

B.E ELECTRONICS AND COMMUNICATION ENGINEERING

Regulation 2026

SEMESTER I

Sl.No.	COURSE CODE	COURSE TITLE	L	T	P	C
		Induction Programme	0	0	0	0
THEORY						
1	26CAHS101	Professional English I	3	0	0	3
2	26CABS102	Matrices and Calculus	3	1	0	4
3	26CABS103	Applied Physics	3	0	0	3
4	26CAES104	Engineering Graphics	1	0	4	3
5	26CAES105	C Programming	3	0	0	3
6	26ECES106	Electrical and Instrumentation Engineering	3	0	0	3
7	26CAHS109	Heritage of Tamils	1	0	0	1
PRACTICAL						
8	26CAES106	C Programming Laboratory	0	0	3	1.5
9	26CAES107	Engineering Practices Laboratory	0	0	3	1.5
Total			17	1	10	23

SEMESTER II

Sl.No.	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1	26CAHS201	Professional English II	3	0	0	3
2	26CABS202	Advanced Calculus and its Applications	3	1	0	4
3	26CAES203	Python Programming	3	0	0	3
4	26ECPC204	Electronic Devices and Circuit Analysis	3	0	0	3
5	26CABS205	Physics for Electronics Engineering	3	0	0	3
6	26CABS206	Chemistry for Electronics Engineering	3	0	0	3

7	26CAHS202	Tamils and Technology	1	0	0	1
PRACTICAL						
8	26CABS107	Physics and Chemistry Laboratory	0	0	3	1.5
9	26CAES206	Python Programming Laboratory	0	0	3	1.5
Total			19	1	6	23

26CAHS101

PROFESSIONAL ENGLISH I

(Common to All Branches)

SEMESTER I

L	T	P	C
3	0	0	3

COURSE OBJECTIVES:

- To develop learners' core communication skills in LSRW, grammar, and vocabulary.
- To help learners use language effectively in academic /work contexts.
- To enhance learners' ability to understand, present, read, and write product-related information using correct grammar and vocabulary.
- To use language efficiently in expressing their opinions via various media.
- To develop learners' ability to read and write complex texts, articles, definitions and essays.

UNIT-I: INTRODUCTION TO FUNDAMENTALS OF COMMUNICATION 9

Listening-understanding listening and listening techniques; listening comprehension.

Speaking-introducing oneself; asking for information to fill details in a form.

Reading- skimming-scanning; speed reading.

Writing – AI assisted email writing; letter writing-permission/accepting/declining.

Grammar - parts of speech-tense-present.

Vocabulary – word formation; abbreviations & acronyms.

UNIT-II: NARRATION AND SUMMATION 9

Listening-listening conversation-note taking.

Speaking - narrating personal experiences; small talk.

Reading - reading comprehension-advertisements- cloze reading.

Writing - minutes of the meeting, short report on an event (field trip etc.).

Grammar –tense-past; articles.

Vocabulary – one-word substitution; synonyms and antonyms.

UNIT-III: DESCRIPTION OF A PROCESS / PRODUCT 9

Listening – listen to a product and process descriptions and advertisements about a products.

Speaking – presentation-PPT slides/project/innovative products; advertising a product.

Reading – reading and comparing different product specifications-reviews; user manuals.

Writing - writing definitions; instructions; and paragraph writing.

Grammar - tense-future- question types: wh/yes or no/ and tags.

Vocabulary - compound words, homonyms; and homophones.

UNIT-IV: CLASSIFICATION AND RECOMMENDATIONS 9

Listening – technical presentation-video clips and answering questions.

Speaking – welcome address-vote of thanks; interviewing a celebrity.

Reading – newspaper articles; responding to instant messages.

Writing – note-making; recommendations; transferring information (tables, chart, graph etc.).

Grammar –subject verb agreement-error correction.

Vocabulary - transition words- sentence completion.

UNIT-V: EXPRESSION 9

Listening – listening to debates and panel discussions.

Speaking –debate & role play activities.

Reading – reading editorials; newspaper report.

Writing – essay writing (descriptive or narrative) - discourse markers.

Grammar – degrees of comparison.

Vocabulary – idioms - phrasal verbs.

Contact Periods:

Lecture: 45 Periods Tutorial: 0 Periods Practical: 0 Periods Total: 45 Periods

TEXT BOOKS:

1. Raman, Meenakshi, and Sangeeta Sharma. Technical Communication: Principles and Practice. 3rd ed., Oxford University Press, 2015.
2. Rizvi, M. Ashraf. Effective Technical Communication. 2nd ed., McGraw Hill Education, 2017.
3. Wren, P. C., and H. Martin. High School English Grammar and Composition. Revised by N. D. V. Prasada Rao, S. Chand Publishing, 2018.

REFERENCES:

1. Raymond Murphy, English Grammar in Use, Cambridge University Press, New Delhi, 2020
2. Richardson, Mathew. Advanced Communication Skills. Charlie Creative Lab, 2020.
3. English for Engineers and Technologists. Vol. 1, Orient Blackswan, 2022.
4. English for Science & Technology – I. Cambridge University Press, 2023.
5. Sambaiah, M. Technical English: An Integrated Text Book. Wiley India Pvt. Ltd., 2025.

COURSE OUTCOMES: Upon completion of this course, the students will be able to:		Bloom's Level
CO1:	Communicate effectively using proper language skills in academic and real-life situations.	K3 (Applying)
CO2:	Comprehend, articulate, interpret, and produce structured communication with accuracy and clarity.	K3 (Applying)
CO3:	Communicate technical and product information clearly and effectively.	K1 (Remembering)
CO4:	Comprehend technical and general content, communicate effectively in formal and informal contexts.	K2 (Understanding)
CO5:	Express their opinions effectively in both oral and written medium of communication.	K3 (Applying)

COs-POs & PSOs MAPPING:

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

CO5	-	-	-	-	-	-	2	1	3	-	-	-	-
AVG	0.0	0.0	0.0	0.0	0.0	0.0	1.6	2.0	2.6	0.0	0.0	0.0	1.0

26CABS102

MATRICES AND CALCULUS
(Common to all Branches)

SEMESTER I			
L	T	P	C
3	1	0	4

COURSE OBJECTIVES:

- To obtain the knowledge of eigen values and diagonalization of a matrix.
- To obtain the knowledge of various Matrix decomposition Techniques
- To acquire knowledge of differentiation for more than one variable and its applications.
- To obtain the knowledge of various techniques of integration.
- To acquire the knowledge of multiple integration and related applications.

UNIT-I: MATRICES

9+3

Eigen values and Eigenvectors of a real matrix - Characteristic equation - Properties of Eigen values and Eigenvectors - Cayley - Hamilton theorem - Reduction of a quadratic form to canonical form by orthogonal transformation.

UNIT-II: MATRIX DECOMPOSITION

9+3

QR decomposition - Singular Value Decomposition (SVD) - Least Square solutions - simple problems (up to 3×3 matrices).

UNIT-III: DIFFERENTIAL CALCULUS

9+3

Partial differentiation - Jacobians - Taylor's series for functions of two variables - Maxima and minima of functions of two variables - Lagrange's Method of undetermined multipliers.

UNIT-IV: INTEGRAL CALCULUS

9+3

Definite and Indefinite integrals - Substitution rule - Techniques of Integration: Integration by parts - Trigonometric Substitution - Integration of rational functions by partial fraction.

UNIT-V: MULTIPLE INTEGRALS

9+3

Double integrals - Change of order of Integration - Area enclosed by plane curves - Triple integrals - Volume of solids (Sphere, Cylinder and tetrahedron only).

Contact Periods:

Lecture: 45 Periods Tutorial: 15 Periods Practical: 0 Periods Total: 60 Periods

TEXT BOOKS:

1. Grewal, B. S., "Higher Engineering Mathematics", 45th Edition, Khanna Publishers, New Delhi, 2023.
2. Kreyszig, E., "Advanced Engineering Mathematics", 11th Edition, John Wiley & Sons, 2025.
3. James Stewart, "Calculus : Early Transcendentals", 8th Edition, Cengage Learning, New Delhi, 2015.

REFERENCES:

1. Friedberg, S. H., Insel, A. J., & Spence, L. E., “Linear Algebra”, 5th Edition, Pearson, 2021.
2. Strang, G., “Linear Algebra and Its Applications”, 4th Edition, Cengage Learning, 2022.
3. Anton. H, Bivens. I and Davis. S, ”Calculus “, 10th Edition, Wiley, 2016
4. Bali. N., Goyal. M. and Watkins. C., “Advanced Engineering Mathematics”, Firewall Media, New Delhi, 7th Edition, 2009.
5. Jain, R. K., & Iyengar, S. R. K., “Advanced Engineering Mathematics”, 5th Edition, Narosa Publications, New Delhi, 2016.

COURSE OUTCOMES:

Upon completion of this course, the students will be able to:		Bloom’s Level
CO1	Understand the matrix algebra techniques for solving practical problems	K2 (Understanding)
CO2	Understand the concepts of decomposition of matrices	K2 (Understanding)
CO3	Apply differential calculus ideas on several variable functions	K3 (Applying)
CO4	Apply different method of integration in solving practical problems	K3 (Applying)
CO5	Apply multiple integrals ideas in solving areas and volumes and other practical problems	K3 (Applying)

COs-POs & PSOs MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	1	1	-	-	-	-	1	1	1		
CO2	3	2	1	1	-	-	-	-	1	1	1		
CO3	3	2	1	1	-	-	-	-	1	1	1		
CO4	3	2	1	1	-	-	-	-	1	1	1		
CO5	3	2	1	1	-	-	-	-	1	1	1		
AVG	3.0	2	1	1	-	-	-	-	1.0	1.0	1.0		

26CABS103

APPLIED PHYSICS
(Common to all branches)

SEMESTER I			
L	T	P	C
3	0	0	3

COURSE OBJECTIVES:

- To impart knowledge on the fundamental concepts of elasticity, bending of beams, and their structural engineering applications.
- To explain the principles of heat transfer, rectilinear flow, and experimental methods to measure thermal conductivity.
- To introduce the formulations of quantum mechanics, wave equations, and the behavior of particles in microscopic domains.
- To familiarize with the basics of quantum computing, qubits, Bloch sphere representation, and foundational quantum logic gates.
- To understand the principles of architectural acoustics, production of ultrasonic waves, and their non-destructive and medical testing applications.

UNIT-I: PROPERTIES OF MATTER **9**

Elasticity- Hooke's law - Classification of Modulus of Elasticity- Poisson's Ratio - Stress-Strain diagram - Factors affecting elasticity - Moment, Couple and Torque - Derivation of Twisting Couple on a wire - Bending moment - Depression of a cantilever - Young's modulus by Uniform Bending – Non-Uniform bending - I shaped girders and its applications.

UNIT-II: THERMAL PROPERTIES **9**

Thermal Conductivity - Thermal Diffusivity - Specific Heat Capacity - Rectilinear Flow of Heat along a Uniform Bar - Heat conduction through compound media (Series and Parallel) - Determination of Thermal Conductivity of a Good Conductor by Forbe's Method: theory and experiment - Determination of Thermal Conductivity of a poor Conductor by Lee and Charlton's Disc Method: theory and experiment.

UNIT-III: QUANTUM MECHANICS **9**

Limitations of classical Physics - Introduction to Quantum theory - Dual nature of matter and radiation - Properties of matter waves - de Broglie wavelength in terms of voltage, energy, and temperature - Heisenberg's Uncertainty principle - physical significance of wave function - Schrodinger's Time independent and Time dependent wave equations - Particle in a one-dimensional potential well.

UNIT-IV: QUANTUM COMPUTING **9**

Introduction to Quantum Computing - Moore's law and its limitations - Differences between Classical and Quantum computing- Concept of qubit and its properties - Representation of qubit

by Bloch sphere - Single and Two qubits Quantum devices - Qubit Gates, Single Qubit Gates: Quantum NOT Gate - Pauli - X, Y and Z Gates - Hadamard Gate - Phase (S) Gate, T Gate.

UNIT- V: ACOUSTICS AND ULTRASONICS

9

Acoustics: Classification of Sound - Weber-Fechner law - Absorption coefficient and its determination - Factors affecting acoustics of buildings and their remedies.

Ultrasonics: Production of ultrasonics - magnetostriction and piezoelectric methods - Non

Destructive testing: pulse echo system through transmission and reflection modes - Medical application: Sonogram.

Contact Periods:

Lecture: 45 Periods

Tutorial: 0 Periods

Practical: 0 Periods

Total: 45 Periods

TEXT BOOKS:

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. Parag K Lala, Quantum Computing - A Beginner's Introduction, Indian Edition, McGrawHill, Reprint 2020.
3. R.K. Gaur and S.L. Gupta, "Engineering Physics", 8th edition, Dhanpat Rai Publications, New Delhi, 2017

REFERENCES:

1. D.Halliday, R.Resnick and J.Walker, Principles of Physics, Wiley (Indian Edition), 2015.
2. N.Garcia, A.Damask and S.Schwarz, Physics for Computer Science Students. Springer Verlag, 2012.
3. Arthur Beiser, Shobhit Mahajan, S. Rai Choudhury, Concepts of Modern Physics, McGrawHill (Indian Edition), 2017.
4. R.Wolfson, Essential University Physics. Volume 1 & 2. Pearson Education (Indian Edition), 2009.
5. Charles Kittel, Introduction to Solid State Physics, Wiley India Edition, 2019.

COURSE OUTCOMES:

Upon completion of this course, the students will be able to:		Bloom's Level
CO1	Apply the concepts of elasticity and bending moments to analyze deformations in cantilevers, beams, and structural components like I-shaped girders.	K3 (Applying)
CO2	Understand the heat conduction through uniform and compound media, and their thermal conductivity.	K2 (Understanding)
CO3	Solve quantum mechanical problems using Schrödinger's time-dependent and independent wave equations.	K3 (Applying)
CO4	Understand difference between classical and quantum computing systems and the operations of single-qubit quantum gates.	K2 (Understanding)

CO5	Apply the acoustic parameters of buildings for noise control and application of ultrasonic waves in medical imaging and non-destructive testing (NDT).	K3 (Applying)
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COs-POs & PSOs MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	2	2	1	1	-	1	-	-	-	-	-	-	-
CO2	2	2	1	1	-	-	-	-	-	-	-	-	-
CO3	3	2	1	1	-	1	-	-	-	-	-	-	-
CO4	3	2	2	1	-	1	-	-	-	-	-	-	-
CO5	2	2	1	1	-	1	-	-	-	-	-	-	-
AVG	2.4	2.0	1.2	1.0	-	1.0	-	-	-	-	-	-	-

26CAES104

ENGINEERING GRAPHICS

SEMESTER I

L	T	P	C
1	0	4	3

COURSE OBJECTIVES:

The main learning objective of this course is to prepare the students to:

- Construct various conic curves, cycloids, involutes, tangents and normals using appropriate graphical methods.
- Apply the principles of orthographic projection to represent points, lines and three-dimensional objects.
- Develop projections of plane surfaces and simple solids using suitable projection methods.
- Construct sectional views and develop the surfaces of simple and sectioned solids.
- Apply the principles of isometric projection to represent simple and truncated solids and visualize three-dimensional objects.

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-I PLANE CURVES

3+12

Basic Geometrical constructions, Curves used in engineering practices: Conics – Construction of Ellipse, Parabola and Hyperbola by eccentricity method – Construction of Cycloid – Construction of involutes of circle – Drawing of tangents and normal to the above curves.

UNIT-II ORTHOGRAPHIC PROJECTION OF POINTS, LINES AND 3D OBJECTS

3+12

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 and traces. Visualization concepts – Visualization principles – Representation of Three Dimensional objects – Layout of views – Sketching of multiple views from pictorial views of objects.

UNIT-III PROJECTION OF PLANE SURFACES AND SOLIDS

3+12

Projection of polygonal plane surfaces inclined to both the principal planes by rotating object method – Projection of simple solids like Prisms, Pyramids, Cylinder and Cone when the axis is inclined to one of the principal planes and parallel to the other by rotating object method.

UNIT-IV PROJECTION OF SECTIONED SOLIDS AND DEVELOPMENT OF SURFACES

3+12

Sectioning of solids in simple vertical position when the cutting plane is inclined to the one of the principal planes and perpendicular to the other – Obtaining true shape of section. Development of lateral surfaces of simple and sectioned solids: Prisms, Pyramids, Cylinder and Cone.

UNIT – V ISOMETRIC PROJECTIONS

3+12

Principles of Isometric projection – Isometric scale – Isometric projections of simple solids and truncated solids: Prisms, Pyramids, Cylinder and Cone – Conversion of orthographic views to pictorial views (Simple objects), Hybrid modelling workflows (Demonstration Only).

Contact Periods:

Lecture: 15 Periods Tutorial: 0 Periods Practical: 60 Periods Total: 75 Periods

TEXT BOOKS:

1. K.V. Natarajan, “Engineering Graphics”, Dhanalakshmi Publishers, 36th Edition, 2024.
2. V.Ramesh Babu, “Engineering Graphics”, VRB Publishers, Revised edition, 2022-2023.
3. Gopalakrishna K.R., “Engineering Drawing” (Vol. I & II combined), Subhas Publications, Bangalore, 30th Edition, 2017.

REFERENCES:

1. Bhatt, N.D., “Engineering Drawing”, Charotar Publishing House Pvt. Ltd., 55th Edition, 2025.
2. K. Venugopal and V Prabhu Raja, “Engineering Graphics”, New Age international Publishers, 17th Edition, 2024.
3. T Jeyapoovan, “Engineering Graphics and Design”, S Chand and Company Ltd, 8th Edition, 2022.
4. Basant Agarwal and Agarwal C.M., “Engineering Drawing”, McGraw Hill, 3rd Edition, 2019.
5. Kulkarni D.M., Rastogi A.P. and Sarkar A.K., “Engineering Graphics with AutoCAD”, PHI Learning, 2nd Edition, 2017.

COURSE OUTCOMES:

Upon completion of this course, the students will be able to:		Bloom's Level
CO1	Construct the conic curves, involutes and cycloid.	K3 (Apply)

CO2	Solve practical problems involving orthographic projection of points, lines and 3D objects.	K3 (Apply)
CO3	Draw the projections of plane surfaces and simple solids.	K3 (Apply)
CO4	Draw the section of solids and the development of simple solids	K3 (Apply)
CO5	Draw the isometric projections of simple solids and sketching of 3D objects	K3 (Apply)

Special points applicable to End Semester Examinations on Engineering Graphics:

1. There will be five questions, each of either or type covering all units of the syllabus.
2. All questions will carry equal marks of 20 each making a total of 100.
3. The answer paper shall consist of drawing sheets of A3 size only. The students will be permitted to use appropriate scale to fit solution within A3 size.
4. The examination will be conducted in appropriate sessions on the same day.

COs-POs &PSOs MAPPING:

COURSE ARTICULATION MATRIX													
CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2
CO 1	2	1	3	-	2	-	-	-	1	-	2	3	-
CO 2	2	1	2	-	1	-	-	-	1	-	2	2	-
CO 3	2	1	3	-	2	-	-	-	1	-	2	3	-
CO 4	2	1	3	-	2	-	-	-	1	-	2	3	-
CO 5	2	1	3	-	2	-	-	-	2	-	2	3	-
Avg.	2	1	2.8	-	1.8	-	-	-	1.2	-	2	2.8	-

COURSE OBJECTIVES:

- Implement computer fundamentals and structure logical solutions using C.
- Develop programs using control structures and arrays.
- Analyze modular and pointer-based techniques for efficient code design.
- Implement user-defined data types and memory management techniques.
- Apply file handling techniques for persistent data storage.

UNIT-I: BASICS OF C PROGRAMMING**11**

Generation and Organization of Computers - Number System - Binary - Decimal - Conversion - Problems. Need for logical analysis and thinking - Algorithm - Pseudo code - Flow Chart. Introduction to programming paradigms: Structure of C program - Data Types - Constants - Keywords - Operators and Expressions - Input / Output statements.

UNIT-II: ARRAYS AND STRINGS**9**

Decision making statements - Switch statement - Looping statements - Arrays - Initialization - Declaration - One dimensional, Two dimensional arrays - String: String operations - String Arrays - Simple programs: Sorting - Searching - Matrix operations.

UNIT-III: FUNCTIONS AND POINTERS**9**

Introduction to functions: Function prototype, function declaration, function definition, function call, Built-in functions (string functions, math functions) - Recursion - Pointers - Pointer operators - Pointer arithmetic - Arrays and pointers - Array of pointers - Parameter passing: Pass by value, Pass by reference- Storage classes and Visibility.

UNIT-IV: STRUCTURES AND UNION**9**

Structure - Nested structures – Pointer and Structures – Array of structures – Self referential structures – Dynamic memory allocation: malloc(), calloc(), realloc(), free() - Singly linked list – typedef – Union.

UNIT-V: FILE PROCESSING**7**

Files: File opening modes - File operations: Open, Read, Write, Close - Sequential access, Random access – Common errors in the file handling- File Pointers: ftell(), fseek(), rewind()- Preprocessor directives - Command line arguments.

Contact Periods:

Lecture: 45 Periods Tutorial: 0 Periods Practical: 0 Periods Total: 45 Periods

Text Books:

1. Reema Thareja, Computer Fundamentals and Programming in C, 3rd Edition, Oxford University Press, 2023.
2. Kernighan, B.W and Ritchie, D.M, “The C Programming language”, 2nd Edition, Pearson Education, 2015.

Reference Books:

1. Paul Deitel and Harvey Deitel, “C How to Program with an Introduction to C++”, 8th Edition, Pearson Education, 2018.
2. Anita Goel and Ajay Mittal, “Computer Fundamentals and Programming in C”, 1st Edition, Pearson Education, 2019.
3. Yashavant P. Kanetkar. “Let Us C”, BPB Publications, 16th revised edition, 2020.

COURSE OUTCOMES:

Upon completion of this course, the students will be able to:		Bloom's Level
CO1	Interpret fundamental concepts and constructs of C language.	K2 (Understand)
CO2	Apply C programming concepts to solve engineering problems.	K3 (Apply)
CO3	Analyze the programs for errors and efficiency	K4 (Analyze)
CO4	Create efficient C programs for engineering applications.	K6 (Create)
CO5	Develop innovative solutions using emerging programming concepts and technologies through independent or joint projects.	K6 (Create)

COs-POs & PSOs MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
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CO1	–	–	–	–	–	–	–	–	–	–	–	–	–
CO2	3	3	2	–	1	–	–	–	–	–	–	2	1
CO3	3	3	2	2	2	–	–	–	–	–	–	2	1
CO4	3	2	3	2	3	–	–	–	1	1	2	2	1
CO5	2	2	3	1	2	–	–	–	2	2	2	3	2
AVG	2.75	2.50	2.50	1.67	2.00	–	–	–	1.50	1.50	2.00	2.25	1.25

26ECES106	ELECTRICAL AND INSTRUMENTATION ENGINEERING	SEMESTER I			
		L	T	P	C
		3	0	0	3
COURSE OBJECTIVES:					
•	To impart knowledge in types, construction and working of transformers.				
•	To impart knowledge in types, construction and working of DC machines.				
•	To impart knowledge in types, construction and working of AC rotating machines.				
•	To introduce the functional elements and working of measuring instruments.				
•	To introduce the components of Electrical installations and energy conservation.				

UNIT-I: TRANSFORMER

K2 9

Introduction-Ideal and Practical Transformer-Phasor diagram- EMF Equation - Equivalent circuit-Testing -Efficiency and Voltage Regulation-Three Phase Transformers-Applications- Auto-Transformers – Current Transformer & Potential Transformer - Applications.

UNIT-II: DC MACHINES

K2 9

Introduction-Constructional Features-Motor and Generator mode-EMF and Torque equation-Methods of Excitation-Characteristics-Starting and Speed Control-Universal Motor-Stepper Motors-Brushless DC Motors-Applications.

UNIT-III: AC MACHINES

K2 9

Principle of operation of three-phase induction motors-Construction-Types-Equivalent circuit-Single phase Induction motors-Construction-Types-starting methods.Alternator:Working principle-Equation of induced EMF-Synchronous motors-working principle-starting methods.

UNIT-IV: MEASUREMENTS AND INSTRUMENTATION

K2 9

Functional elements of an instrument, Standards and calibration, Operating Principle, types-Moving Coil and Moving Iron meters, Measurement of three phase power, Energy Meter, Instrument Transformers-DSO-Block diagram-Data acquisition.

UNIT-V: ELECTRICAL INSTALLATIONS AND ENERGY CONSERVATION

K3 9

Single phase and three phase system-phase, neutral and earth, basic house wiring-basic safety measures at home and industry-Energy efficient lamps-Components of LT switchgear: Switch

fuse unit, MCB, MCCB, ELCB- Principle, characteristics, types and applications: Batteries-Earthing

Contact Periods:

Lecture: 45 Periods Tutorial: 0 Periods Practical: 0 Periods Total: 45 Periods

TEXT BOOKS:

1. P. S. Bimbhra, Electrical Machinery, Khanna Publishing House, Revised Edition, 2024.
2. B. L. Theraja and A. K. Theraja, A Textbook of Electrical Technology, Volume II: AC and DC Machines, S. Chand Publishing, 2025.
3. J. B. Gupta, A Course in Electrical and Electronic Measurements & Instrumentation, S. K. Kataria & Sons, 14th Edition, Reprint 2024.

REFERENCE BOOKS:

1. Md. Abdus Salam, Electrical Machines: Fundamentals and Analysis, Wiley/Scrivener, 1st Edition, 2025.
2. Rakesh Kumar Srivastava, Electrical Machines, Springer, 2025.
3. V. Jagadeesh Kumar, Principles of Electrical Measurement and Measuring Instruments, Springer Nature, 1st Edition, 2025.
4. R. K. Rajput, Electrical and Electronic Measurements and Instrumentation, S. Chand Publishing.
5. J. B. Gupta, An Integrated Course in Electrical Engineering, S. K. Kataria & Sons, 10th Edition, 2025

COURSE OUTCOMES:			
Upon completion of the course, the student will be able to			
CO	Statement	Knowledge level	SDGs Mapping
CO1:	Explain the construction, operating principles, performance characteristics, testing, and applications of single-phase, three-phase, and auto transformers.	K2 (Understanding)	SDG 7
CO2:	Explain the construction, operating principles, characteristics, speed control methods, and applications of DC machines, stepper motors, and brushless DC motors.	K2 (Understanding)	SDG 9

CO3:	Analyze the operating principles, characteristics, and performance of induction motors, alternators, and synchronous motors for industrial applications.	K2 (Understanding)	SDG 9
CO4:	Explain the principles and applications of electrical measuring instruments, instrument transformers, digital storage oscilloscopes, and data acquisition systems for electrical measurements.	K2 (Understanding)	SDG 9
CO5:	Apply the concepts of electrical installations, LT switchgear, earthing, batteries, electrical safety practices, and energy conservation techniques in residential and industrial systems.	K3 (Applying)	SDG 7, SDG12

MAPPING OF COs WITH POs AND PSOs

COs	POs											PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	-	-	1	-	-	-	-	-	-		
CO2	3	2	2	-	1	-	-	-	-	-	-		
CO3	3	3	2	1	1	-	-	-	-	-	-		
CO4	2	3	-	2	3	-	-	-	-	-	-		
CO5	2	2	2	-	1	-	3	-	-	-	-		
Avg.	2.60	2.40	2.0	1.50	1.40	-	3.0	-	-	-	-		

26CAHS109

HERITAGE OF TAMILS

SEMESTER I

L	T	P	C
1	0	0	1

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 – SCULPTU 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

Therukoothu, Karagattam, Villu Pattu, Kaniyan Koothu, Oyillattam, Leather puppetry, 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 – Self-Respect Movement - Role of Siddha Medicine in Indigenous Systems of Medicine – Inscriptions & Manuscripts – Print History of Tamil Books.

TOTAL : 15 PERIODS

REFERENCES:

1. தமிழக வரலாறு - மக்களும் பண்பாடும் - மற்றும் கல்வியியல் பணிகள் கழகம்).
2. கணினித் தமிழ் - முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்).
3. கீழடி - வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு) பொருநை - ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு)

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

26CAES106	C PROGRAMMING LABORATORY	SEMESTER I			
		L	T	P	C
		0	0	3	1.5
COURSE OBJECTIVES:					
• Outline control and iterative logic to build decision-driven C programs. • Develop modular, memory-efficient solutions using data organization and addressing. • Design real-world team applications using persistent storage and quality practices. • Analyze modular and memory-oriented programming techniques for efficient problem solving. • Apply data organization and file-handling techniques to develop efficient solutions.					
LIST OF EXPERIMENTS:					
1. I/O statements, operators, expressions 2. Decision-making constructs: if-else, goto, switch-case, break-continue 3. Loops: for, while, do-while 4. Arrays: 1D and 2D, Multi-dimensional arrays, traversal 5. Strings: operations 6. Functions: call, return, passing parameters by (value, reference), passing arrays to function. 7. Recursion 8. Pointers: Pointers to functions, Arrays, Strings, Pointers to Pointers, Array of Pointers 9. Structures: Nested Structures, Pointers to Structures, Arrays of Structures and Unions. 10. Files: reading and writing, File pointers, file operations, random access, processor directives. 11. Mini Project : Library Management, Hospital Management System, Banking Application, Inventory Management, Ticket Reservation, Student Attendance Maintenance, Restaurant Billing, Employee Management, College Course Registration System, Supermarket Billing Process, Hotel Reservation application, Currency Converter.					
Contact Periods:					
Lecture: 0 Periods	Tutorial: 0 Periods	Practical: 45 Periods	Total: 45 Periods		

COURSE OUTCOMES:

Upon completion of this course, the students will be able to:		Bloom's Level
CO1	Illustrate core programming concepts and constructs for solving computational problems.	K2 (Understand)
CO2	Apply control and iterative logic to build decision-driven solutions.	K3 (Apply)
CO3	Analyze modular and memory-addressing techniques for efficient problem solving.	K4 (Analyze)
CO4	Create efficient software solutions using structured data and persistent storage.	K6 (Create)
CO5	Demonstrate programming skills through individual or team-based application development.	K6 (Create)

LIST OF EQUIPMENT'S AND COMPONENTS

- Software Required – Turbo C Compiler / GNU C Compiler / Equivalent
- Operating System – Windows 7 / 8.1 / 10 / Linux
- Computers Required – 30 Nos.

COs-POs & PSOs MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO ₁	PSO2
CO1	–	–	–	–	–	–	–	–	–	–	–	–	–
CO2	3	3	2	–	1	–	–	–	–	–	–	2	2
CO3	3	3	3	2	2	–	–	–	–	–	–	2	1
CO4	3	2	3	2	3	–	–	–	1	1	2	2	1
CO5	2	2	3	1	2	–	–	–	2	2	2	2	1
AVG	2.75	2.50	2.75	1.67	2.00	–	–	–	1.50	1.50	2.00	2.00	1.25

L	T	P	C
0	0	3	1.5

COURSE OBJECTIVES:

The main objective of this course is to provide students in basic engineering practices and develop their practical skills through work shop based activities to:

- Provide hands-on training in plumbing and sheet-metal fabrication practices.
- Develop practical skills in carpentry using basic hand tools and workshop techniques.
- To understand electrical installation, wiring, and solar measurement practices.
- To develop skills in electrical safety, wiring, and solar measurement.
- To develop skills in identifying electronic components, soldering, and computer assembly.

GROUP – A (CIVIL & MECHANICAL)**PART I CIVIL ENGINEERING PRACTICES**

1. Plumbing Practice: Basic Introduction –Pipe fittings –Valves, Taps, Couplings, Unions, and Elbows and practical applications of plumbing.
2. Fabrication of Sheet Metal practices.
3. Carpentry Practice: Making a basic wood joint.

PART II MECHANICAL ENGINEERING PRACTICES

1. Welding Practice: introduction to welding –Safety – Arc Welding and Welding Joints.
2. Foundry Practice: Green Sand Molding – Core Preparation – Pattern Shrinkage (Demonstration only).

Contact Periods:

Lecture: 0 Periods Tutorial: 0 Periods Practical: 24 Periods Total: 24 Periods

GROUP – B (ELECTRICAL & ELECTRONICS)**PART III ELECTRICAL ENGINEERING PRACTICES**

1. Study of Electrical Installation tools, equipment & safety measures.
2. Residential house wiring and Staircase wiring.
3. Measurement of voltage and current using solar panel.

PART IV ELECTRONIC ENGINEERING PRACTICES

1. Study of Electronic Components and Equipment: Resistor Colour Coding, and Soldering Practices.
2. Dis-assembly and assembly of computers.

Contact Periods:**Lecture: 0 Periods****Tutorial: 0 Periods****Practical: 21 Periods****Total: 21 Periods****Overall Total: (Group A: 21 + Group B: 24) Total: 45 Periods****COURSE OUTCOMES:****Upon completion of this course, the students will be able to:**

CO	Course Outcome Description	Knowledge Level
CO1	Assemble pipe fittings for a Plumbing line and fabricate a sheet metal tray.	K3 (Apply)
CO2	Construct a basic wood joint using appropriate carpentry hand tools and workshop techniques.	K3 (Apply)
CO3	Perform electrical installation, wiring, and solar measurements safely.	K3 (Apply)
CO4	Apply electrical safety practices and measure solar panel parameters.	K3 (Apply)
CO5	Identify electronic components, perform soldering, and assemble computers.	K3 (Apply)

COs-POs &PSOs MAPPING:

COURSE ARTICULATION MATRIX													
CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2
CO 1	3	-	-	-	-	-	1	-	2	-	-	2	-
CO 2	3	-	-	-	-	-	-	-	2	-	-	2	-
CO 3	3	-	-	-	-	-	1	-	2	-	-	2	-
CO 4	3	-	-	-	2	2	-	2	2	-	-	-	2
CO 5	3	-	-	-	2	-	-	-	2	-	-	-	2
Avg.	3	-	-	-	2	2	1	2	2	-	-	2	2