

தெருக்கூத்து, கரகாட்டம், வில்லுப்பாட்டு, கணியான்கூத்து,ஒயிலாட்டம் ,தோல்பாவைகூத்து, சிலம்பாட்டம், வளரி, புலியாட்டம், தமிழர்களின் விளையாட்டுக்கள்.

UNIT IV தமிழர்களின்திணைக்கோட்பாடுகள் 3

தமிழகத்தின் தாவரங்களும் விலங்குகளும்-தொல்காப்பியம் மற்றும் சங்க இலக்கியத்தில் அகம் மற்றும் புற கோட்பாடுகள் தமிழர்கள் போற்றிய அறக்கோட்பாடுகள்-சங்க காலத்தில் தமிழகத்தில் எழுத்தறிவும், கல்வியும் சங்க கால நகரங்களும் துறைமுகங்களும் – சங்க காலத்தில் ஏற்றுமதி மற்றும் இறக்குமதி-கடல் கடந்த நாடுகளின் சோழர்களின் வெற்றி.

UNIT V இந்திய தேசியஇயக்கம் மற்றும் இந்திய பண்பாட்டிற்கு தமிழர்களின் பங்களிப்பு 3 இந்திய

விடுதலைப் போரில் தமிழர்களின் பங்கு-இந்தியாவின் பிற பகுதிகளில் தமிழ் பண்பாட்டின் தாக்கம் சுயமரியாதை இயக்கம்-இந்திய மருத்துவத்தில், சித்த மருத்துவத்தின் பங்கு கல்வெட்டுக்கள் கையெழுத்துப்படிகள்-தமிழ் புத்தகங்கள் அச்ச வரலாறு.

Contact Periods:

Lecture: 15 Periods

Tutorial: -

Practical: -

Total: 15 Periods

TEXT BOOKS:

1. ஜெயந்தி ரவிகிருஷ்ணா K, தமிழர்களின் பாரம்பரியம், ஸ்ரீ கிருஷ்ணா பதிப்பகம், முதல்பதிப்பு, 2023.
2. எஸ். பிரியதர்ஷினி, தமிழர்களின்பாரம்பரியம், வி. கே. பதிப்பகம்

REFERENCES:

1. தமிழக வரலாறு மக்களும் பண்பாடும் - கே.கே. பிள்ளை, International Institute of Tamil Studies, C.P.T Campus, Chennai.
2. கணினித்தமிழ் - முனைவர். இல. சுந்தரம், விகடன்பிரசுரம், அண்ணாசாலை, சென்னை, திசம்பர் 2016.

EVALUATION PATTERN:

Continuous Internal Assessments	
Assessment 1 (100 Marks)	
Total	100

SEMESTER-II

U26EN221	ENGLISH PROFICIENCY-II (Common to all programmes)	Category: HSMC				
		L	T	P	J	C
		0	0	2	0	1

PRE-REQUISITES:

- Nil

COURSE OBJECTIVES:

- To develop students' ability to comprehend, analyse, and articulate complex ideas effectively.
- To enable students to use English proficiently for research, presentations, technical documentation, and collaborative projects.

COURSE OUTCOMES:

COURSE OUTCOMES: On completion of the course, the students will be able to		BT Mapped (Highest Level)
CO1	Interpret advanced texts, research articles, and multimedia content to identify key ideas, arguments, and perspectives.	Apply
CO2	To do clear and well-structured oral presentations that effectively communicate ideas in academic and workplace contexts.	Understand
CO3	Analyze research findings, interpret datas and communicate results effectively through written and oral communication.	Analyze

CO PO MAPPING:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	-	2	-	-	-	-	-	2	3	-	-	-	2
CO2	1	2	-	-	-	-	1	2	2	-	-	1	2
CO3	1	3	-	3	-	-	-	3	3	-	1	1	3
Correlation Levels; 1.Slight (low) 2. Moderate (Medium) 3. Substantial (High)													

SYLLABUS:**UNIT I LISTENING & SPEAKING SKILLS:****10**

Oral presentations: structuring arguments and persuasive speech – Listening comprehension: podcasts, interviews, and webinars analysis - Debates and role-plays on contemporary issues

UNIT II MEDIA & LITERATURE EXPLORATION**10**

Science communication - Multimedia content: analyzing podcasts, TED Talks, and webinars - Film and documentary reviews: narrative techniques and critical perspectives

UNIT III RESEARCH & PRESENTATION SKILLS**10**

Conducting mini-research in lab or field environments - Data interpretation and reporting findings in written and oral forms - Peer review sessions to enhance collaborative learning

Contact Periods:

Lecture: --

Tutorial: --

Practical: 30 Periods

Total: 30 Periods**TEXT BOOKS:**

1. Bailey, Stephen. *Academic Writing: A Handbook for International Students*. 5th ed., Routledge, 2018.
2. Rizvi, Ashraf M. *Effective Technical Communication*. 2nd ed., McGraw Hill Education, 2017.

REFERENCES:

1. Markel, Mike H., and Stuart A. Selber. *Technical Communication*. 12th ed., Bedford/St. Martin's, 2018.
2. Hall, Lynn, and Leah Wahlin. *A Guide to Technical Communications: Strategies & Applications*. Ohio State University Libraries, 2016.

EVALUATION PATTERN:

Continuous Internal Assessments		End Semester Examinations (practical)	
		Test/Report Evaluation	Presentation & Viva
Practical			
Evaluation of students work, Observation, Record, etc.	Lab test (model practical)		
45(100)	15(100)		
60		40	
Total		100	

[illegible]

- Nil

- Apply appropriate methods to solve higher-order linear ordinary differential equations with constant coefficients and obtain complementary functions and particular integrals.
- To learn Laplace transforms and apply them in solving differential equations
- To understand the concepts of singularities in the various domains of engineering field.

On completion of the course, the students will be able to		BT Mapped (Highest Level)
CO1	Understand the analytical methods of solving ordinary differential equations.	Understand
CO2	Apply the concept of ordinary differential equations to engineering problems.	Analyze
CO3	Apply Laplace transforms to solve linear ordinary differential equations and utilize properties such as shifting and convolution	Apply
CO4	Apply the concept of analytic functions in engineering problems	Apply
CO5	Evaluate complex integrals using Cauchy's integral theorem, residue theorem, and series expansions (Taylor and Laurent), and apply these methods to solve real integrals.	Apply

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
C01	3	2	—	—	2	-	-	-	-	-	-	2	1
C02	3	3	2	—	2	-	-	-	-	-	-	3	2
C03	3	3	2	2	3	-	-	-	-	-	-	3	3
C04	3	2	—	2	2	-	-	-	-	-	-	2	3
C05	3	3	—	3	2	-	-	-	-	-	-	2	2

Correlation Levels; 1.Slight (low) 2. Moderate (Medium) 3. Substantial (High)

UNIT I ORDINARY DIFFERENTIAL EQUATIONS OF HIGHER ORDER 9

Linear differential equations of second and higher order with constant coefficients - Particular Integrals for the types $e^{ax} - \cos ax / \sin ax - x^n - e^{ax}x^n$, $e^{ax}\sin bx$ and $e^{ax}\cos bx$

UNIT II APPLICATION OF ORDINARY DIFFERENTIAL EQUATIONS 9

Differential Equations with variable coefficients: Euler-Cauchy's equation – Method of variation of parameters – Applications of differential equations: Simple Harmonic Motion – Electric circuits

UNIT-III LAPLACE TRANSFORM 9

Existence conditions – Transforms of elementary functions – Transform of unit step function and unit impulse function – Basic properties – Shifting theorems – Initial and final value theorems- transform of periodic functions – Inverse transforms- partial fraction Method - convolution theorem.

UNIT IV ANALYTIC FUNCTIONS 9

Functions of a complex variable – Analytic functions – Necessary and sufficient conditions (excluding proof) – Cauchy–Riemann equations (Statement only) – Properties of analytic function (Statement only) – Harmonic function – Construction of analytic function – Conformal mapping: $w = z + a$, az , $1/z$ – Bilinear transformation.

UNIT V COMPLEX INTEGRATION 9

Introduction – Cauchy's theorem (without proof) – Cauchy's integral formula – Singularities – Classification – Taylor series – Laurent series – Cauchy's residue theorem (without proof)

Contact Periods:

Lecture: 45 Periods

Tutorial: 15 Periods

Practical: -

Total: 60 Periods**TEXT BOOKS:**

- 1.Higher Engineering Mathematics – B. S. Grewal, (2024–2025), Khanna Publishers.
- 2.Advanced Engineering Mathematics – H. K. Dass & Er. Rajnish Verma, (2023), S. Chand Publishing.
3. P. Kandasamy, K. Thilagavathi and K. Gunavathi, Engineering Mathematics, 4th Revised Edition, S. Chand & Company Ltd., New Delhi, 2001.

REFERENCES:

1. A Textbook of Engineering Mathematics – N. P. Bali & Manish Goyal, (2022/Latest Edition), Laxmi Publications.

2. Engineering Mathematics – S. Narayanan, T. K. Manicavachagom Pillay & G. Ramanaiah, (Latest Reprint), S. Viswanathan Publishers.

EVALUATION PATTERN:

Continuous Assessments			End Semester Examinations
CIAT 1	CIAT 2	Activities	
40%			60%
16(60)	16(60)	8(40)	60(100)

U26PH211	PHYSICS FOR ELECTRONICS ENGINEERING (Applicable for ECE & EEE)	Category: BSC				
		L	T	P	J	C
		2	0	2	0	3

PRE-REQUISITES:

- Nil

COURSE OBJECTIVES:

- Understand the principles of photonics, including reflection, refraction, total internal reflection, air wedge, and laser fundamentals.
- Apply fibre optics to communication systems and sensor applications and explain the properties of semiconducting materials and devices.
- Explain the characteristics and applications of magnetic and dielectric materials used in data storage, sensing, and insulation.

COURSE OUTCOMES:

On completion of the course, the students will be able to		BT Mapped (Highest Level)
CO1	Describe the principles of photonics, including reflection, refraction, total internal reflection, air wedge, and laser fundamentals.	Understand
CO2	Apply the concepts of fibre optics in communication systems and sensor applications.	Apply
CO3	Explain the properties of semiconducting materials, including carrier concentration, transport mechanisms, and semiconductor devices.	Understand
CO4	Explain the characteristics and applications of magnetic materials used in data storage and sensing technologies.	Understand
CO5	Understand the basics of dielectric materials and insulation.	Understand

CO PO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	2	1	-	-	1	-	-	-	-	-	-	1	1
CO2	3	2	2	1	3	1	-	-	-	-	-	2	2
CO3	2	2	1	-	2	-	-	-	-	-	-	2	3
CO4	2	1	1	-	1	1	-	-	-	-	-	3	2
CO5	2	1	-	-	1	-	-	-	-	-	-	3	2

Correlation Levels; 1.Slight (low) 2. Moderate (Medium) 3. Substantial (High)

6

6

6

6

6

- 1 Laser- Determination of the wave length of the laser using grating .
- 2 Post office box -Determination of Band gap of a semiconductor.
- 3 Determination of thickness of a thin wire using Air Wedge method
- 4 Optical fibre -Determination of Numerical Aperture and acceptance angle
- 5 Compact disc- Determination of width of the groove using laser.

Contact Periods:

Tutorial: -

Total: 60 Periods

1. M.N. Avadhanulu, P.G. Kshirsagar, and T.V.S. Arun Murthy, “A Textbook of Engineering Physics”, 11th edition, S. Chand Publishing, New Delhi, 2022.
2. "Engineering Physics", McGraw Hill Education India, 2022.

REFERENCES:

1. NPTEL, "Engineering Physics & Materials Science Courses", 2018–2025.
2. MIT Open Course Ware, "Materials Science and Optics Courses", 2018–2025.
3. NPTEL Courses on Engineering Physics, Semiconductor Physics, Energy Storage.
4. Coursera Courses on batteries, nanomaterials, and photonics.

EVALUATION PATTERN:

Continuous Assessments					End Semester Examinations
Theory			Practical / Project		Theory
CIAT 1	CIAT 2	Activities	Evaluation of Student's work, Observation, Record, etc.	Lab Test	
35%			15%		50%
15(60)	15(60)	5(40)	10(75)	5(25)	50(100)

U26EE211	ELECTRIC CIRCUIT ANALYSIS	Category: PCC				
		L	T	P	J	C
		3	0	2	0	4

PRE-REQUISITES:

- Nil

COURSE OBJECTIVES:

- To familiarize the basic laws, source transformations, theorems and the methods of analyzing electrical circuits.
- To explain the use of network theorems and the concept of resonance.
- To familiarize the analysis of three-phase circuits, two port networks and networks with non sinusoidal inputs.
- To explain the importance of initial conditions, their evaluation and transient analysis of R-L and R-C circuits.
- To impart basic knowledge on network analysis using Laplace transforms.

COURSE OUTCOME:

On completion of the course, the students will be able to		BT Mapped (Highest Level)
CO1	Describe the principles of photonics, including reflection, refraction, total internal reflection, air wedge, and laser fundamentals.	Understand
CO2	Apply the concepts of fibre optics in communication systems and sensor applications.	Apply
CO3	Explain the properties of semiconducting materials, including carrier concentration, transport mechanisms, and semiconductor devices.	Understand
CO4	Explain the characteristics and applications of magnetic materials used in data storage and sensing technologies.	Understand
CO5	Understand the basics of dielectric materials and insulation.	Understand

CO PO MAPPING:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	1	1	2	-	1	-	-	1	-	2	2
CO2	3	2	2	2	3	1	1	-	1	2	-	3	3
CO3	3	3	2	2	2	-	1	-	-	1	-	3	2
CO4	3	2	2	2	2	1	1	-	1	1	-	3	2
CO5	3	2	2	2	2	1	2	2	-	1	-	3	2

Correlation Levels; 1.Slight (low) 2. Moderate (Medium) 3. Substantial (High)

SYLLABUS:**UNIT I BASIC CONCEPTS 9**

Active and passive elements – Elements in series and parallel connections -concept of ideal and practical sources – Equivalent resistance – Ohm's law and Kirchhoff's laws – Network topology– Complex impedance – Phasor diagram – Mesh and nodal analysis – Power, power factor and energy

UNIT II NETWORK THEOREMS 9

Voltage and current division – Star and delta conversions – Source transformation – Superposition theorem – Thevenin's and Norton's theorem – Maximum power transfer theorem – Millman's theorem- Analysis of networks (only with independent AC and D C sources).

UNIT III RESONANCE AND COUPLED CIRCUITS 9

Series and parallel resonance circuits – Frequency response, quality factor, bandwidth and half power frequencies – Coupled circuits – Self and mutual inductance – Coupling coefficient – Dot rule – Single tuned circuits

UNIT IV TRANSIENT RESPONSE AND TWO PORT NETWORKS 9

Laplace Transformation (LT): LT of Impulse, Step, Ramp, Sinusoidal signals and shifted functions, periodic functions. Initial and Final value theorems.

Transient response of RL, RC and RLC circuits with DC and sinusoidal excitations – Two port networks – Z, Y and H parameters

UNIT V THREE PHASE CIRCUITS 9

Three phase system – Phasor diagram – Three phase three wire – Three phase four wire – Balanced star and delta load – Unbalance star and delta load – Power measurement in three phase system

LIST OF EXPERIMENTS

1. Verification of Ohm's Law and Kirchhoff's Laws
2. Analysis of Mesh and Nodal Methods in Resistive Networks
3. Simulation and Verification of Superposition & Maximum Power transfer Theorem
4. Simulation of Thevenin's and Norton's Equivalent Circuits
5. Analysis of Maximum Power Transfer in Electrical Networks
6. Measurement of Power in Three-Phase Systems Using Two Wattmeter Method
7. Simulation of Transient Response in RL, RC, and RLC Circuits
8. Simulation and Analysis of Resonance in Series and Parallel RLC Circuits

Contact Periods:

Lecture: 45 Periods

Tutorial: –

Practical: 30 Periods

Total: 75 Periods**TEXT BOOKS:**

1.Sudhakar A. and Shyammohan S. Palli, *Circuits and Network Analysis*, 5th edition, McGraw-Hill Education, New Delhi, 2019.

2. William H. Hayt Jr., Jack E. Kemmerly and Steven M. Durbin, *Engineering Circuit Analysis*, 8th edition, McGraw-Hill Education, New Delhi, 2013.

REFERENCES:

1. Joseph A. Edminister and Mahmood Nahvi, *Electric Circuits*, 5th edition, Schaum's Outline Series, McGraw-Hill Education, New Delhi, 2017.
2. Allan H. Robbins and Wilhelm C. Miller, *Circuits Analysis Theory and Practice*, 5th edition, Cengage Learning, India, 2013.
3. Charles K. Alexander and Matthew N. O. Sadiku, *Electric Circuits*, 6th edition, McGraw-Hill Education, New Delhi, 2016.

EVALUATION PATTERN:

Continuous Assessments					End Semester Examinations
Theory			Practical / Project		Theory
CIAT 1	CIAT 2	Activities	Evaluation of Student's work, Observation, Record, etc.	Lab Test	
35 %			15 %		50%
15(60)	15(60)	5(40)	10(75)	5(25)	50(100)

- Nil

- Introduce the fundamentals of Python programming, syntax, data types and operators.
- Develop programming skills using control structures, functions, modules and packages.
- Apply Python data structures and file handling techniques to process engineering data.
- Introduce numerical computing and data visualization using NumPy, SciPy, Matplotlib and Pandas.
- Develop Python-based computational solutions for basic Electrical and Electronics Engineering applications.

On completion of the course, the students will be able to		BT Mapped (Highest Level)
CO1	Explain the fundamental concepts, syntax, data types and operators of Python programming.	Understand
CO2	Develop Python programs using control structures, functions and modules to solve engineering problems	Apply
CO3	Apply Python data structures, file handling and exception handling techniques for processing engineering data	Apply
CO4	Utilize NumPy, SciPy, Matplotlib and Pandas for numerical computation, data analysis and visualization	Apply
CO5	Develop Python-based computational solutions for basic Electrical and Electronics Engineering applications	Apply

[illegible]

SYLLABUS:

UNIT I – PYTHON FUNDAMENTALS

9

Introduction to Python – Features and applications – Python interpreter and IDEs – Interactive and script modes – Syntax and indentation – Variables, constants, keywords and identifiers – Data types – Type conversion – Operators – Input and output statements – Comments – Basic debugging and error identification.

UNIT II – CONTROL STRUCTURES, FUNCTIONS AND MODULES

9

Conditional statements – if, if-else, nested if, elif ladder – Iterative statements – for and while loops – Nested loops – break, continue and pass – Functions – Arguments and return values – Default and keyword arguments – Lambda functions – Recursion – Modules and packages.

UNIT III – DATA STRUCTURES AND FILE HANDLING

9

Strings and string methods – Lists – Tuples – Sets – Dictionaries – Indexing and slicing – List comprehensions – Nested data structures – Searching and sorting – File handling – Text and CSV files – Exception handling.

UNIT IV – NUMERICAL COMPUTING AND DATA VISUALIZATION

9

NumPy arrays – Array creation and manipulation – Vectorized operations – Mathematical functions – Matrix operations – Introduction to SciPy – Numerical computation – Matplotlib – Line, bar and scatter plots – Multiple plots – Labelling and visualization of engineering data.

UNIT V – PYTHON APPLICATIONS IN ELECTRICAL ENGINEERING

9

Python for electrical engineering calculations – DC and AC circuit calculations – Power and energy calculations – Transformer performance calculations – Electrical machine data analysis – Signal generation and analysis – Introduction to Pandas – Engineering data analysis – Visualization – Mini-project development.

LABORATORY – PYTHON PROGRAMMING AND ITS APPLICATIONS

1. Basic Python programming: input/output, operators and type conversion.
2. Programs using conditional and looping statements.
3. Functions, recursion and lambda functions.
4. Python module/package for electrical engineering calculations.
5. Power, energy and power-factor calculations.
6. Transformer performance and efficiency analysis.
7. Electrical machine performance/data analysis.
8. Mini-project: Python application related to an Electrical and Electronics Engineering **problem**.

Contact Periods:

Lecture: 45 Periods

Tutorial: –

Practical: 30 Periods

Total: 75 Periods**TEXT BOOKS:**

1. Mark Lutz, Learning Python, O'Reilly Media.
2. Eric Matthes, Python Crash Course, No Starch Press.
3. Charles Severance, Python for Everybody, CreateSpace.

REFERENCES:

1. John V. Guttag, Introduction to Computation and Programming Using Python, MIT Press.
2. Wes McKinney, Python for Data Analysis, O'Reilly Media.
3. Allen B. Downey, Think Python, O'Reilly Media.
4. Hans Petter Langtangen, A Primer on Scientific Programming with Python, Springer.

SOFTWARE REQUIREMENTS:

Python 3.x, Jupyter Notebook / Google Colab, NumPy, SciPy, Matplotlib and Pandas.

EVALUATION PATTERN:

Continuous Assessments					End Semester Examinations
Theory			Practical / Project		Theory
CIAT 1	CIAT 2	Activities	Evaluation of Student's work, Observation, Record, etc.	Lab Test	
35%			15%		50%
15(60)	15(60)	5(40)	10(75)	5(25)	50(100)

U26EE212	AI FOR ELECTRICAL ENGINEERS	Category: ESC				
		L	T	P	J	C
		2	0	2	0	3

PRE-REQUISITES:

- Nil

COURSE OBJECTIVES:

1. To introduce the fundamentals of Artificial Intelligence and its relevance to Electrical Engineering applications.
2. To develop basic programming skills for AI using Python.
3. To understand simple machine learning **concepts** for data-driven electrical systems.
4. To expose students to AI applications in power systems, smart grids, and automation.
5. To provide hands-on experience through laboratory experiments.

COURSE OUTCOMES:

On completion of the course, the students will be able to		BT Mapped (Highest Level)
CO1	Explain the fundamentals of Artificial Intelligence, its evolution, scope, and applications in Electrical Engineering, and distinguish AI from Machine Learning and Deep Learning	Understand
CO2	Apply Python programming concepts, including NumPy and Pandas, for data handling and solving basic electrical engineering problems.	Apply
CO3	Demonstrate the basic principles of Machine Learning by implementing simple supervised and unsupervised learning algorithms for prediction and classification tasks	Apply
CO4	Analyze and apply AI techniques to electrical engineering applications such as power systems, renewable energy, electric vehicles, smart grids, load forecasting, and fault detection.	Analyze
CO5	Evaluate ethical issues, safety, reliability, and emerging trends in AI, and develop basic AI-based solutions for smart electrical systems through laboratory experiments and mini projects.	Evaluate

CO PO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	-	-	1	1	-	1	-	1	-	2	1
CO2	3	3	2	2	3	-	-	-	1	1	1	3	3
CO3	3	3	2	2	3	-	-	-	1	1	1	3	3
CO4	3	3	3	3	3	2	2	1	1	2	1	3	3
CO5	2	2	3	3	3	2	2	3	2	2	2	3	3
Correlation Levels; 1.Slight (low) 2. Moderate (Medium) 3. Substantial (High)													

SYLLABUS:**UNIT I INTRODUCTION TO AI 6**

Definition and scope of AI -History and evolution of AI -AI vs Machine Learning vs Deep Learning - Applications in Electrical Engineering (Smart Grid, Fault Detection)

UNIT II PYTHON FOR AI 6

Basics of Python programming -Data types, loops, functions -Introduction to NumPy and Pandas -Data handling for electrical signals

UNIT III MACHINE LEARNING BASICS 6

Introduction to Machine Learning -Supervised vs Unsupervised Learning -Regression and Classification basics -Simple algorithms: Linear Regression, KNN

UNIT IV AI IN ELECTRICAL ENGINEERING 6

AI in Power Systems (load forecasting, fault detection) -AI in Renewable Energy systems -AI in Electric Vehicles -Smart Grid applications

UNIT V ETHICS & FUTURE TRENDS 6

Ethical AI and bias -AI safety and reliability -Future trends in AI for Electrical Engineers -Industry case studies

LIST OF EXPERIMENTS:

1. Installation of Python & AI tools (Anaconda / Google Colab)
2. Basic Python programs for electrical calculations
3. Data visualization using Matplotlib (Voltage/Current signals)
4. Implementation of NumPy for matrix operations
5. Load dataset handling using Pandas
6. Simple Linear Regression for load prediction
7. Classification using KNN algorithm
8. Fault detection using simple ML model
9. AI-based energy consumption prediction
10. Mini Project: Smart Electrical System using AI (basic)

Contact Periods:

Lecture: 30 Periods

Tutorial: –

Practical: 30 Periods

Total: 60 Periods**TEXT BOOKS:**

1. Stuart Russell & Peter Norvig – *Artificial Intelligence: A Modern Approach*
2. Aurélien Géron – *Hands-On Machine Learning with Scikit-Learn*

REFERENCES:

1. Tom Mitchell – *Machine Learning*
2. Ethem Alpaydin – *Introduction to Machine Learning*

EVALUATION PATTERN:

Continuous Assessments					End Semester Examinations
Theory			Practical / Project		Theory
CIAT 1	CIAT 2	Activities	Evaluation of Student's work, Observation, Record, etc.	Lab Test	
35%			15%		50%
15 (60)	15 (60)	5 (40)	10 (75)	5 (25)	50 (100)

U26CEC01	DESIGN THINKING	Category: PCC				
		L	T	P	J	C
		1	0	2	0	2

PRE-REQUISITES:

- Nil

COURSE OBJECTIVES:

- To introduce the fundamental principles, mindset, and phases of Design Thinking for problem-solving.
- To develop the ability to understand user needs through empathy-driven research methods.
- To enable students to apply creative ideation and experimentation techniques for innovative solutions.
- To equip learners with skills to engage stakeholders and communicate ideas effectively.
- To provide knowledge on evaluating, refining, and implementing solutions using strategic and analytical tools.

COURSE OUTCOMES:

On completion of the course, the students will be able to		BT Mapped (Highest Level)
CO1	Explain the principles, phases, and tools of Design Thinking and apply them to real-world problems	Understand
CO2	Apply empathy-based techniques such as field observation, interviews, and persona development to identify user needs	Apply
CO3	Generate innovative ideas using ideation techniques like SCAMPER and develop prototypes.	Apply
CO4	Demonstrate effective communication through storytelling, storyboarding, and user engagement methods	Apply
CO5	Analyze and evaluate solutions using strategic tools such as viability analysis, activity systems, and innovation frameworks	Analyze

CO PO MAPPING

[illegible]

SYLLABUS:

UNIT I DESIGN THINKING 3

Key Principles and Mindset – Five Phases, Methods and Tools of Design Thinking – User Guide – Foundation Building for Design Thinking – Explore: Methods & Tools – STEEP Analysis – Strategic Priorities – Activity System – Stakeholder Mapping – Opportunity Framing.

UNIT II EMPATHIZE: 3

Methods & Tools – Field Observation – Deep User Interview – Empathy Map – User Journey Map - Need Finding – User Insights - User Persona Development.

UNIT III EXPERIMENT 3

Methods & Tools – Ideation – SCAMPER – Analogous Inspiration – Deconstruct & Reconstruct – User Experience Journey – Prototyping– Idea Refinement.

UNIT IV ENGAGE 3

Methods & Tools – Story Telling – Art of Story Telling – Storyboarding – Co-Creation with Users – Collect Feedback from Users.

UNIT V EVOLVE 3

Methods & Tools – Concept Synthesis – Strategic Requirements – Evolved Activity Systems – Activity System Integration – Viability Analysis – Innovation Tools using User Needs, CAP, 4S – Change Management - Quick Wins.

LIST OF EXPERIMENTS / PRACTICAL EXERCISES

1. Study and analysis of a real-world problem using STEEP Analysis.
2. Perform Stakeholder Mapping for a selected case study.
3. Develop an Activity System Map for an existing product/service.
4. Conduct Field Observation and document findings.
5. Perform a Deep User Interview and analyze responses.
6. Create an Empathy Map based on collected data.
7. Generate ideas using Brainstorming and SCAMPER techniques.
8. Apply Analogous Inspiration for innovative thinking.
9. Perform Deconstruct & Reconstruct exercise on an existing product.
10. Develop a Storytelling script for a design solution.
11. Create a Storyboard representing the user experience.
12. Conduct Co-creation sessions with users.
13. Perform Concept Synthesis for final solution design.
14. Define Strategic Requirements for implementation.

15. Develop an Evolved Activity System.

Contact Periods:

Lecture: 15 Periods

Tutorial: -

Practical: 30 Periods

Total: 45 Periods

EVALUATION PATTERN:

Continuous Assessments					End Semester Examinations	
Theory			Practical / Project		Practical	
CIAT 1	CIAT 2	Activities	Evaluation of Student's work, Observation Record, etc.	Lab Test	Test / Report Evaluation	Presentat ion & Viva
25%			25 %		50%	
10(30)	10(30)	5(40)	15(75)	10(25)	40(80)	10(20)

U26MC201	UNIVERSAL HUMAN VALUES - II	Category: MCC				
		L	T	P	J	C
		3	0	0	0	3

PRE-REQUISITES:

- Nil

COURSE OBJECTIVES:

- To facilitate the development of a holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the human reality and the rest of existence.
- To highlight plausible implications of such a holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature.

COURSE OUTCOMES:

On completion of the course, the students will be able to		BT Mapped (Highest Level)
CO1	Evaluate the significance of value inputs in formal education and start applying them in life and profession.	Understand
CO2	Distinguish between values and skills, happiness and accumulation of physical facilities, the Self and the Body, Intention and Competence of an individual, etc.	Understand
CO3	Analyze the value of harmonious relationships based on trust and respect in life and profession.	Understand
CO4	Examine the role of a human being in ensuring harmony in society and nature	Understand
CO5	Apply the understanding of ethical conduct to formulate strategies for ethical life and profession	Understand

CO PO MAPPING:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	-	-	-	2	1	2	1	1	-	2	1
CO2	2	2	-	-	-	2	1	2	2	1	-	2	1
CO3	2	2	-	-	-	3	1	3	3	2	-	2	1
CO4	3	2	-	-	-	3	3	2	2	2	-	2	2
CO5	3	3	1	1	1	3	2	3	2	2	1	3	2

Correlation Levels; 1.Slight (low) 2. Moderate (Medium) 3. Substantial (High)

SYLLABUS:

UNIT I INTRODUCTION – BASIC HUMAN ASPIRATION, ITS FULFILLMENT THROUGH ALL ENCOMPASSING RESOLUTION 9

The basic human aspirations and their fulfillment through Right Understanding and Resolution Right understanding and Resolution as the activities of the Self (self being central to Human Existence) – All encompassing Resolution for a Human Being – Its details and solution of problems in the light of Resolution.

UNIT II RIGHT UNDERSTANDING – KNOWER, KNOWN & THE PROCESS 9

The domain of right understanding starting from understanding the human being and extending up to understanding nature/existence – its interconnectedness and co-existence – and finally understanding the role of human being in existence (human conduct).

UNIT III UNDERSTANDING HUMAN BEING 9

Understanding the human being comprehensively as the first step and the core theme of this course – Human being as co-existence of the self and the body – The activities and potentialities of the self – basis for harmony/contradiction in the self.

UNIT IV UNDERSTANDING NATURE AND EXISTENCE 9

A comprehensive understanding about the existence – Nature being included – The need and process of inner evolution – Particularly awakening to activities of the Self: Realization – Understanding and Contemplation in the Self.

UNIT V UNDERSTANDING HUMAN CONDUCT, ALL-ENCOMPASSING RESOLUTION & HOLISTIC WAY OF LIVING 9

Understanding Human Conduct – Different aspects of all encompassing Resolution – Holistic way of living for Human Being with all encompassing resolution covering all four dimensions of human endeavor viz., realization, thought, behavior and work leading to harmony at all levels from Self to Nature and entire Existence.

Contact Periods:

Lecture: 45 Periods

Tutorial: -

Practical:-

Total: 45 Periods

TEXTBOOKS:

1. R R Gaur, R Asthana, G P Bagaria, A Foundation Course in Human Values and Professional Ethics, 2nd Revised Edition, Excel Books, New Delhi, 2019.

REFERENCES:

1. E G Seebauer & Robert L. Berry, Fundamentals of Ethics for Scientists & Engineers, Oxford University Press, 2000.
2. M Govindarajan, S Natrajan & V.S. Senthil Kumar, Engineering Ethics (Including

Human Values), Eastern Economy Edition, Prentice Hall of India Ltd.

3. B P Banerjee, Foundations of Ethics and Management, Excel Books, 2005.

4. B L Bajpai, Indian Ethos and Modern Management, New Royal Book Co., Lucknow, Reprinted 2008.

EVALUATION PATTERN:

Continuous Internal Assessments	
Assessment 1 (100 Marks)	
Total	100

U26TA201	தமிழரும் தொழில்நுட்பமும் / Tamills and Technology (Common to all programmes)	Category: MCC				
		L	T	P	J	C
		1	0	0	0	1

PRE-REQUISITES:

- Nil

COURSE OBJECTIVES:

- To learn weaving, ceramic and construction technology of Tamils
- To understand the agriculture, irrigation and manufacturing technology of Tamils
- To realize the development of scientific Tamil and Tamil computing

COURSE OUTCOMES:

On completion of the course, the students will be able to		BT Mapped (Highest Level)
CO1	Understand the weaving and ceramic technology of ancient Tamil people nature	Understand
CO2	Understand the construction technology, building materials in Sangam period and case studies	Understand
CO3	Infer the metal process, coin and beads manufacturing with relevant archeological evidence	Understand
CO4	Realize the agriculture methods, irrigation technology and pearl diving	Understand
CO5	Apply the knowledge of scientific Tamil and Tamil computing	Understand

CO PO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	-	-	-	-	-	-	3	3	-	2	-	-	-
CO2	-	-	-	-	-	-	3	3	-	2	-	-	-
CO3	-	-	-	-	-	-	3	3	-	2	-	-	-
CO4	-	-	-	-	-	-	3	3	-	2	-	-	-
CO5	-	-	-	-	-	-	3	3	-	2	-	-	-

Correlation Levels; 1.Slight (low) 2. Moderate (Medium) 3. Substantial (High)

SYLLABUS:

UNIT I WEAVING AND CERAMIC TECHNOLOGY

3

Weaving Industry during Sangam Age – Ceramic technology – Black and Red Ware Potteries (BRW) – Graffiti on Potteries.

UNIT II DESIGN AND CONSTRUCTION TECHNOLOGY

3

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 III MANUFACTURING TECHNOLOGY

3

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 beads - Archeological evidences - Gem stone types described in Silappathikaram.

UNIT IV AGRICULTURE AND IRRIGATION TECHNOLOGY

3

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 V SCIENTIFIC TAMIL & TAMIL COMPUTING

3

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.

Contact Periods:

Lecture: 15 Periods

Tutorial: --

Practical: -

Total: 15 Periods

TEXT BOOKS:

1. Tamils and Technology, K. Jayanthi Ravikrishna, Sri Krishna publications, Mahalakshmi Nagar, Velappanchavadi, Chennai - 600 007, First Edition 2023.
2. Tamils and Technology, S. Priyadarshini, V. K. Publications, 55, Gopuram Colony, Sivakasi - 626 124.

REFERENCES:

1. History of Tamil Nadu – People and Culture – K.K. Pillai, International Institute of Tamil Studies, C.P.T Campus, Chennai.
2. Computer Tamil – Dr. Il. Sundaram, Vikatan Publications, Anna Salai, Chennai, December 2016.

[illegible]

SYLLABUS:

UNIT I	நெசவுமற்றும்பானைதொழில்நுட்பம்	3
சங்க காலத்தில் நெசவுத் தொழில் பானை தொழில் நுட்பம்- கருப்பு சிவப்பு பாண்டங்கள் பாண்டங்களில் கீறல் குறியீடுகள்.		
UNIT II	மரபு-பாறை ஓவியங்கள் முதல் நவீன ஓவியங்கள் வரை- சிற்பக்கலை	3
சங்க காலத்தில் வடிவமைப்பு மற்றும் கட்டுமானங்கள் சங்ககாலத்தில் வீட்டு பொருட்களில் வடிவமைப்பு சங்க காலத்தில் கட்டுமான பொருட்களும் நடுக்கல்லும் சிலப்பதிகாரத்தில் மேடைவடிவமைப்பு பற்றிய விவரங்கள் மாமல்லபுரம் கோவில்கள் சிற்பங்களும் கோவில்களும் சோழர் காலத்தில் சோழர் காலத்துப் பெருங் கோவில்கள் மற்றும் பிற வழிபாட்டுத் தலங்கள் நாயக்கர் கால கோவில்கள் மாதிரி கட்டமைப்புகள் பற்றி அறிதல் மீனாட்சியம்மன் ஆலயம் மற்றும் திருமலை நாயக்கர் மஹால் செட்டி நாட்டு வீடுகள் பிரிட்டிஷ் காலத்தில் சென்னையில் இந்தோசாராசெனிக் கட்டிடக்கலை.		
UNIT III	உற்பத்தித்தொழில்நுட்பம்	3
கப்பல் கட்டும் கலை -உலோகவியல் இரும்புதொழிற்சாலை -இரும்பு உருக்குதல் -எஃகு - வரலாற்றுச் சான்றுகளாக செம்பு மற்றும் தங்க நாணயங்கள்- நாணயங்கள் அச்சடித்தல் - மணிஉருவாக்குதல் -தொழிற் சாலைகள்- கல்மணிகள் கண்ணாடி மணிகள் சுடுமண் மணிகள் சங்குமணிகள் -எலும்புதுண்டுகள் -தொல்லியல் சான்றுகள்-சிலப்பதிகாரத்தில் மணிகளின் வகைகள்		
UNIT IV	வேளாண்மை மற்றும்நீர் பாசன தொழில்நுட்பம்	3
அனை,ஏரி, குளங்கள், மதகு - சோழர் கால குமிழித்தூம்பின் முக்கியத்துவம்- கால்நடை பராமரிப்பு -கால் நடைகளுக்காக வடிவமைக்கப்பட்ட கிணறுகள்- வேளாண்மை மற்றும் வேளாண்மை சார்ந்த செயல்பாடுகள் - கடல் சார்ந்த அறிவு மீன்வளம் -முத்து மற்றும் முத்துகுளித்தல் -பெருங்கடல் குறித்து பண்ணைய -அறிவுசார் சமூகம்.		
UNIT V	அறிவியல் தமிழ் மற்றும் கணித தமிழ்	3
அறிவியல் தமிழின் வளர்ச்சி -கணித தமிழ் வளர்ச்சி -தமிழ் நூல்களை மின்பதிப்பு செய்தல்- தமிழ் மென் பொருட்கள் உருவாக்கம் - தமிழ் இணைய கல்விக் கழகம்- தமிழ் மின் நூலகம் - இணையத்தில் தமிழ் அகராதிகள்-சொற்குவைத் திட்டம்.		

Contact Periods:

Lecture: 15 Periods

Tutorial: --

Practical: -

Total: 15 Periods

TEXT BOOKS:

1. கே. ஜெயந்தி ரவிகிருஷ்ணா, தமிழர்கள் மற்றும் தொழில்நுட்பம், ஸ்ரீ கிருஷ்ணா பதிப்பகம், மகாலட்சுமி நகர், வேலப்பஞ்சாவடி, சென்னை-600 007, முதல்பதிப்பு, 2023..
2. எஸ். பிரியதர்ஷினி, தமிழர்கள் மற்றும் தொழில் நுட்பம், வி. கே. பதிப்பகம், 55, கோபுரம் காலனி, சிவகாசி-626 124.

REFERENCES:

3. தமிழக வரலாறு – மக்களும் பண்பாடும் - கே.கே. பிள்ளை, International Institute of Tamil Studies, C.P.T Campus, Chennai.
4. கணினித் தமிழ் - முனைவர். இல. சுந்தரம், விகடன் பிரசுரம், அண்ணாசாலை, சென்னை, திசம்பர் 2016.

EVALUATION PATTERN:

Continuous Internal Assessments	
Assessment 1 (100 Marks)	
Total	100