VASAVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

ACCREDITED BY NAAC WITH 'A++' GRADE
Ibrahimbagh, Hyderabad-31
Approved by A.I.C.T.E., New Delhi and
Affiliated to Osmania University, Hyderabad-07

Sponsored

by

VASAVI ACADEMY OF EDUCATION

Hyderabad

SCHEME OF INSTRUCTION AND SYLLABI UNDER CBCS FOR
B.E. (ECE) I and II Semesters
With effect from 2025-26
(For the batch admitted in 2025-26)
(R-25)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
Phones: +91-40-23146040, 23146041
Fax: +91-40-23146090

Institute Vision

Striving for a symbiosis of technological excellence and human values

Institute Mission

To arm young brains with competitive technology and nurture holistic development of the individuals for a better tomorrow

Department Vision

Striving for excellence in teaching, training and research in the areas of Electronics and Communication Engineering and fostering ethical values

Department Mission

To inculcate a spirit of scientific temper and analytical thinking and train the students in contemporary technologies in Electronics and Communication Engineering to meet the needs of the industry and society with ethical values

B.E (ECE) Program Educational Objectives (PEO's)	
PEO I	Graduates will be able to identify, analyze and solve engineering problems.
PEO II	Graduates will be able to succeed in their careers, higher education, and research.
PEO III	Graduates will be able to excel individually and in multidisciplinary teams to solve industry and societal problems.
PEO IV	Graduates will be able to exhibit leadership qualities and lifelong learning skills with ethical values.

B.E. (ECE) PROGRAM OUTCOMES (PO's) Engineering Graduates will be able to:	
PO1	Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
PO2	Problem Analysis: Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
PO3	Design / development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety and the cultural, societal and environmental considerations.
PO4	Conduct investigations of complex problems: Use research based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.
PO5	Modern tool usage: Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts and demonstrate the knowledge of and need for sustainable development.
PO8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	Individual and team work: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary settings.
PO10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, give and receive clear instructions.
PO11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	Lifelong learning: Recognize the need, and for have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

B.E (ECE) PROGRAM SPECIFIC OUTCOMES (PSO's)	
PSO I	ECE students will be able to analyze and offer circuit and system level solutions for complex electronics engineering problems, keeping in mind the latest technological trends.
PSO II	ECE students will be able to apply the acquired knowledge and skills in modeling and simulation of communication systems.
PSO III	ECE students will be able to implement signal and image processing techniques for real time applications.

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS) :: IBRAHIMBAGH, HYDERABAD – 500 031.
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
SCHEME OF INSTRUCTION AND EXAMINATION **(R-25)** :: B.E. - ECE : FIRST SEMESTER (2025-26)

B.E (ECE) I – SEMESTER								
Course Code	Name of the Course	Scheme of Instruction			Scheme of Examination			
		Hours per Week			Duration in Hrs	Maximum Marks		Credits
		L	T	P		SEE	CIE	
THEORY								
U25HS010EH	English Language and Communication	2	-	-	3	60	40	**2**
U25BS110MA	Matrices and Calculus	3	-	-	3	60	40	**3**
U25BS120CH	Engineering Chemistry	2	-	-	3	60	40	**2**
U25ES110EC	Basic Circuit Analysis	3	-	-	3	60	40	**3**
U25ES120EC	Programming and Problem Solving for Engineers	3	-	-	3	60	40	**3**
U25ES010CE	Basic Engineering Mechanics	2	-	-	3	60	40	**2**
PRACTICALS								
U25HS011EH	English Language and Communication Skills Lab	-	-	2	3	50	30	**1**
U25BS011CH	Chemistry Lab	-	-	2	3	50	30	**1**
U25ES111EC	Basic Circuit Analysis Lab	-	-	2	3	50	30	**1**
U25ES121EC	Programming and Problem Solving for Engineers Lab	-	-	2	3	50	30	**1**
		15	**-**	**8**		**560**	**360**	**19**
	GRAND TOTAL	**23**				**920**		
Left over hours will be allocated for : Sports / Library / Mentor - Mentee Interaction / CC / RC / TC								
Note: 1) Every Student shall complete one NPTEL course certification of 8 weeks duration (equivalent to 2 credits weightage) by the end of VI-Semester. **2)** Students willing to Opt B.E (ECE) Honours Degree in System on Chip Design shall complete one NPTEL Course Certification (equivalent to 2 Credits weightage) by the end of IV-Semester.								

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
SCHEME OF INSTRUCTION AND EXAMINATION **(R-25)** :: B.E. – ECE : FIRST SEMESTER (2025 - 2026)

B.E (ECE) I - SEMESTER								
SERVICE COURSES OFFERED BY ECE TO CSE								
Course Code	Name of the Course	Scheme of Instruction			Scheme of Examination			
		Hours per Week			Duration in Hrs	Maximum Marks		Credits
		L	T	P		SEE	CIE	
THEORY								
U25ES130EC	Introduction to Electronics Engineering	2	-	-	3	60	40	2
PRACTICALS								
U25ES131EC	Introduction to Electronics Engineering Lab	-	-	2	3	50	30	1

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DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

English Language and Communication

SYLLABUS FOR B.E. I - SEMESTER (Common to all branches)

L:T:P (Hrs/Week): 2:0:0	SEE Marks: 60	Course Code: **U25HS010EH**
Credits: 2	CIE Marks: 40	Duration of SEE: 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the learners to: 1. Build greater confidence and proficiency in oral and written communication. 2. Equip themselves with essential language skills to analyze and articulate their point of views. 3. Develop the ability to engage in reading for reflection and enquiry. 4. Construct grammatically correct and contextually appropriate correct sentences. 5. Learn how project reports are written in their related field of study.	At the end of the course the learners will be able to: - 1. Demonstrate effective verbal and non-verbal communication skills and apply emotional intelligence and team-building concepts to real-life scenarios. 2. Listen actively and speak clearly and confidently in academic and professional contexts, including delivering structured presentations. 3. Employ reading techniques and write coherent, well-organized paragraphs, emails, and letters for different purposes and audiences. 4. Apply a broadened vocabulary and correct grammatical structures to construct meaningful and grammatically accurate sentences. 5. Analyse and appreciate literary texts, identifying themes, tone, and stylistic devices, and relate them to personal or societal contexts.

CO-PO/PSO Mapping

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

UNIT-I: 1.0 Effective communication and Interpersonal skills

1.1 Role and Importance of Communication – Types of Communication (Verbal-non-verbal, formal- informal, oral, written, visual, intrapersonal,

interpersonal and extra personal communication); styles, channels and barriers of communication.
1.2 Emotional Intelligence: Self-awareness, Self- regulation, Motivation, Empathy and Social skills
1.3 Johari Window.
1.4 Persuasion techniques.
1.5 Stages of Team Building by Bruce Tuckman; Qualities of a team player/leader.

UNIT-II: 2.0 Listening and Speaking skills (4hrs)
2.1 Importance of listening-- Types of listening; Note taking.
2.2 Speaking skills: Presentation Skills (on Projects/ Topics related to the branch).

UNIT-III: 3.0 Reading and Writing skills (5hr)
3.1 Reading strategies- SQ3R (Survey, Question, Read, Recite &Review); Types of Comprehension - Global, Factual and Inferential.
3.2 Features of Writing-Principles of writing paragraphs (Coherence, Cohesion& Unity); Use of appropriate linkers/connectives; Focus on cause, effects, comparison, definition, classification problem/ solution, process, argument.
3.3 Email-Etiquette.
3.4 Letter Writing.

UNIT-IV: 4.0 Vocabulary Building and Grammar (3hrs)
4.1Vocabulary Building: Synonyms, Antonyms, One-word substitutes; Words often Confused; Idioms.
4.2 Functional Grammar: Tense and Aspect; Subject-Verb agreement

UNIT-V: 5.0 Reading for appreciation of literary texts (8hrs)
1.5 Prose text- Yesterday was Beautiful by Roald Dahl
5.2 Poem- Defeat by Kahlil Gibran

Prescribed textbook for theory:
Technical communication - Principles and Practice (2nd Edition 2014) - Meenakshi Raman and Sangeeta Sharma- Oxford University Press.

Additional reading:-
1. Abraham Lincolns letter to his son's school master
2. On His Blindness by John Milton
3. Road not taken by Robert Frost
4. Mike Markel - Technical communication
5. The Soldier by Rupert Brooke.

6. Upheavals of Thought: The Intelligence of Emotions-Martha C. Nussbaum
7. Emotional intelligence – Daniel Goleman.
8. Experience & Education-John Dewey
9. Academic writing-Stephen Bailey
10. Biographies for vocabulary and grammar- Salim Ali & Charles Barbage.
11. Bruce Tuckman – Team Building

Learning Resources:

1. Paul V. Anderson – Technical Communication
2. E.Suresh Kumar, P. Sreehari and J. Savithri - Essential English
3. Reading comprehension - Nuttal.J.C - Orient Blackswan
4. Sunitha Mishra, C. Murali Krishna-Communication Skills for Engineers, Pearson, 2004.
5. M. Ashraf Rizvi. Effective Technical Communication. Tata McGraw Hill, 2005.
6. Allen and Waters. How English Works.
7. Willis Jane., English through English.

Mode of delivery: - Case-studies, Presentations-Power and Poster, Group Discussions, Research based projects, worksheets, Handouts, Lectures, Student presentations, Videos, Audio clips of Speeches, Team tasks etc.

The break-up of CIE: Internal Tests + Assignments + Quizzes

1.	No. of Internal Tests	:	2	Max. Marks for each Internal Tests	:	30
2.	No. of Assignments	:	3	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	:	3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 Minutes

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DEPARTMENT OF MATHEMATICS

Matrices and Calculus

For B.E., I- Sem., (CBCS) (Common to Civil, EEE, ECE and Mechanical)

L:T:P (Hrs/Week): 3:1:0	SEE Marks: 60	Course Code: **U25BS110MA**
Credits: 3	CIE Marks: 40	Duration of SEE: 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to: 1. Study the concepts of rank of a matrix, System of linear equations and LU-Decomposition method. 2. Learn the concepts of eigen values, eigen vectors and diagonalization. 3. Develop a deep understanding of the concepts and applications of Taylor's series, Maclaurin's series, curvature, radius of curvature, centre of curvature, and evolutes. 4. Learn the techniques for finding partial derivatives of functions of several variables, Taylor's series for functions of two variables and methods for finding maxima and minima of functions of several variables. 5. Understand the fundamental concepts of infinite series and various tests for convergence.	At the end of the course students should be able to: 1. Compute the rank of a given matrix and solution of a system by LU-Decomposition method. 2. Find the characteristic equation, eigen values, and eigen vectors and to diagonalize a square matrix using similarity transformation. 3. Apply the concepts of Taylor's series and Maclaurin's series to approximate functions and to find the curvature, radius, centre of curvature and evolutes of curves. 4. Calculate partial derivatives of functions of several variables and apply Taylor's series for functions of two variables, analyze functions to find maxima and minima. 5. Identify an appropriate test and determine nature of a series.

CO-PO/PSO Mapping

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

UNIT-I:

MATRICES-I: Rank of a Matrix- Echelon form - Linearly Dependence and Independence of Vectors– Consistency and Inconsistency of Homogeneous and Non-Homogenous system of linear equations.

UNIT-II:

MATRICES-II: Characteristic equation- Cayley - Hamilton Theorem (without proof) -Eigen values and Eigen vectors - Diagonalization using Orthogonal Transformation-Quadratic form- Reduction of Quadratic form to Canonical form.

UNIT-III:

DIFFERENTIAL CALCULUS: Taylor's Series – Maclaurin's Series - Curvature - Radius of Curvature – Centre of Curvature – Evolutes (Cartesian and Parametric forms of the curves).

UNIT-IV:

MULTIVARIBLE CALCULUS: Limits- Continuity (Concepts) - Partial Derivatives - Higher Order Partial Derivatives - Total Derivates - Derivatives of Composite and implicit functions - Taylor's series of functions of two variables - Maxima and Minima of functions of two variables - Lagrange's Method of multipliers.

UNIT-V:

INFINITE SERIES: Introduction to Infinite Series - Nature of the Series – Series of positive terms - Geometric series- p-series test - Comparison tests – Limit form of comparison test - D'Alembert's Ratio Test – Cauchy's n^{th} root test - Alternating Series – Leibnitz test – Absolute Convergence.

Text Books:

1. Advanced Engineering Mathematics, Third Edition, R. K. Jain and S. R. K. Iyengar, Narosa Publishing House.
2. Higher Engineering Mathematics, B. S. Grewal $40^{th.}$ Edition, Khanna Publishers.

Reference Books:

1. Advanced Engineering Mathematics 8^{th} Edition by Erwin Kreyszig, John Wiley & Sons.
2. Differential Calculus by Shanti Narayan, S. Chand & Co
3. Vector Calculus – Schaum's outline series.

Online Resources:

1. https://onlinecourses.nptel.ac.in/noc24_ma03/preview
2. https://onlinecourses.nptel.ac.in/noc24_ma31/preview
3. https://onlinecourses.swayam2.ac.in/cec24_ma10/preview

The break-up of CIE : Internal Tests + Assignments + Quizzes

1.	No. of Internal Tests	: 2	Max. Marks for each Internal Tests	:	30
2.	No. of Assignments	: 3	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 Minutes

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DEPARTMENT OF CHEMISTRY

Engineering Chemistry

SYLLABUS FOR B.E. I - SEMESTER (For ECE & EEE branches)

L:T:P (Hrs/Week): 2:0:0	SEE Marks: 60	Course Code: **U25BS120CH**
Credits: 2	CIE Marks: 40	Duration of SEE: 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to: 1. Study types of conductance, variation of electrode potential and EMF and to acquaint with applications of Galvanic Cell. 2. Classify and compare various types of batteries and fuel cells. 3. Introduce the fundamental concepts and applications of nanomaterials and electrochemical sensors. 4. Get acquainted with engineering materials such as polymers and liquid crystals.	At the end of the course, students should be able to: 1. Construct a galvanic cell and calculate its EMF and pH wherever applicable. 2. Describe the construction, functioning and applications of the selected primary, secondary batteries and fuel cells. 3. Explain the synthesis and properties of nanomaterials along with working principle of electrochemical sensors. 4. Outline the properties associated with different types of engineering polymers and liquid crystals.

CO-PO/PSO Mapping

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

UNIT-I: ELECTROCHEMISTRY (10)

Introduction, conductance, types of conductance - specific, equivalent, molar conductance and their interrelationship - numericals. Principle and applications of conductometric titrations- strong acid *vs* strong base, week acid *vs* strong base and mixture of acids *vs* strong base.

Cells-electrolytic and electrochemical cells. concept of electrode potential, electromotive force (EMF). Nernst equation - derivation, applications and numericals. Types of electrodes – construction and working of calomel electrode (CE), quinhydrone electrode and glass electrode (GE). Determination of pH using glass electrode and quinhydrone electrode. Applications of potentiometry – acid base titrations.

UNIT-II: ENERGY STORAGE DEVICES (9)

Introduction – definition of cell and battery – Types of cells (reversible and irreversible cells). Battery characteristics: free energy change, electromotive force of battery, power density, energy density – numerical. Memory effect, flat discharge rate.

Primary batteries: Types-acidic, alkaline and reserve batteries. Construction and electrochemistry of Ag_2O-Zn battery and lithium-V_2O_5 battery.

Secondary batteries: Construction and working of lead-acid and lithium ion battery – advantages, limitations and applications.

Fuel cells: Concept, types of fuel cells and merits. Construction, working and applications of methanol - oxygen fuel cell and phosphoric acid fuel cell.

UNIT-III: NANO MATERIALS AND SENSORS (10)

a) Nanomaterials: Introduction – concept of nanomaterials – quantum confinement and surface volume ratio. Applications of Nanomaterials.

Synthesis of nanomaterials: Top down and bottom-up approaches – Mechanical grinding by ball milling, sol gel method.

Carbon Nanotubes**:** Single walled carbon nanotubes (SWCNTs). Multi walled carbon nanotubes (MWCNTs), synthesis of CNTs – arc discharge method, Microscopic Characterization: Limitations of optical microscopy, Principle and block diagram of Scanning Electron Microscope (SEM).

b) Sensors: Introduction – characteristics of sensors, elements of sensors- receptor, transducer, Classification of sensors- working principle with an example of potentiometric sensors and amperometric sensors- Applications of Electrochemical sensors.

UNIT-IV: POLYMERS AND LIQUID CRYSTALS (10)

Introduction, degree of polymerization, functionality of monomers and its effect on the structure of polymers. Classification of polymers – i) homo and co-polymers, ii) homo chain and hetero chain polymers. iii) plastics-elastomers, fibers and resins. Molecular weight – number average and weight average molecular weight, numericals. Glass transition temperature (T_g) and factors affecting T_g.

Plastics: Thermo plastics and Thermo sets. Preparation, properties and engineering applications of PVC, Bakelite and Nylon 6,6.

Elastomers: Preparation, properties and engineering applications of Buna-S.

Biodegradable polymers: Concept, preparation and uses of polylactic acid and polyvinyl alcohol.

Conducting polymers: Definition – classification, mechanism of

conduction in (p-doped and n-doped) polyacetylene and engineering applications.

Liquid Crystals:

Introduction, classification of liquid crystals – Thermotropic and Lyotropic liquid crystals – Chemical constitution & liquid crystalline behavior. Molecular ordering in liquid crystals – Nematic, Smectic and Cholestric liquid crystals – Applications.

Text Books:

1. P. C. Jain, M Jain Engineering Chemistry, Dhanapathi Rai publishing company (17th edition), New Delhi.
2. O. G. PALANNA, Engineering Chemistry, TMH Edition.

Learning Resources:

1. B. H. Mahan, University Chemistry.
2. B. L. Tembe, Kamaluddin and M. S. Krishnan, Engineering Chemistry (NPTEL Web-book).
3. P. W. Atkins, Physical Chemistry.
4. S. S. Dara, S Chand and sons, Engineering Chemistry, New Delhi.
5. Puri, Sharma and Pathania, Principles of Physical Chemistry, Vishal Publishing Co.
6. D. Dhara, IIT Kharagpur, NPTEL Polymer Chemistry Course.
7. Gowarikar V R, Polymer chemistry, V Edition.
8. S M Lindsay, Introduction to Nanoscience, Oxford University press.
9. Sashi Chawla, Text book of Engineering Chemistry, Dhanapathi Rai & Co, New Delhi.
10. J.C. Kuriacose and Rajaram, Chemistry in Engineering and Technology.
11. Wiley Engineering Chemistry, Wiley India pvt Ltd, II edition.
12. Peter Grundler, Chemical sensors, An introduction for scientists and engineers, Springers
13. Chemistry of Nanomaterials by CNN Rao.

The break-up of CIE: Internal Tests + Assignments + Quizzes

1.	No. of Internal Tests	:	2	Max. Marks for each Internal Tests	:	30
2.	No. of Assignments	:	3	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	:	3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 Minutes

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Basic Circuit Analysis

SYLLABUS FOR B.E. (ECE) I - SEMESTER

L:T:P (Hrs/Week): 3:0:0	SEE Marks: 60	Course Code: **U25ES110EC**
Credits: 3	CIE Marks: 40	Duration of SEE: 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
Students will be able 1. To understand the fundamental concepts of electric circuits, including classification of elements, circuit laws, and analysis techniques like nodal and mesh analysis. 2. To apply network theorems such as Thevenin's, Norton's, Superposition, and others for effective analysis of both DC and AC electrical circuits. 3. To study and analyze two-port networks using various parameters (z, y, h, g, ABCD) and understand their interconnection and conversion. 4. To analyze time-domain responses of circuits under different inputs, focusing on transient and steady-state behaviour of RL, RC, and RLC circuits. 5. To explore frequency-domain analysis including resonance and passive filters, and evaluate their characteristics such as Q-factor, selectivity, and bandwidth.	On completion of the course, students will be able to 1. Calculate circuit parameters of any given circuit. 2. Solve the given circuits using network theorems. 3. Determine two port network parameters from given network 4. Analyze given circuit in time domain using Transient and steady state analysis. 5. Design and analyze a given circuit in frequency domain.

CO-PO/PSO Mapping

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

UNIT-I:

Basic concepts of Electric Circuits: Classification of Basic circuit elements, Dependent and independent voltage and current sources, Energy and power, Ohm's law, Kirchhoff's laws, network reduction techniques, nodal and super nodal analysis, mesh and super mesh analysis.

UNIT-II:
Network Theorems to DC and AC circuits: Thevenin's and Norton's theorem, maximum power transfer theorem, Super position theorem, Reciprocity theorem, Tellegen's theorem, Substitution Theorem.

UNIT-III:
Two port networks: z,y,h,g, ABCD parameters. Equivalence of two port networks, conversion between network parameters. Inter connection of two ports.

UNIT-IV:
Time Domain Analysis of Circuits: Response of circuits for Unit step and sinusoidal input: Transient and Steady state response of circuits: Zero input response (ZIR), Zero state response (ZSR), and complete response. Transient and steady state analysis of RL, RC and RLC circuits for unit step, sinusoidal inputs.

UNIT-V:
Frequency Domain Analysis: Resonance: Analysis of Series and Parallel resonance, Q-factor, Selectivity, and bandwidth.
Passive Filters: Classification of passive filters, Response of RC and RL low pass filters and high pass filters. Filters as Integrating and differentiating circuits. Computation of Kirchhoff's laws using AI concept.

Learning Resources:

1. Charles K. Alexander, Matthew N.O. Sadiku, Fundamentals of electric circuits 6th ed. McGraw Hill, 2016.
2. James W. Nilsson, Susan A. Riedel Electric Circuits Ninth Edition, Prentice Hall, 2011.
3. Chakrabarti, Ciruit Theory Dhanapati Rai & Co(Pvt.)Ltd., Educational & Technical Publishers. 2018.
4. William H. Hayt, Jr., Jack E. Kemmerly and Steven M. Durbin, Engineering Circuit Analysis, 5th edition, McGraw Hill, 2010.
5. Charles A. Desoer and Ernest S Kuh, Basic Circuit Theory, McGraw Hill, 2009.

The break-up of CIE : Internal Tests + Assignments + Quizzes

1.	No. of Internal Tests	: 2	Max. Marks for each Internal Tests	:	30
2.	No. of Assignments	: 3	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 Minutes

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Programming and Problem Solving for Engineers

SYLLABUS FOR B.E. (ECE) I- SEMESTER

L:T:P (Hrs/Week): 3:0:0	SEE Marks: 60	Course Code: **U25ES120EC**
Credits: 3	CIE Marks: 40	Duration of SEE: 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. Acquire problem solving skills and develop flow charts. 2. Understand conditional and iterative concepts. 3. Implement sorting and searching using Arrays. 4. Understand the importance of pointers. 5. Construct user defined datatypes and work with FILEs.	At the end of the course the learners will be able to 1. Interpret the storage of data in memory and design flowcharts and algorithms for solving a given computational problem. 2. Apply decision making, looping constructs and functions to develop programs. 3. Store data using arrays and perform searching and sorting operations on the data. 4. Design programs on string handling and operations on arrays using dynamic memory management techniques. 5. Develop programs to store data and perform operations using structures and FILEs.

CO-PO/PSO Mapping

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

UNIT-I:

Introduction to Computers: Computer Systems, Computing Environments, Computer Languages, Creating and Running Programs, Flowcharts. Number Systems (Binary, Octal, Decimal and Hexadecimal)

Introduction to C Language: Background, Structure of a C Program, Identifiers, Types, Variables, Constants, Input/Output statements, Operators, Expressions, Precedence and Associativity, Side Effects, Evaluating Expressions, Type Conversion.

UNIT-II:

Branching Statements: simple-if, if – else, nested – if, else if ladder, switch statements.

Iterative Statements: while, do-while, for Statements; break, continue

statements; Nested loops.
Functions: Introduction to Structured Programming, Built-in and User Defined Functions, Inter-Function Communication, Non-formatted I/O Functions.

UNIT-III:
Storage Classes: Scope and Lifetime of variables; storage class specifiers; type qualifiers.
Recursion: Introduction, Recursive Functions.
Arrays: Introduction, 1D Arrays: Definition, Declaration, Initialization; Bubble Sort, Selection Sort, Linear Search and Binary Search; Two-Dimensional Arrays, Problems on Matrices.

UNIT-IV:
Pointers: Introduction, Call-by-value, Call-by-reference, Pointers to Pointers, Pointer Arithmetic, Passing an Array to a Function.
Runtime Arrays: Dynamic Memory Allocation Functions, Handling 1D and 2D arrays at runtime, Array of Pointers.
Strings: Introduction, String Input/Output functions, String Manipulation Functions, Array of Strings.

UNIT-V:
Type Definition (typedef), Enumerated Types.
Structure: Definition, Declaration and instantiation, Example programs on structures; Nested Structures, Arrays of Structures, Building Functions with structures, Pointers to Structures, Self-Referential Structures, Unions.
FILEs: Introduction, File Handling Functions.
Command Line Arguments in C.

Learning Resources:
1. Forouzan B.A & Richard F. Gilberg, A Structured Programming Approach using C,3rd Edition (2013), Cengage Learning.
2. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, 2nd, Edition (2006), Prentice-Hall.
3. Balagurusamy E, Programming in ANSI C, 4th Edition(2008), TMG.
4. MOOC Resource: NPTEL, https://nptel.ac.in/courses/106104128

The break-up of CIE : Internal Tests + Assignments + Quizzes

1.	No. of Internal Tests	: 2	Max. Marks for each Internal Tests	:	30
2.	No. of Assignments	: 3	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
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IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF CIVIL ENGINEERING

Basic Engineering Mechanics

SYLLABUS FOR B.E. I- SEMESTER (Common to CSE, CSE AIML, ECE & EEE)

L:T:P (Hrs/Week): 2:0:0	SEE Marks: 60	Course Code: **U25ES010CE**
Credits: 2	CIE Marks: 40	Duration of SEE: 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
Objectives of this course are to: 1. Explain the resolution of a system of forces (coplanar, spatial, concurrent, non-concurrent) and compute their resultant. 2. Solve particle equilibrium problem using equation of equilibrium 3. Determine forces in the members of a truss 4. Perform analysis of bodies lying on rough surfaces. 5. Locate the centroid of a body and also compute the area moment of inertia of standard sections.	At the end of the course, students will be able to: 1. Determine resultant of forces acting on a body. 2. Analyse equilibrium of a body subjected to a system of forces. 3. Perform analysis of trusses using method of joints and method of sections. 4. Solve problem of bodies subjected to friction. 5. Find the location of centroid and calculate moment of inertia.

CO-PO/PSO Mapping

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

UNIT-I:
Force Systems: Rectangular components, moment, couple and resultant of two dimensional force systems.

UNIT-II:
Equilibrium of Force Systems: Free body diagram, Equations of equilibrium, Equilibrium of two dimensional force systems.

UNIT-III:
Determinate Trusses: Analysis of plane trusses like Warren girder, Pratt truss, Fink truss etc using method of joints and method of sections.

UNIT-IV:

Friction: Laws of friction. Application to simple systems, Connected systems Wedge friction.

UNIT-V:

Centroid and Moment of Inertia: Centroids of lines, areas, Moment of inertia of areas for regular bodies (T, I & C-Sections)

Learning Resources:

1. Singer F.L "Engineering Mechanics", Harper & Collins, Singapore, 3rd Edition 2023.
2. Timoshenko S.P and Young D.H "Engineering Mechanics", McGraw Hill International Edition, 2017
3. Andrew Pytel., Jaan Kiusalaas., "Engineering Mechanics", 4th edition, Cengage Learning, 2015.
4. Beer F.P & Johnston E.R Jr. "Vector Mechanics for Engineers", TMH, 2019.
5. Hibbeler R.C, "Engineering Mechanics", 4th edition, Pearson Education, 2017.
6. Tayal A.K., "Engineering Mechanics – Statics & Dynamics", 4th Edition, Umesh Publications, 2011.
7. Basudeb Bhattacharyya., "Engineering Mechanics", Oxford University Press, 2014, 2nd Edition
8. Meriam. J. L. and Kraige L.G., "Engineering Mechanics", Volume-I Statics, John Wiley & Sons, 2017.
9. NPTEL Course (www.nptel.ac.in)
10. Virtual labs (www.vlab.co.in)

The break-up of CIE : Internal Tests + Assignments + Quizzes

1.	No. of Internal Tests	:	2	Max. Marks for each Internal Tests	:	30
2.	No. of Assignments	:	3	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	:	3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
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DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

English Language and Communication Skills Lab

SYLLABUS FOR B.E - I & II SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code: **U25HS011EH**
Credits : 1	CIE Marks : 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the learners to: 1. Understand the fundamentals of English phonetics, including sound classification and pronunciation of commonly mispronounced and foreign words. 2. Enhance listening comprehension and ear training through stress, intonation, and exposure to historical speeches and pronunciation patterns. 3. Develop effective public speaking and presentation skills by analysing model speeches and practicing structured delivery techniques. 4. Build collaborative communication abilities through group discussions, focusing on initiation, continuation, and closure strategies. 5. Strengthen reading comprehension and analytical skills, including paraphrasing and summarizing, using diverse reading strategies and text types.	On completion of the course, learners will be able to: 1. Accurately identify and pronounce English consonant and vowel sounds, including words with silent letters and foreign-origin terms used in English. They will also demonstrate improved listening and speech recognition skills through analysis of famous speeches and application of intonation and stress patterns. 2. Deliver structured public speeches and group presentations confidently, adhering to best practices for content and visual aid usage. They will engage effectively in group discussions, displaying clarity of thought, respect for others' opinions, and logical progression. 3. Apply advanced reading techniques (e.g., SQ3R, scanning, skimming) to comprehend, paraphrase, and summarize content from diverse sources including technical and journalistic texts.

CO-PO/PSO Mapping

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

1.0 PHONETICS LAB- TOPICS (8hrs)

1.1 **Introduction to English Phonetics:**

Classification of consonants and vowel sounds and related symbols. Pronunciation of commonly mispronounced words. Pronunciation of Foreign words in English.

1.2 **Aspects of language learning and ear training activities-** Word stress and intonation, Pronunciation of silent letters and Foreign words used in English Longman Dictionary of contemporary English- 6th Edition, 2020. Listening to famous speeches from history followed by while listening and post listening exercises.

2.0 INTERACTIVE COMMUNICATION SKILLS LAB-TOPICS (8hrs)

2.1 **Public speaking:**
Dos and don'ts of public speaking. Listening and analysing speeches of great personalities in history, TED talks, Documentaries and Movies.

2.2 **Presentation Skills:**
Dos and Don'ts of power point presentations, group presentations (branch specific topics)

2.3 **Group discussion:**
Objectives of GD, Types of GDs; Initiating, Continuing, and concluding a GD.

3.0 READING SKILLS LAB – TOPICS (8hrs)

3.1 Sub-skills of reading - SQ3R – skimming, scanning, extensive and intensive reading.

3.2 Teaching different types of texts for comprehension-short stories and technical articles.

3.3 Newspaper reading and paraphrasing/summarising.

3.4 Interview skills: For Practical examinations and general HR interviews.

Prescribed textbook for laboratory:

1. Speak Well: Jayshree Mohanraj, KandulaNirupa Rani and Indira Babbellapati - Orient Black Swan
2. Longman Dictionary of Contemporary English – 6th Edition, 2020.(The students will be given the PDF format)

Learning Resources:

1. Balasubramanian: A textbook of English phonetics for Indian students, Macmillan, 2008.
2. Priyadarshini Patnaik: Group discussion and interviews, Cambridge University Press India private limited 2011.
3. Daniel Jones: Cambridge English Pronouncing Dictionary - A Definitive guide to contemporary English Pronunciation.
4. Reading Cards (Eng400): Orient Black Swan. Reading Squabble - Hadfield.

The break-up of marks for CIE & SEE:

1.	No. of Internal Tests-2	:	Max. Marks for Internal Test : 30
	Duration of Internal Test	:	120 Minutes
2.	SEE	:	50 Marks
	Duration	:	180 Minutes

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DEPARTMENT OF CHEMISTRY

Chemistry Lab

SYLLABUS FOR B.E. I - SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code: **U25BS011CH**
Credits : 1	CIE Marks : 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to: 1. Promote adherence to laboratory safety precautions and ethical scientific practices 2. Describe the quantitative analytical techniques 3. Learn the skills to handle the instruments 4. Apply the theoretical principles in experiments	At the end of the course, students should be able to: 1. Estimate the amount of metal ions in the given solutions. 2. Analyze the hardness, alkalinity and chloride content of a given water sample. 3. Determine the concentration a given solution by conductometry, potentiometry and pH metry. 4. Use the principle of colorimetry in the estimation of Permanganate / Copper (II) in a given solution.

CO-PO/PSO Mapping

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

1. Preparation of standard FAS or oxalic acid solution and standardization of $KMnO_4$ or NaOH solution.
2. Estimation of Iron(II) in the given solution by permanganometry.
3. Estimation of chromium(VI) in the given solution by standardized FAS.
4. Estimation of copper(II) in given solution by Iodometry.
5. Estimation of total hardness of given water sample.
6. Estimation of alkalinity of a given sample.
7. Conductometric acid-base titrations -Determination of strength of given acids (HCl *Vs* NaOH and CH_3COOH *Vs* NaOH).

8. Conductometric acid-base titrations- Determination of strength of acids in a given mixture of acids (HCl and CH_3COOH *Vs* NaOH)
9. Determination of strength of a given acid by Potentiometry.
10. Determination of concentration of a given $FeSO_4$ using redox titration by Potentiometry.
11. Determination of strength of a given acid by pH metry.
12. Determination of strength of permanganate or copper by Colorimetry.

Text Books:

1. G H Jeffery, J Bassett, J Mendham, R C Denney, Vogel's text book of quantitative chemical analysis, Fifth Edition.
2. M S Kaurav, Engineering chemistry with laboratory experiments, PHI learning (P) ltd, New Delhi.
3. Sunita rattan, Experiments in applied chemistry, S K Kataria & Sons (2010).
4. A text book on experiments and calculation Engg. S.S. Dara.

The break-up of CIE :

1.	No. of Internal Test	:	1
2.	Max. Marks for internal tests	:	12
3.	Marks for day-to-day laboratory class work	:	18

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Basic Circuit Analysis Lab

SYLLABUS FOR B.E. (ECE) I - SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code: **U25ES111EC**
Credits : 1	CIE Marks : 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
Students will be able 1. To understand and experimentally verify fundamental circuit laws such as Ohm's law, Kirchhoff's Current and Voltage Laws using basic electrical circuits. 2. To apply and validate network analysis techniques including Nodal and Mesh analysis for solving electrical circuits practically and through simulation. 3. To verify key network theorems like Thevenin's, Norton's, Superposition, Tellegen's, and Maximum Power Transfer theorems using hardware and Multisim tools. 4. To design and analyze resonance circuits (series and parallel) and determine two-port network parameters through hands-on and virtual experiments. 5. To utilize Multisim software effectively for simulating circuit behavior, including dependent sources, transient responses, and AC analysis, reinforcing theoretical concepts through virtual labs.	On completion of the course, students will be able to 1. Apply Kirchhoff's laws, nodal and mesh analysis techniques to analyze and verify basic electrical circuits. 2. Demonstrate the validity of electrical network theorems such as Thevenin's, Norton's, Superposition, Tellegen's, and Maximum Power Transfer through practical experiments. 3. Design and analyze series and parallel resonance circuits, and measure key characteristics such as resonant frequency and quality factor. 4. Determine two-port network parameters and understand their significance in system interconnections through experimental methods. 5. Simulate and analyze electrical circuits using Multisim software, including circuits with dependent sources and transient behavior, to support theoretical understanding with virtual validation.

CO-PO/PSO Mapping

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

List of Experiments:

Part - A

1. Verification of Kirchhoff's Laws, Nodal and Mesh analysis.
2. Verification of Thevenin's theorems and maximum power transfer theorem.
3. Verification of superposition theorem.
4. Verification of Tellegen's theorem.
5. Design & verification of Series Resonance.
6. Design & verification of Parallel Resonance.
7. Measurement of two-port network parameters

Part - B (using MULTISIM)

8. Verification of Nodal and Mesh Analysis in the presence of dependent sources.
9. Verification of Thevenin's & maximum power transfer theorem in the presence of dependent sources.
10. Verification of Norton's theorems in the presence of dependent sources.
11. Verification of superposition & Tellegen's theorem in the presence of dependent sources.
12. Transient response of RL and RC circuits.
13. Measurement of two-port network parameters in the presence of dependent sources and ac sources

New / Additional Experiments

1. Design of Integrator using RC circuits.
2. Design of Differentiator using RC circuits.

The break-up of CIE :

1.	No. of Internal Test	:	1
2.	Max. Marks for internal tests	:	12
3.	Marks for day-to-day laboratory class work	:	18

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Programming and Problem Solving for Engineers Lab

SYLLABUS FOR B.E. (ECE) I - SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code: **U25ES121EC**
Credits : 1	CIE Marks : 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. Understand the fundamentals of programming in C Language. 2. Write, compile & debug programs in C 3. Formulate solution to problems and implement in C. 4. Effectively choose programming components to solve computing problems. 5. Develop structured programming concepts for a given problem.	On completion of the course, students will be able to 1. Choose appropriate data type for implementing programs in C language. 2. Design and implement modular programs involving input output operations, decision making and looping constructs. 3. Implement search and sort operations on arrays. 4. Apply the concept of pointers for implementing programs on dynamic memory management and string handling. 5. Design and implement programs to store data in structures and files.

CO-PO/PSO Mapping

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

All the programming exercises will be implemented in Linux Client-Server environment

Programming Exercises:

1. Programs on operators and Expressions
2. Programs on selection statements
3. Programs on iterative statements

4. Programs on nested iterative statements.
5. Programs on functions and recursion
6. Programs on one dimensional arrays.

Introduction to HackerRank™ online coding platform.

7. Programs on searching and sorting
8. Programs on two dimensional arrays
9. Programs on pointers: pointer to arrays, pointer to functions.
10. Programs on string manipulations.
11. Programs on structures and unions.
12. File handling programs.

New Experiments:

1. Program to Find Rank of a Matrix
2. Creation of User defined Library

Learning Resources:

1. Forouzan B.A & Richard F. Gilberg, A Structured Programming Approach using C,3rd Edition (2013), Cengage Learning.
2. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, 2nd, Edition (2006), Prentice-Hall.
3. Balagurusamy E, Programming in ANSI C, 4th Edition(2008), TMG.
4. MOOC Resource: NPTEL, https://nptel.ac.in/courses/106104128

The break-up of CIE :

1.	No. of Internal Test	:	1
2.	Max. Marks for internal tests	:	12
3.	Marks for day-to-day laboratory class work	:	18

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Introduction to Electronics Engineering

SYLLABUS FOR B.E. (CSE) I - SEMESTER

L:T:P (Hrs/Week): 2:0:0	SEE Marks: 60	Course Code: **U25ES130EC**
Credits: 2	CIE Marks: 40	Duration of SEE: 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. To understand the characteristics and operation of different electronic devices. 2. To understand the importance of feedback in amplifiers and oscillators 3. To study the working of rectifiers, transistor amplifiers, operational amplifiers and oscillators. 4. To study the working principle of different types of transducers and sensors	On completion of the course, students will be able to 1. Describe the input and output characteristics of Diode, BJT and MOSFET. 2. Appreciate the advantages of negative feedback in amplifiers and to design simple RC type, LC type oscillators using BJT. 3. Demonstrate the working of operational amplifier as Differentiator, Integrator etc. 4. Demonstrate the ability to select and apply appropriate transducer and sensor to convert real world physical parameters into electrical signals for IOT applications.

CO-PO/PSO Mapping

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

UNIT-I:

Semiconductor Devices: P-N Junction diode Rectifiers: Half Wave and Full Wave Rectifiers (Bridge and Centre tapped), Ripple factor and Efficiency, Zener Voltage Regulator, Bipolar Junction Transistor (BJT), Working principle, Configurations, Transistor parameters, Problems, Transistor as an amplifier, Metal Oxide Semiconductor Field Effect Transistor (MOSFET), Types (Depletion and Enhancement), MOSFET characteristics.

UNIT-II:

Feedback Concepts: Basic concept of feedback, Types of feedback, Advantages of Negative feedback in amplifiers; Oscillators: Classification, LC Type and RC Type Oscillators and Crystal Oscillators (Qualitative treatment only)

UNIT-III:

Operational Amplifiers: Introduction, Characteristics of Ideal Operational amplifier, Parameters, Open loop and closed loop configurations, Applications (Adder, Subtractor, Comparator, Voltage follower, Integrator, Differentiator)

UNIT-IV:

Data Acquisition Systems: Introduction, Classification of transducers, Temperature transducers (Thermocouple), Piezoelectric transducer, Photoelectric transducer; Ultrasonic Sensors, PIR Sensors, Gas Sensors and Humidity Sensors.

Learning Resources:

1. S.Shalivahan, N. Suresh Kumar, A Vallavea Raj Electronic Devices and Circuits Tata McGraw Hill, 2003.
2. Boylestad and Nashelsky, "Electronic Devices and Circuits", Eleventh Edition, Pearson.
3. Jacob Milman & C., Halkias, Electronic devices Eighth Edition, Reprinted, Mc Graw Hill,1985.
4. Ramakanth A. Gayakwad, Op-AMPS and Linear Integrated Circuits, 3rdedition, Prentice Hall of India,1985.
5. https://nptel.ac.in/courses/117103063/

The break-up of CIE : Internal Tests + Assignments + Quizzes

1.	No. of Internal Tests	: 2	Max. Marks for each Internal Tests	:	30
2.	No. of Assignments	: 3	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Introduction to Electronics Engineering Lab

SYLLABUS FOR B.E. (CSE) I - SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code: **U25ES131EC**
Credits : 1	CIE Marks : 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. Verify the characteristics of various electronic devices. 2. Understand the functioning of voltage regulator, rectifiers and oscillators. 3. Perform different arithmetic operations using operational amplifier.	On completion of the course, students will be able to 1. Plot the characteristics of active devices and to compute their parameters. 2. Analyse the functioning of voltage regulators, rectifiers and oscillators. 3. Perform addition, subtraction and comparison operations using operational amplifier.

CO-PO/PSO Mapping

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

List of Experiments:

1. Study of Electronic components and Resistor Color Coding
2. Zener Voltage Regulator (Line and Load Regulations)
3. Centre tapped Full Wave Rectifier
4. Characteristics of BJT (CE Configuration)
6. Characteristics of MOSFET (Drain and Transfer characteristics)
7. RC Phase shift oscillator
8. Hartley oscillator
9. Colpitt's Oscillator
10. Applications of Operational Amplifier: Adder, Subtractor
11. Applications of Operational Amplifier: Comparator, Voltage Follower

New / Additional experiments planned

1. Operational amplifier as a Differentiator
2. Operational amplifier as an Integrator

Learning Resources:

1. Paul B. Zbar, Albert P. Malvino , Michael A. Miller, Basic Electronics, A Text-Lab Manual, 7th Edition, TMH, 1994.
2. Paul B. Zbar, Industrial Electronics, A Text – Lab Manual, 3rd Edition, TMH,1983.
3. https://nptel.ac.in/courses/122106025/

The break-up of CIE :

1.	No. of Internal Test	:	1
2.	Max. Marks for internal tests	:	12
3.	Marks for day-to-day laboratory class work	:	18

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS) :: IBRAHIMBAGH, HYDERABAD – 500 031.
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
SCHEME OF INSTRUCTION AND EXAMINATION **(R-25)** :: B.E. – ECE : SECOND SEMESTER (2025-26)

B.E (ECE) II SEMESTER								
Course Code	Name of the Course	Scheme of Instruction			Scheme of Examination			
		Hours per Week			Duration in Hrs	Maximum Marks		Credits
		L	T	P/D		SEE	CIE	
THEORY								
U25BS210MA	Differential Equations and Vector Calculus	3	-	-	3	60	40	**3**
U25BS210PH	Quantum Mechanics for Engineers	2	-	-	3	60	40	**2**
U25ES210EC	Problem Solving through Object Oriented Programming	3	-	-	3	60	40	**3**
U25ES030CE	Basic Engineering Drawing	1	-	2	3	60	40	**2**
U25ES010EE	Basic Electrical Engineering	2	-	-	3	60	40	**2**
U25HS020EH	Human Values and Professional Ethics - I	1	-	-	2	40	30	**1**
U25HS040EH	Learning to Learn	1	-	-	2	40	30	**1**
PRACTICALS								
U25BS211PH	Applied Physics Lab	-	-	2	3	50	30	**1**
U25ES211EC	Problem Solving through Object Oriented Programming Lab	-	-	2	3	50	30	**1**
U25ES011EE	Basic Electrical Engineering Lab	-	-	2	3	50	30	**1**
U25ES011ME	Engineering Workshop	-	-	2	3	50	30	**1**
	TOTAL	**13**	**-**	**10**		**580**	**380**	**18**
	GRAND TOTAL	**23**				**960**		

Left over hours will be allocated for : Sports / Library / Mentor - Mentee Interaction / CC / RC / TC

Note: 1) Every Student shall complete one NPTEL course certification of 8 weeks duration (equivalent to 2 credits weightage) by the end of VI-Semester.
2) Students willing to Opt B.E (ECE) Honours Degree in System on Chip Design shall complete one NPTEL Course Certification (equivalent to 2 Credits weightage) by the end of IV-Semester.

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DEPARTMENT OF MATHEMATICS

Differential Equations and Vector Calculus

For B.E., II - Sem., (CBCS) (Common to Civil, EEE, ECE, Mechanical)

L:T:P (Hrs./week): 3:0:0	SEE Marks :60	Course Code : **U25BS210MA**
Credits : 3	CIE Marks :40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to : 1. Understand the fundamental concepts and solution of first-order Differential Equations, as well as their applications in modeling real-world phenomena. 2. Develop the ability to solve homogeneous and non-homogeneous Linear differential equations with constant coefficients, and their applications to LCR circuits. 3. Study the concepts of vector differentiation, Directional derivative, Divergence and Curl of a vector point function. 4. Learn the concepts of evaluation of double integrals and changing the order of integration. 5. Understand the concepts Improper integrals Beta, Gamma functions and their properties.	At the end of the course students should be able to: 1. Solve various types of first-order Differential Equations, model and analyze physical systems such as LR circuit and find orthogonal trajectories of Cartesian curves. 2. Solve homogeneous and non-homogeneous Linear differential equations with constant coefficients, including those arising in LCR circuits. 3. Find the gradient of a scalar point function, divergence and curl of vector field and its applications. 4. Evaluate the double integrals and also evaluate the double integrals by changing the order of integration and by change of variables. 5. Evaluate Improper integrals using Beta, Gamma functions.

CO-PO/PSO Mapping

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

UNIT-I:

ORDINARY DIFFERENTIAL EQUATIONS OF FIRST ORDER

Exact differential equations - Integrating factors - Clairaut's equation - Applications: Orthogonal trajectories (Cartesian families) - LR Circuit.

UNIT-II:

HIGHER ORDER LINEAR DIFFERENTIAL EQUATIONS

Solutions of Homogeneous and Non-Homogeneous linear equations of the

form f(D)y = r(x) with constant coefficients
$[\text{Where } r(x) = e^{ax},\ \sin(ax+b) (\text{or}) \cos(ax+b),\ x^k,\ e^{ax}V(x)]$ - Method of Variation of Parameters- LCR circuits.

UNIT-III:
VECTOR CALCULUS

Scalar and Vector point function and their derivatives - Level Surface - Gradient of a scalar point function - Normal to a level surface - Directional Derivative – Divergence and Curl of a Vector Field – Solenoidal and Irrotational vectors - Conservative vector field.

UNIT-IV:
DOUBLE INTEGRALS

Double integrals (Cartesian) - Change of order of integration (Cartesian Coordinates) - Change of the Variables (Cartesian to Polar Coordinates in two dimensions).

UNIT-V:
SPECIAL FUNCTIONS

Definition of Improper Integrals- Beta function - Gamma function - Relations between Beta & Gamma function - Properties of Beta and Gamma functions.

Text Books:

1. Advanced Engineering Mathematics 3rd Edition, R.K.Jain & S.R.K.Iyengar, Narosa Publishing House.
2. Higher Engineering Mathematics 40thEdition Dr. B.S Grewal, Khanna Publishers.
3. A Text book of Engineering Mathematics, N.P. Bali& Manish Goyal, Laxmi Publications.

Reference Books:

1 Advanced Engineering Mathematics, by Wylie & Barrett, Tata Mc Graw Hill, New
2 Advanced Engineering Mathematics, 8th Edition by Erwin Kreyszig, John Wiley & Sons, Inc.
3 Complex Variables and applications, J.W.Brown and R.V.Churchill, 7th Edition, Tata Mc Graw Hill,2004.

Online Resources:

1. https://onlinecourses.swayam2.ac.in/cec24_ma09/preview
2. https://onlinecourses.nptel.ac.in/noc24_ma03/preview

The break-up of CIE : Internal Tests + Assignments + Quizzes

1.	No. of Internal Tests	: 2	Max. Marks for each Internal Tests	:	30
2.	No. of Assignments	: 3	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Tests: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
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DEPARTMENT OF PHYSICS

Quantum Mechanics for Engineers

SYLLABUS FOR B.E. II – SEMESTER (Common to ECE and EEE)

L:T:P (Hrs./week): 2:0:0	SEE Marks :60	Course Code : **U25BS210PH**
Credits : 2	CIE Marks :40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. To appreciate the merits of quantum mechanics over classical mechanics. 2. To arrive at the expression for carrier concentration in semiconductors and analyze various semiconductor devices 3. To comprehend advantages of superconductors 4. To introduce basics of quantum bit theory	1. To apply quantum mechanical laws and interpret quantum tunnelling phenomenon. 2. To estimate required carrier concentration and elucidate working of optoelectronic devices 3. To explore SQUIDs and formulate different types of superconducting qubits 4. To interpret various types of qubits and their probable advantages

CO-PO/PSO Mapping

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

UNIT-I: FUNDAMENTALS OF QUANTUM MECHANICS

de Broglie waves and their properties, wave packet, wave function and its significance, Schrodinger time dependent and independent wave equations. Eigen values and Eigen functions of one-dimensional infinite square-well potential (particle in a box). Potential barrier problem and tunnelling phenomenon.

UNIT-II: PHYSICS OF SEMICONDUCTORS AND DEVICES

Kronig-Penny model, effective mass of an electron, Fermi energy level and variation of Fermi energy level with temperature, density of states, expression for intrinsic equilibrium carrier concentration, conductivity of intrinsic and extrinsic semiconductors, Hall effect and its applications.

Optoelectronic Devices: Principle, construction and working of LED, photodiode, solar cell and applications.

UNIT-III: SUPERCONDUCTIVITY

Introduction to superconductivity, General properties of superconductors: Zero resistivity, persistent currents, critical temperature, Critical magnetic field, critical current density, effect of pressure on T_C, Isotope effect, entropy, Meissner effect, London penetration depth, Type I and Type II superconductors-fundamentals of BCS Theory - Josephson's Junctions-Josephson's dc and ac effects–SQUID- High temperature superconductors-Applications of superconductors.

UNIT-IV: BASICS OF QUANTUM BIT THEORY

Introduction to Ket and Bra vectors, Qubits, superposition, entanglement, interference, decoherence of qubits, difference between quantum and classical computers.

Physical implementation of qubits (very qualitative description)

Solid State Qubits: Semiconducting Qubits- quantum dots, spins

Superconducting Qubits: Charge, Flux and Phase

Applications of quantum computers.

Learning Resources:

1. Donald A Neamen, Semiconductor Physics and Devices, 3rd edition, Tata McGraw 2008.
2. S.O. Kasap, Optoelectronic and Photonics: Principles and Practices, Pearson, 2001
3. S O Pillai, Solid State Physics, 8th edition, New Age International Publishers, 2018
4. M.N. Avadhanulu and P.G. Kshirsagar and TVS Arun Murthy, A Textbook Engineering Physics, 11th edition, S. Chand, 2019.
5. Quantum Mechanics: Theory and Applications" by Ajoy Ghatak and S. Lokanathan, Springer-Verlag New York Inc., 2004.
6. Quantum Computation and Quantum Information Michael A. Nielsen & Isaac L. Chuang, 10th Anniversary Edition, Cambridge University Press

The break-up of CIE : Internal Tests + Assignments + Quizzes

1.	No. of Internal Tests	: 2	Max. Marks for each Internal Tests	:	30
2.	No. of Assignments	: 3	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Tests: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Problem Solving through Object Oriented Programming

SYLLABUS FOR B.E. (ECE) II-SEMESTER

L:T:P (Hrs/Week): 3:0:0	SEE Marks: 60	Course Code: **U25ES210EC**
Credits: 3	CIE Marks: 40	Duration of SEE: 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. Understand basic notions of object-oriented programming. 2. Acquire knowledge of classes and objects. 3. Construct classes with function and operator overloading. 4. Implement inheritance in OOP 5. Implement generic programming	On completion of the course, students will be able to: 1. Explain Object Oriented Programming concepts using C++. 2. Design programs using functions, user defined classes. 3. Construct classes with arrays and perform operator overloading. 4. Design programs using inheritance and achieve dynamic polymorphism, 5. Implement templets and handle exceptions.

CO-PO/PSO Mapping

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

UNIT-I:

Introduction to C++: Programming paradigms, Object Oriented Programming concepts, Advantages and Applications of OOP. Variables and Assignments, I/O streams- cin and cout , branching and iterative statements in C++. Introduction to Classes and Objects.

UNIT-II:

Functions: Call by value, Call by Reference, Return by reference. Inline functions, Function Overloading, default list of Arguments, Recursion.

Implementation of user defined classes: Procedural Abstraction, Data Hiding and ADT.

UNIT-III:

Arrays: Introduction to Arrays, Arrays in functions, Programming with Arrays and Multidimensional Arrays.
Strings, Pointers and Dynamic Arrays.
Constructors, Copy Constructors, Destructors.
Static Polymorphism: Operator Overloading – Unary and Binary operators; Friend Functions and Friend classes.

UNIT-IV:

Inheritance: The notion of Inheritance, Types of inheritance, Derived Classes, Function Overriding, Virtual Base Class, Constructors and Destructors in inheritance.
Runtime Polymorphism: Introduction, Up-casting, Virtual functions, pure virtual functions, Abstract Base Class.

UNIT-V:

Generic Programming: Introduction, Function Templates, Class Templates, runtime object casting
Exception handling: Exception handling basics, Programming techniques for Exception Handling.
Stacks and Queues: Implementation of Stacks and Queues using Arrays.

Learning Resources:

1. Walter Savitch, "Problem solving with C++", 6th Edition, Pearson Education, 2009.
2. Bjarne Stroustrup, "The C++ Programming Language", 4th Edition, Addison-Wesley, 2013.
3. E. Balaguruswamy, "Object-Oriented Programming with C++", 6th Edition, Tata Mc-Graw Hill, 2013.
4. MOOCs Recourses: https://nptel.ac.in/courses/106105234

The break-up of CIE : Internal Tests + Assignments + Quizzes

1.	No. of Internal Tests	: 2	Max. Marks for each Internal Tests	:	30
2.	No. of Assignments	: 3	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
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DEPARTMENT OF CIVIL ENGINEERING

Basic Engineering Drawing

SYLLABUS FOR B.E. II - SEMESTER (Common to ECE & EEE)

L:T:P (Hrs/Week): 1:0:2	SEE Marks: 60	Course Code: **U25ES030CE**
Credits: 2	CIE Marks: 40	Duration of SEE: 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
Objectives of this course are to: 1. Impart skills in using drawing instruments to convey exact and complete information of the object. 2. Construct conic sections and regular polygons. 3. Construct the orthographic projections of points, lines, planes and solids.	At the end of the course, students will be able to: 1. Understand the fundamentals of drawing, Draw polygons and Conics. 2. Draw the orthographic projections of points and straight lines. 3. Draw the orthographic projections of planes inclined to both reference planes. 4. Draw the orthographic projections of solids inclined to one reference plane.

CO-PO/PSO Mapping

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

UNIT-I:

UNIT-I: Introduction to Engineering Drawing: Necessity of Engineering Drawing for engineers, Use of Drawing Instruments, Types of Lines, Lettering practice, Dimensioning and its methods, Conic sections by eccentricity method, Regular polygons given the length of side.

UNIT-II:

Orthographic Projections: Principles of orthographic projections, conventions, projections of points placed in different quadrants.

Projections of straight lines inclined to one and two reference planes placed infirst quadrant – Determination of final projections given true length and inclinations; Determination of true length and inclinations given projections ($\theta+\phi<90°$Only)

UNIT-III:

Projections of Planes: Projections of perpendicular planes, oblique planes- cases of an element of plane in HP or VP only.

UNIT-IV:

Projections of Regular Solids: Projections of prism, cylinder, pyramid and cone in simple positions and axis inclined to one reference plane.

Learning Resources:

1. Bhatt N.D. "Elementary Engineering Drawing", Charotar Publishers, 54th Edition, 2023.
2. Basanth Agrawal, Agrawal C.M " Engineering Drawing" Second Edition, Tata McGraw Hill,2019
3. Thomas E French, Charles J Vierck, Robert J. Foster, "Engineering Drawing and Graphic Technology", Mc Graw Hill Education, 1993.
4. GillP.S. "Engineering Drawing: Geometrical Drawing", S K Kataria & sons, 13th Edition, 2021.
5. Venugopal.K "Engineering Drawing and Graphics Plus Autocad", New Age International (P) Ltd., New Delhi, 2011.
6. Siddiquee A.N "Engineering Drawing with a Primer on Autocad", Prentice hall of India Ltd., New Delhi, 2004.
7. BVR Gupta, M RajaRoy, "Engineering Drawing with AutoCad", IK Int Pvt Ltd,2020.
8. NPTEL Course(www.nptel.ac.in)
9. Virtuallabs (www.vlab.co.in)

The break-up of CIE : Internal Tests + Assignments + Quizzes

1.	No. of Internal Tests	: 2	Max. Marks for each Internal Tests	:	30
2.	No. of Assignments	: 3	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Basic Electrical Engineering

SYLLABUS FOR B.E II - SEMESTER (Common to CSE & AIML, IT and ECE)

L:T:P (Hrs/Week): 2:0:0	SEE Marks: 60	Course Code: **U25ES010EE**
Credits: 2	CIE Marks: 40	Duration of SEE: 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. To explain the concepts and principles governing Direct Current (DC) electrical circuits. 2. To explain the essential principles of Alternating Current (AC) electrical circuits. 3. To explain the operational mechanisms and principles of DC electrical machines. 4. To explain the core working principles and applications of AC electrical machines.	On completion of the course, students will be 1. Analyze Electrical Dc circuits using different analyzing methods and theorems. 2. Analyze Electrical single phase circuits and power factor improvement. 3. Comprehend the working principles of DC machines. 4. Comprehend the working of single phase transformer & AC machines.

CO-PO/PSO Mapping

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

UNIT-I:

D.C. Circuits: Electrical circuit elements (R, L and C), independent voltage and current sources, Kirchhoff current and voltage laws, Source transformation, Mesh Analysis, Nodal analysis, Superposition theorem, Thevenin's and Norton's Theorem, Maximum power transfer theorem.

UNIT-II:

A.C. Circuits: Representation of sinusoidal waveform - peak and rms values, form factor, phasor representation, real power, reactive power, apparent power, power
Factor. Analysis of single-phase ac series combinations of R-L-C circuits, power factor improvement.

UNIT-III:

DC Machines: Construction, Working principle of DC Generator and DC motor , EMF equation, Types of DC Generators & motors, Torque in a DC motor, Torque – speed characteristic of DC Shunt motor, Speed control of DC shunt motor.

UNIT-IV:

Single Phase Transformer, Three phase induction Motor: Principle of operation, Ideal and practical transformer on No-load and Load, Equivalent circuit, losses in transformers, efficiency.

Generation of rotating magnetic fields, Construction and working of a three- phase induction motor, torque derivation, torque-slip characteristics.

Applications: General construction, working of Stepper motor and BLDC motor.

Learning Resources:

1. D. P. Kothari and I. J. Nagrath, "Basic Electrical Engineering", 4th edition Tata McGraw Hill, 2019.
2. D. C. Kulshreshtha, "Basic Electrical Engineering", McGraw Hill, 2019.
3. L. S. Bobrow, "Fundamentals of Electrical Engineering", Oxford University Press, 2011.
4. E. Hughes, "Electrical and Electronics Technology", Pearson, 2010.
5. V.K Mehta, Rohit Mehta, "Principles of Electrical Engineering and Electronics", S Chand & Company Ltd, 2006.
6. J.B. Guptha, A course in electrical installation estimating and costing, reprint 2013, published by S.K. Kataria & Sons.
7. V. D. Toro, "Electrical Engineering Fundamentals", Prentice Hall India, 1989.

The break-up of CIE : Internal Tests + Assignments + Quizzes

1.	No. of Internal Tests	: 2	Max. Marks for each Internal Tests	:	30
2.	No. of Assignments	: 3	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
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DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

Human Values and Professional Ethics - I

SYLLABUS FOR B.E. I & II - SEMESTER (Common to all branches)

L:T:P (Hrs/Week): 1:0:0	SEE Marks: 40	Course Code: **U25HS020EH**
Credits: 1	CIE Marks: 30	Duration of SEE: 2 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the learners to: 1. Get a holistic perspective of value-based education. 2. Grasp the meaning of basic human aspirations vis-a-vis the professional aspirations 3. Understand professionalism in harmony with self and society. 4. Develop ethical human conduct and professional competence. 5. Enrich their interactions with the world around, both professional and personal.	At the end of the course the learners will be able to: - 1. Understand the significance of value inputs in a classroom and start applying them in their life and profession 2. Distinguish between Personal and Professional life goals–constantly evolving into better human beings and professionals. 3. Work out the strategy to actualize a harmonious environment wherever they work. 4. Distinguish between ethical and unethical practices, and start implementing ethical practices 5. Apply ethics and values in their personal and professional interactions.

CO-PO/PSO Mapping

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

UNIT-I: HARMONY WITH SELF AND FAMILY

Understanding and living in harmony at various levels-with self, family, society and nature and the Ethical and moral values**:** which include self-sufficiency, self-determination, self-advocacy, self-competence, self-direction, self-efficacies, self-regulation, self-reliance, and self-responsibility. This also includes Family values involving all the ideas of how you want to live your family life, and they are often passed down

from previous generations.
1.1 Self-Values and Ethics
1.2 Family – Values and Ethics
1.3 Self-Care Practices

UNIT-II: PROFESSIONAL VALUES AND BEHAVIOUR

At the level of individuals: as socially and ecologically responsible engineers and technologists. Team Work: Developing Credibility and building trust by having open and truthful communication. This includes recognizing the value of time and respecting time of self and others.
2.1 Professional Ethics – Individual
2.2 Professional Behaviour - Body Language and Etiquette
2.3 Professional Ethics – Team

UNIT-III: SOCIAL VALUES

Values of service, social justice, dignity and worth of the person
Importance of human relationships, integrity, and competence.
3.1 Understanding Social Values
3.2 Importance of relationship
3.3 Diversity and Inclusion

UNIT-IV: SPIRITUAL VALUES

Developing individual practice has to do with having a sense of peace and purpose. Spiritual values, namely, benevolence, charity, dignity, forbearance, hope, humility, kindness, love, modesty, peace, perseverance, piety, repentance, righteous, sacredness, sincerity, steadfastness, striving, trusting, truthfulness, unity, and wisdom.
4.1 Exploring Different Traditions
4.2 Values in Action
4.3 Spirituality in Everyday Life

MODE of DELIVERY

● Questionnaires ● Quizzes ● Case-studies ● Observations and practice ● Home and classroom assignments	● Discussions ● Skits ● Short Movies/documentaries ● Team tasks and individual tasks ● Research based tasks ● Viva

Relevant Websites, CD's and Documentaries

https://plato.stanford.edu/

Learning Resources:

learn.talentsprint.com

1. Sapiens: A Brief History of Humankind By Yuval Noah Harari
2. How to Think About What You Don't Know: The Art of Counterfactual Thinking by Judith Lichtenberg
3. Ethics in the Professions by Charles E. W. Tessera
4. Thinking in Ethics: A Practical Guide to Right and Wrong by Jeanne Halifax

Additional Reading

1. Akash Singh Rathore - On Constitution

The break-up of CIE: Internal Tests + Assignments + Quizzes

1.	No. of Internal Tests	: 1	Max. Marks for each Internal Tests	:	20
2.	No. of Assignments	: 2	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	: 2	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
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DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

Learning to Learn

SYLLABUS FOR B.E. I & II - SEMESTER

L:T:P (Hrs/Week): 1:0:0	SEE Marks: 40	Course Code: **U25HS040EH**
Credits: 1	CIE Marks: 30	Duration of SEE: 2 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the learners to: 1. Understand the importance of a growth mindset and personal learning styles. 2. Learn techniques to improve memory retention and focus for effective learning. 3. Develop practical time management skills to prioritize tasks effectively. 4. Help students understand questions, structure answers effectively, and manage time for improved exam performance.	At the end of the course the learners will be able to: 1. Students will be able to adopt a growth mindset and customize learning strategies based on their strengths. 2. Students will apply mnemonic devices, active recall, and focus strategies to enhance their learning process. 3. Students will implement time-blocking and prioritization techniques for better productivity. 4. Students will apply strategies to interpret questions and write clear, effective answers within time limits.

CO-PO/PSO Mapping

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

Overview:

In an era shaped by rapid change and evolving technologies, the ability to learn continuously is a core skill for personal and professional success. This course is designed to help engineering students become self-directed, adaptable learners. By exploring mindset, memory techniques, focus strategies, time management, and reflection, students will develop learning habits that support lifelong growth and workplace readiness.

UNIT-1: Foundations of Learning

Builds a strong base for lifelong learning through mindset, self-awareness, and personal learning styles.

1.1 Growth Mindset

1.2 Understanding Learning Styles

1.3 Overcoming Procrastination

Learning Outcomes:

- Cultivate a growth mindset to embrace challenges and persist in learning
- Identify personal learning preferences and adapt strategies accordingly
- Recognize and overcome common learning barriers like procrastination

UNIT-2: Memory and Focus

Equips students with practical strategies to improve attention and information retention.

2.1 Techniques for Focus and Attention

2.2 Spaced Repetition and Active Recall

2.3 Mind Mapping for Retention

Learning Outcomes:

- Practice focused learning using tools like Pomodoro and distraction management
- Enhance memory with scientifically supported methods like spaced repetition and recall

Use visual techniques such as mind maps to organize and retain complex content

UNIT-3: Managing Time Effectively

Enables students to manage academic and personal responsibilities through smart scheduling and prioritization.

3.1 Prioritization (Eisenhower Matrix)

3.2 Time Management Tools

3.3 Balancing Academics and Personal Goals

Learning Outcomes:

- Prioritize tasks using structured models for better academic planning
- Use digital or physical tools to track goals, deadlines, and productivity
- Design a sustainable routine that aligns academic success with well-being

UNIT-4: Strategic Exam Skills Decoded

Focuses on building strategic approaches to tackle exams effectively, with emphasis on comprehension, answer structuring, and time-bound performance.

4.1 Understanding the Question
4.2 Structuring the Answer
4.3 Customizing Answers for Impact

Learning Outcomes:

- Interpret exam questions accurately and identify the expected response type and depth.
- Construct well-structured, relevant answers tailored to the marks and keywords in the question.
- Recognize and eliminate common answer-writing errors like digression and unnecessary detail.

Suggested Books

1. Mindset: The New Psychology of Success by Carol S. Dweck
2. Make It Stick: The Science of Successful Learning by Peter C. Brown, Henry L. Roediger III, and Mark A. McDaniel
3. Eat That Frog! by Brian Tracy
4. How to Write Better Essays by Bryan Greetham

Learning Resources:

learn.talentsprint.com

The break-up of CIE: Internal Tests + Assignments + Quizzes

1.	No. of Internal Tests	: 1	Max. Marks for each Internal Tests	:	20
2.	No. of Assignments	: 1	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	: 1	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 Minutes

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DEPARTMENT OF PHYSICS

Applied Physics Lab

SYLLABUS FOR B.E. II - SEMESTER (for ECE and EEE Branches)

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code: **U25BS211PH**
Credits : 1	CIE Marks : 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. to study and discuss the characteristics of a given device 2. to identify probable errors and take in the readings and known possible precautions 3. to compare the experimental and theoretical values and draw possible conclusions. 4. To interpret the results from the graphs drawn using experimental values. 5. To write the record independently with appropriate results.	1. to conduct experiment independently and in team to record the measurements 2. To outline the precautions required to be taken in each experiment 3. To compare the experimental results with standard values and estimate error percentage 4. To draw graphs and interpret the results with respect theoretical results. 5. To effectively write summary of the experiment and draw appropriate conclusions

CO-PO/PSO Mapping

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

1. Study of I-V characteristics of P-N Junction diode.
2. Study of I-V characteristics of Zener Diode
3. Study of I-V characteristics of LED and Photodiode
4. Study of I-V characteristics of solar cell and to calculate fill factor and efficiency.
5. Determination of energy gap of a given semiconductor by four probe method
6. Hall's effect- Determination of Hall's coefficient, carrier concentration of given semiconductor
7. Helmholtz coil –calculation of magnetic field along the axis of a solenoid

8. B-H curve-estimation of Hysteresis loss of a ferromagnetic sample
9. Determination of wavelength of laser light.
10. Calculation of numerical aperture, acceptance angle and power loss due to bending of an optical fiber.
11. Study of resonance in LCR series and parallel circuits and estimation of band width & Q- factor
12. Determination of Seebeck coefficient.
13. Determination of Dielectric constant.

The break-up of CIE :

1.	No. of Internal Test	:	1
2.	Max. Marks for internal tests	:	12
3.	Marks for day-to-day laboratory class work	:	18

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Problem Solving through Object Oriented Programming Lab

SYLLABUS FOR B.E. (ECE) II - SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code: **U25ES211EC**
Credits : 1	CIE Marks : 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. Understand basic notions of object-oriented programming. 2. Acquire knowledge of classes and objects. 3. Construct classes with function and operator overloading. 4. Implement inheritance in OOP 5. Implement generic programming	On completion of the course, students will be able to: 1. Explain Object Oriented Programming concepts using C++. 2. Design programs using functions, user defined classes. 3. Construct classes with arrays and perform operator overloading. 4. Design programs using inheritance and achieve dynamic polymorphism, 5. Implement templets and handle exceptions.

CO-PO/PSO Mapping

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

All the programming exercises will be implemented in Linux Client-Server environment

Programming Exercise:

1. Programs on selection and iterative statements.
2. Programs on functions and function overloading.
3. Programs on complex numbers using classes.
4. Programs on constructors, destructors and copy constructors.

5. Programs on dynamic memory allocation for arrays.
6. Programs on Searching, Sorting and Matrices

   Introduction to CodeChef™ online coding platform.
7. Programs on friend function and friend class.
8. Programs on operator overloading
9. Programs on inheritance.
10. Programs on virtual functions, dynamic polymorphism.
11. Programs on function templates, class templates and exception handling.
12. Program on implementation of stacks and queues using arrays

New Experiments

1. Implementation of Singly Linked List.
2. Programs on file operations.

Learning Resources:

1. Walter Savitch, "Problem solving with C++", 6th Edition, Pearson Education, 2009.
2. Bjarne Stroustrup, "The C++ Programming Language", 4th Edition, Addison- Wesley, 2013.
3. E. Balaguruswamy, "Object-Oriented Programming with C++", 6th Edition, Tata Mc-Graw Hill, 2013.
4. MOOCs Recourses: https://nptel.ac.in/courses/106105234

The break-up of CIE:

1.	No. of Internal Test	:	1
2.	Max. Marks for internal tests	:	12
3.	Marks for day-to-day laboratory class work	:	18

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Basic Electrical Engineering Lab

SYLLABUS FOR B.E II - SEMESTER (Common to CSE & AIML, IT and ECE)

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code: **U25ES011EE**
Credits : 1	CIE Marks : 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. To familiarize students with the operation and safe handling of basic electrical equipment 2. To enable students to perform experimental testing and analyze the performance characteristics of AC and DC machines 3. To provide practical experience in applying and verifying electrical network theorems 4. To develop competency in measuring electrical energy consumption 5. To instill the importance of power factor in electrical systems	On completion of the course student will be able to: 1. Handle basic electrical equipment and apprehend safety precautions 2. Test the performance of various AC and DC machines 3. Apply and Verify various Network theorems 4. Comprehend Measurement of Electrical Energy consumption 5. Comprehend the importance of Power Factor improvement.

CO-PO/PSO Mapping

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

List of Experiments:

1. Basic safety precautions. Introduction and use of measuring instruments – voltmeter, ammeter, multi-meter, oscilloscope. Real-life resistors, capacitors and inductors.
2. Verification of Kirchoff's Voltage Law & Kirchoff's Current Law.
3. Verification of Superposition theorem.
4. Verification of Maximum Power transfer theorem.

5. Verification of Thevenin's theorem.
6. Sinusoidal steady state response of R-L and R-Ccircuits, Measurement of phase angle.
7. Demonstration of cut-out sections of machines: dc machine (commutator-brush arrangement), induction machine (squirrel cage rotor), synchronous machine (field winging - slip ring arrangement) and single-phase induction machine.
8. Torque Speed Characteristic of dc shunt motor.
9. Speed control of dc shunt motor.
10. Loading of a transformer: measurement of primary and secondary voltages and currents and power.
11. Torque-Slip Characteristic of a three phase induction motor.
12. Measurement of electrical energy consumption.
13. Improvement of Power factor in R-L-C Circuits.

From the above experiments, each student should perform at least 10 (Ten) experiments.

The break-up of CIE :

1.	No. of Internal Test	:	1
2.	Max. Marks for internal tests	:	12
3.	Marks for day-to-day laboratory class work	:	18

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DEPARTMENT OF MECHANICAL ENGINEERING

Engineering Workshop

SYLLABUS FOR B.E. (ECE) II - SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code: **U25ES011ME**
Credits : 1	CIE Marks : 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to: 1. know basic workshop processes, adopt safety practices while working with various tools 2. identify, select and use various marking, measuring, striking holding, and cutting tools & equipment.	At the end of the course, students will be able to: 1. Construct models related to carpentry, fitting, and sheet metal trades using appropriate tools and techniques. 2. Measure and inspect finished components accurately using suitable measuring instruments. 3. Apply basic electrical and electronics engineering concepts to design and assemble simple electrical circuits, verify their functionality, and perform component soldering with proper safety and technique.

CO-PO/PSO Mapping

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

List of the Experiments:

FITTING

1. Template fitting (square fit)
2. V-groove fit
3. Drilling and Tapping

ELECTRICAL & ELECTRONICS:

1. Two lamps in(a)series(b) parallel with 3 pin plug and switches
2. Staircase wiring and Tube light wiring
3. (a) Identification of electronic components
   (b) Soldering practice

CARPENTRY:

1. Half-lap joint
2. Dove-tail joint
3. Bridle joint

SHEET METAL:

1. Rectangular box
2. Rectangular scoop with handle
3. Making a funnel with soldering

Additional Experiments

1. Fitting: Assembly of pulley on a shaft with key (demo)
2. Electrical & Electronics: LT Distribution with loads (Demo)
3. Carpentry: Wood turning operation (demo)
4. Sheet Metal: Making a T-Joint (Demo).

Learning Resources:

1. Hajra Choudhury S.K., Hajra Choudhury A.K., Nirjar Roy S.K. "Element of Workshop Technology" Vol-I 2008 & Vol-II 2010 Media Promoters & Publishers Pvt. Limited, Mumbai.
2. Kalpakjian S. and Steven S. Schmid, "Manufacturing Engineering and Technology" 4th Edition, Pearson Education India Edition, 2002.
3. Gowri P., Hariharan and Surech Babu A., "Manufacturing Technology-I", Pearson Education 2008.
4. P. Kannaiah & K.L. Narayana "Workshop manual" 2nd Ed., Scitech publications (I) Pvt. Ltd., Hyderabad.
5. B.L. Juneja, "Workshop Practice", Cengage Learning India Pvt. Limited, 2014.
6. www.technologystudent.com

The break-up of CIE:

1.	No. of Internal Test	:	1
2.	Max. Marks for internal tests	:	12
3.	Marks for day-to-day laboratory class work	:	18

Duration of Internal Test: 2 Hours

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Academic Activity Planner / Calendar for the Academic Year 2025-26

S.No.	Date	Activities planned
1	02-08-2025	Introduction and objectives of CCA activities, Introduction of Techniche Proposal which mainly focuses on the development of technical skills in students through projects, workshops and technical talks in various domains.
2	23-08-2025	Guest lecture on Recent trends in industrial growth, Rohit Lingala, 2022, application developer II, Oracle (AI Agents)
3	30-08-2025	Awareness on Library learning Resources, by Mr. Ravi Kumar Librarian, VCE
4	06-09-2025	Extempore Contest for BE ECE (A, B & C) Sem-5 students) in association with IETE Students' Forum.
5	20-09-2025	Guest lecture on career guidance by Vinay garu, Dir SRE, Optum
6	27-09-2025	Poster Presentation on "IoT Solutions in Agriculture" for BE (ECE) Sem-3, Sem-5 and Sem-7 students in association with IETE Students' Forum (ISF)
7	18-10-2025	Invited talk by Professor C. Vanitha NIT-Warangal
8	25-10-2025	"Logical Wizard", A technical event conducted for 5th semester students of ECE (A, B & C) in association with IEEE SB VCE Unit.
9	01-11-2025	Guest lecture on skills need for career growth Manoj Kumar Infrastructure Engineer principal global services.
10	15-11-2025	Technical Essay Writing Competition for BE ECE (A, B & C) Sem-1 students on "Technology in Professional Ethics– need of the hour" in association with IETE Students' Forum (ISF)
11	22-11-2025	Technical Talk on "Introduction to FPGA" by Mr. Vamshi, Member of Technical staff, AMD, Hyderabad

S.No.	Date	Activities planned
12	03-01-2026	Guest Lecture on Internet of Things: From idea to prototyping Dr. Shyam Sunder Associate Professor, ECE, Osmania University
13	17-01-2026	Invited talk on contributions of DRDL for nation building – Prof. Arun Kumar, VCE, Hyderabad.
14	24-01-2026	Invited talk on Recent trends in industrial growth by Dr. K. Krishna Kishore Director AI-Powered Business Expansion, Houses of Companies- T-hub, Hyderabad.
15	31-01-2026	Invited talk on Artificial Intelligence and its impact on the world by – Mr. Karthik, Head – AI division, SignalLyaer, Hyderabad
16	07-02-2026	Technical talk by T. Pavan Kalyan Analog Design Engineer in MOSCHIP Technologies.
17	21-02-2026	Hackerrank™ based coding contest "Hackathon 2026" for BE ECE Sem-1 students in association with IEEE SB.
18	28-02-2026	A Workshop on "Robotryst (Programming nodeMCU)"
19	07-03-2026	"Tech Lipi – A technical contest" for BE ECE (A, B & C) (Sem – 4) students in association with IETE Students' Forum
20	21-03-2026	Career guidance by V. Satya Sri Engineer at QUALCOMM, Hyderabad, Telangana,
21	28-03-2026	Guest Lecture on "Electronic Instrumentation and Various Test procedures" Mrs. Phani Madhuri, Deputy Manager, BEL, Hyderabad
22	04-04-2026	"Hardware circuit design Contest" in association with IEEE SB of VCE Unit.
23	18-04-2026	Guest lecture by Mr. Neeraj, Alumni VCE.
24	25-04-2026	Guest Lecture on "Importance of life skills for securing jobs", by Durga prasad Yaragunta, Trainer in sift skills and life skills, Editor in chief, Insight Publications pvt ltd Hyderabad