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. (AI&ML) I and II Semesters

With effect from 2024-25

(For the batch admitted in 2024-25)

(R-24)

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Phones: +91-40-23146020, 23146021

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

To be a center for academic excellence in the field of Computer Science and Engineering education to enable graduates to be ethical and competent professionals

Department Mission

To enable students to develop logic and problem solving approach that will help build their careers in the innovative field of computing and provide creative solutions for the benefit of society.

B.E (CSE) Program Educational Objectives (PEO's)	
Graduates should be able to utilize the knowledge gained from their academic program to:	
PEO I	Solve problems in a modern technological society as valuable and productive engineers.
PEO II	Function and communicate effectively, both individually and within multidisciplinary teams.
PEO III	Be sensitive to the consequences of their work, both ethically and professionally, for productive professional careers.
PEO IV	Continue the process of life-long learning.

B.E. (CSE) 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.
P1O	**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, and give and receive clear instructions.
P11	**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.
P12	**Lifelong learning:** Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

B.E (CSE) PROGRAM SPECIFIC OUTCOMES (PSO's)	
PSO I	Graduates will have knowledge of programming and designing algorithms to develop solutions for engineering problems pertaining to AI&ML.
PSO II	Graduates will be able to develop models in Machine Learning, Deep Learning using knowledge of AI and modern tools.
PSO III	Graduates will apply AI&ML techniques for real world applications in the areas of Cyber Security, Image processing, Natural Language Processing and IoT

With effect from the Academic Year 2024-25

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
SCHEME OF INSTRUCTION AND EXAMINATION(R-24)
FOR B.E 2024-25 ADMITTED BATCH I SEMESTER (A.Y 2024-25)

B.E CSE (AI&ML) 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/D		SEE	CIE	
THEORY								
U24BS120MA	Calculus & Linear Algebra	3	-	-	3	60	40	3
U24BS110PH	Physics of Semiconductors and Optoelectronic Devices	3	-	-	3	60	40	3
UII24ES120CS	Programming for Problem Solving	3	-	-	3	60	40	3
U24ES110EC	Introduction to Electronics Engineering	3	-	-	3	60	40	3
U24ES010CE	Basic Engineering Mechanics	3	-	-	3	60	40	3
U24ES030CE	Basic Engineering Drawing	1	-	2	3	60	40	2
U24HS020EH	Human Values and Professional Ethics-I	1	-	-	2	40	30	1
U24MC010ME	Introduction to Entrepreneurship	1	-	-	2	40	30	0
PRACTICALS								
U24BS111PH	Semiconductor and Optoelectronics Lab	-	-	2	3	50	30	1
UII24ES121CS	Programming for Problem Solving Lab	-	-	2	3	50	30	1
U24ES111EC	Introduction to Electronics Engineering Lab	-	-	2	3	50	30	1
	TOTAL	**18**	-	**8**		**590**	**390**	**21**
	GRAND TOTAL	**26**				**980**		
Student should acquire one online course certification equivalent to two credits during I Sem to VI Sem								

VASAVI COLLEGE OF ENGINEERING (Autonomous)

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IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF MATHEMATICS

CALCULUS & LINEAR ALGEBRA

SYLLABUS FOR B.E. I-SEMESTER

(Common to CSE, CSE-AI & ML and IT)

L:T:P (Hrs./week):3:0:0	SEE Marks : 60	Course Code : **U24BS120MA**
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** **On completion of the course, students will be able to**
1. **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. 2. **Learn** the techniques for finding limits, continuity, partial derivatives of functions of several variables and Taylor's series for functions of two variables, methods for finding maxima and minima of functions of several variables. 3. **Study** the fundamental concepts of vector spaces, vector subspaces, linear dependence and independence of vectors, span, basis of a vector space, dimension of a vector space, and coordinates. 4. **Understand** the fundamental concepts of linear transformations and their properties. 5. **5. Understand** of linear algebra concepts, including the rank of a matrix, characteristic equation, eigenvalues and eigenvectors, LU decomposition, and single value decomposition.	1. **Apply** the concepts of Taylor's series and Maclaurin's series to approximate functions and calculate the curvature, radius, centre of curvature of curves, and evolutes. 2. **Calculate** limits, continuity, partial derivatives of functions of several variables and apply Taylor's series for functions of two variables, analyze functions to find maxima and minima. 3. **Analyze** vector spaces and their subspaces, determine linear dependence and independence of vectors, identify bases of vector spaces, and compute the dimension of vector spaces. 4. **Determine** linear transformations, their null space and range, calculating the dimension of these spaces, understanding the rank and nullity of a linear transformation, and representing a linear transformation using a matrix. 5. **Find** the rank of a matrix, eigenvalues and eigenvectors, performing LU decomposition, and applying single value decomposition to real-world problems.

UNIT- I (08 classes)
DIFFERENTIAL CALCULUS

Taylor's Series – Maclaurin's Series – Curvature - Radius of Curvature – Centre of Curvature – Evolutes. (Cartesian and Parametric co-ordinates)

UNIT –II (10 classes)
MULTIVARIABLE 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 – Jacobian - Maxima and Minima of functions of two variables - Lagrange's Method of multipliers.

UNIT-III: (08 classes)
VECTOR SPACES
Definition of Vector Space - Vector Subspaces – Linear Dependence and Independence of vectors - Span of a set of vectors - Basis of a Vector Space – Dimension of a Vector Space –Co-ordinates.

UNIT-IV (08 classes)
LINEAR TRANSFORMATIONS
Introduction to Linear Transformations- The null space and range of a linear map – Dimension of null space and range space - Rank -Nullity theorem (without proof)-Matrix of a linear transformation.

UNIT-V (08 classes)
MATRICES
Rank of a Matrix - Characteristic equation - Eigen values and Eigenvectors – LU Decomposition - Single Value Decomposition.

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.
3. Introduction to linear algebra with applications, Jim DeFranza, Daniel Gagliardi, Tata McGraw-Hill
4. Operational Mathematics by R.V. Churchill, Mc Graw-Hill Book Company, INC.

Reference Books:
1. Advanced Engineering Mathematics 8th Edition by Erwin Kreyszig, John Wiley & Sons.
2. Differential Calculus by Shanti Narayan, S. Chand & Co
3. Elementary Linear algebra, Anton and Rorres, Wiley India Edition
4. An introduction to Linear Algebra, V.P Mainra, J.L Arora, Affiliated to East-West Press Pvt Ltd

Online Resources:

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

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IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF PHYSICS

PHYSICS OF SEMICONDUCTORS AND OPTOELECTRONIC DEVICES

SYLLABUS FOR B.E.I-SEMESTER

(Common to CSE, AI&ML and IT)

L:T:P(Hrs/week):3:0:0	SEE Marks:60	Course Code: **U24BS110PH**
Credits :03	CIE Marks:40	Duration of SEE: 3 Hours

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COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1. Demonstrate the use of crystal structure in device applications.	1. Classify crystals based on their structure and apply effects of defects on manipulation of properties of solids.
2. Appreciate the merits of quantum mechanics over classical mechanics.	2. Apply Schrodinger wave equation to quantum mechanical systems and obtain eigen values.
3. Arrive at the expressions for carrier concentration in semiconductors	3. Apply semiconductor physics to fabricate various devices.
4. Describe working of optoelectronic devices	4. Categorize optoelectronic devices and use them for appropriate applications
5. Comprehend lasing action and relate the use of lasers in optical fiber communication	5. Compare different types of lasers. Summarize merits and demerits of optical fibers.

UNIT-I: FUNDAMENTALS OF CRYSTALLOGRAPHY (12 hours)

Introduction to crystallography-Miller Indices, inter planar spacing (d_{hkl}), Bragg's law, x- ray diffraction, Debye-Scherrer (Powder) method, distinction between crystalline, polycrystalline, and amorphous materials, Point Defects and their effects, expression for concentration of Schottky and Frankel defects, applications relevant to computer science and engineering.

UNIT-II: INTRODUCTION TO QUANTUM MECHANICS (10 hours)

De Broglie hypothesis, wave packet, wave function and its significance, Schrodinger time dependent and independent wave equations, Eigen values and Eigen functions of infinite square-well potential (particle in a box). Potential barrier-quantum tunneling problem. Introduction to ket and bra vector notation, representation of Qubit, applications of quantum computing.

UNIT-III: SEMICONDUCTOR PHYSICS (10 hours)

Kronig-Penny model, E-k diagram, effective mass of an electron, energy bands in solids, Fermi energy level, density of states, expression for intrinsic and extrinsic equilibrium carrier concentration, conductivity of intrinsic and extrinsic semiconductors, variation of Fermi level with doping and temperature, Hall effect and its applications, formation of a PN junction, diode current equation. Applications of semiconductor devices to computer architecture.

UNIT-IV: OPTOELECTRONIC DEVICES (10 hours)

Light Emitting Diode (LED): Direct and indirect band gap semiconductors, electron-hole pair generation and recombination, non-radiative and radiative recombination in semiconductors, construction and working of homo junction LED, quantum efficiency of LED, advantages, and applications of LED.

Photo detectors: Principle of a photo detector, construction and working of photodiode and PIN diode, applications of photo detectors.

Solar Cell: Photovoltaic effect, construction and working of solar cell, V-I characteristics of solar cell, conversion efficiency, fill factor, applications of solar cells.

UNIT-V: LASERS AND OPTICAL FIBERS (10 hours)

Lasers: Induced absorption, spontaneous and stimulated emissions, characteristics of lasers, population inversion, meta-stable states, pumping mechanisms, components of laser, types of lasers, construction and working of He-Ne laser and semiconductor laser, advantages of lasers, applications of lasers including computer devices such as memory, printers.

Optical Fibers: principle of optical fiber, propagation of light in optical fiber, numerical aperture, acceptance angle, types of optical fibers, V- number, signal losses in optical fibers: Attenuation-absorption, scattering, bending and alignment losses, Signal distortion: intermodal and intra model dispersions, block diagram of optical communication system, advantages, and application of optical fibers.

Learning Resources:

1. Charles Kittel, Introduction to Solid State Physics, 8th edition, John Wiley & Sons, 2012.
2. Donald A Neamen, Semiconductor Physics and Devices, 3rd edition, Tata McGraw 2008.
3. S.O. Kasap, Optoelectronic and Photonics: Principles and Practices, Pearson, 2001
4. M.N. Avadhanulu and P.G. Kshirsagar and TVS Arun, Murthy A Textbook Engineering Physics, 11th edition, S. Chand, 2019.
5. M.R Shenoy, NPTEL MOOCS course, Semiconductor opto-electronics. 2020.
6. Prof.Digbijoy N Nath, NPTEL MOOCS, Fundamentals of Semiconductor Devices

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

1	No. of Internal Test:	02	Max. Marks for each Internal Test:	30
2	No. of Assignments:	03	Max. Marks for each Assignment:	5
3	No. of Quizzes:	03	Max. Marks for each Quiz Test:	5

Duration of Internal Test: 90 Minutes

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IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

PROGRAMMING FOR PROBLEM SOLVING

SYLLABUS FOR B.E. I-SEMESTER

L:T:P (Hrs./week):3:0:0	SEE Marks : 60	Course Code :**UII24ES120CS**
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1 Acquire problem solving skills.	1 Design flowcharts and algorithms for solving a given problem using the fundamentals of programming.
2 Develop flow charts.	2 Apply decision making, looping constructs and functions to develop programs for a given problem.
3 Understand structured programming concepts.	3 Store data using arrays and perform searching and sorting operations on the data.
4 Write programs in C Language.	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.

UNIT-I:

Introduction to Computers: Computer Systems, Computing Environments, Computer Languages, Creating and Running Programs, Software Development, Flowcharts. Number Systems (Binary, Octal, Decimal and Hexadecimal), Representation of Numbers (Fixed and Floating Point).

Introduction to C Language: Background, C Programs, Identifiers, Types, Variables, Constants, Input/Output, Expressions, Precedence and

Associativity, Side Effects, Evaluating Expressions, Type Conversion, Statements, Bitwise Operators.

UNIT-II:

Selection: Logical Data and Operators, if… else, switch Statements, Standard Functions.

Repetition: Loops, while, for, do-while Statements, Loop Examples, break, continue, goto.

Functions: Designing Structured Programs, Functions Basics, User Defined Functions, Inter-Function Communication, Standard Functions, Scope, Storage Classes-Auto, Register, Static, Extern, Scope Rules and Type Qualifiers.

UNIT-III:

Recursion: Recursive Functions, Preprocessor Commands.

Arrays: Concepts, Using Arrays in C, Inter-Function Communication, Array Applications, Two-Dimensional Arrays, Multidimensional Arrays, Linear Search and Binary Search, Selection Sort and Bubble Sort.

UNIT-IV:

Pointers: Introduction, Pointers for Inter-Function Communication, Pointers to Pointers, Compatibility, LValue and RValue, Arrays and Pointers, Pointer Arithmetic and Arrays, Passing on Array to a Function, Memory Allocation Functions, Array of Pointers, Programming Applications, Pointers to void, Pointers to Functions, Command Line Arguments.

Strings: Concepts, C Strings, String Input/Output, Functions, Arrays of Strings, String Manipulation Functions.

UNIT-V: Type Definition (typedef), Enumerated Types.

Structure: Definition and Initialization of Structures, Accessing Structures, Nested Structures, Arrays of Structures, Structures and Functions, Pointers to Structures, Self Referential Structures, Unions.

Input and Output: Files, Streams, Standard Library Input/Output Functions, Character Input/Output Functions.

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. Rajaraman V, The Fundamentals of Computer, 4th Edition(2006), Prentice-Hall of India
4. Steve Oualline, Practical CProgramming,3rd Edition(2006),O'Reilly Press.
5. Jeri R. Hanly, Elliot B. Koffman, Problem Solving and Program Design in C, 5thEdition (2007), Pearson Education.
6. Balagurusamy E, Programming in ANSI C, 4th Edition(2008), TMG.
7. Gottfried, Programming with C, 3rd Edition(2010), TMH.
8. R G Dromey, How to Solve it byComputer,1st Edition(2006), Pearson Education.

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

1	No. of Internal Test	:	2	Internal Test	:	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 : 1 Hour 30 Minutes

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IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

INTRODUCTION TO ELECTRONICS ENGINEERING

SYLLABUS FOR B.E. I – SEMESTER

L:T:P (Hrs/week): 3:0:0	SEE Marks : 60	Course Code: **U24ES110EC**
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. To understand the characteristicsand operation of different electronic devices. 2. To study the working of rectifiers, transistor amplifiers, operational amplifiers and oscillators. 3. To study the working principle ofdifferent types of transducers.	**On completion of the course, students will be ableto** 1. Employ different electronic devices to build electronic circuits such as rectifiers, filters, voltage regulators. 2. Describe the input and output characteristics of BJT and MOSFET. 3. Appreciate the advantages of negative feedback in amplifiers and to design simple RC type, LC type oscillators using BJT. 4. Demonstrate the working of operational amplifier as Differentiator, Integrator etc. 5. Convert real time signals into corresponding electrical signals using different types of transducers and sensors for IOT applications.

UNIT - I : Semiconductor Diodes

P-N Junction diode, Biasing, Diode resistance, Transition capacitance and Diffusion capacitance, Applications, Rectifiers: Half wave and Full wave Rectifiers (Bridge, center tapped), ripple factor and efficiency, comparison of rectifiers, Filters: Types of filters, Rectifiers with and without filters, Zener Diode: Characteristics, Zener diode as a voltage regulator, Block diagram of Regulated Power Supply.

UNIT - II : Transistors

Bipolar Junction Transistor (BJT), Construction, Types, Working principle, Configurations, Transistor parameters, Transistor as an amplifier, Problems,

h-parameter equivalent circuits. Field Effect Transistor(FET), Construction and working of FET, Metal Oxide Semiconductor FET (MOSFET), Types (depletion and enhancement), MOSFET characteristics, Comparison of BJTs with MOSFET

UNIT - III : Feedback Concepts

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

UNIT - IV : Operational Amplifiers

Introduction, Characteristics of ideal Operational amplifier, Operational amplifier stages, Parameters, Open loop and closed loop configurations, Applications (Adder, Subtractor, Voltage follower, Integrator, Differentiator)

UNIT - V : Data Acquisition systems

Introduction, Classification of transducers, Temperature transducers (Thermocouple), Piezoelectric transducer, Photoelectric transducer; Ultrasonic Sensors, PIR Sensors, Gas sensors and Humidity Sensors. Display Systems: Constructional details of C.R.O and Applications.

Learning Resource:

1. S.Shalivahan, N. Suresh Kumar, A Vallavea Raj Electronic Devices andCircuits 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 Tests: 90 Minutes

With effect from the Academic Year 2024-25

VASAVI COLLEGE OF ENGINEERING(Autonomous)

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IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF CIVIL ENGINEERING

BASIC ENGINEERING MECHANICS

(Common to Civil, CSE, ECE, EEE & Mechanical Engineering)

SYLLABUS FOR B.E. I SEMESTER

L : T : P(Hrs./week):3 : 0 : 0	SEE Marks:60	Course Code: U24ES010CE
Credits: 3	CIE Marks:40	Duration of SEE: 3 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
Objectives of this course are to:	At the end of the course, students will be able 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 and composite sections.	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 and polar moment of inertia of a given section.

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

UNIT-II: Equilibrium of Force Systems: Free body diagram, Equations of equilibrium, Equilibrium of planar and spatial system.

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, Connectedsystems and belt friction, Wedge friction.

UNIT-V: Centroid and Moment of Inertia: Centroids of lines, areas and volumes, Moment of inertia of areas, Composite areas, Polar moment of inertia, Radius of gyration.

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., JaanKiusalaas., "Engineering Mechanics", 4th edition, Cengage Learning, 2015.
4. Beer F.P & Johnston E.R Jr. "VectorMechanics 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 Test	:	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

With effect from the Academic Year 2024-25

VASAVI COLLEGE OF ENGINEERING (Autonomous)

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IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF CIVIL ENGINEERING

BASIC ENGINEERING DRAWING

(Common to CSE & IT)

SYLLABUS FOR B.E. I-SEMESTER

L:T:P (Hrs./week): 1:0:2	SEE Marks: 60	Course Code: **U24ES030CE**
Credits: 2	CIE Marks: 40	Duration of SEE: 3Hrs

COURSE OBJECTIVES	**COURSE OUTCOMES**
Objectives of this course are to:	At the end of the course, students will be able 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. 4. Visualize and construct isometric projections.	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. 5. Draw the isometric projections of lines, planes and solids.

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 in first quadrant only. Traces (By conventional methods only).

UNIT-III: Projections of Planes: Projections of perpendicular planes, oblique planes and their traces.

UNIT-IV:Projections of Regular Solids: Projections of prism, cylinder, pyramid and cone in simple positions and axis inclined to one reference plane. Development of lateral surfaces of full solids.

UNIT-V: Isometric Projections: Principles of isometric projections – Isometric scale, Isometric axes, Isometric planes, Isometric view. Isometric views of lines, planes, regular solids, and combination of two solids.

Learning Resource:

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. Gill P.S."Engineering Drawing: Geometrical Drawing",S K Kataria &sons,13th Edition, 2021.
5. Venu gopal. K" EngineeringDrawingand 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", IKInt Pvt Ltd, 2020.
8. NPTEL Course (www.nptel.ac.in)
9. 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 Test	:	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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IBRAHIMBAGH, HYDERABAD – 500 031

Department of Humanities & Social Sciences

Human Values and Professional Ethics-I

SYLLABUS FOR B.E- I SEMESTER

(COMMON FOR ALL BRANCHES)

L:T:P(Hrs/Week):1:0:0	SEE Marks: 40	Course Code: **U24HS020EH**
Credits: 1	CIE Marks: 30	Duration of SEE: 02 Hours

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

UNIT-1 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-2 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-3 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 -4 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

The break-up of marks for CIE:
Internal Tests + Quiz Tests + Assignments

1. No. of Internal Tests: 1 Max. Marks for each Internal Tests: 20

2. No. of Assignments : 2 Max. Marks for each Assignments : 5

3. No. of Quizzes : 2 Max. Marks for each Quiz Tests :5

Duration of Internal Tests : 90 minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)

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IBRAHIMBAGH, HYDERABAD – 500 031

Department of Mechanical Engineering

INTRODUCTION TO ENTREPRENEURSHIP

SYLLABUS FOR B.E.I-SEMESTER

L:T:P(Hrs/week):1:0:0	SEE Marks:40	Course Code: **U24MC010ME**
Credits :0	CIE Marks:30	Duration of SEE:02Hours

COURSE OBJECTIVE	**COURSE OUTCOMES** *On completion of the course, students will be able to*
1. Inspire students develop an entrepreneurial mind-set, educate about the resources and schemes available to start enterprises in India.	1 Get awareness about entrepreneurship and potentially become an entrepreneur. 2 Discern the characteristics required to be a successful entrepreneur 3 Know the importance of effective communication. 4 Demonstrate effective sales skills

Unit-I: Sources of new ideas, techniques for generating ideas.
Team formation, how entrepreneurship has changed the country and world, entrepreneurial myths, E-cells and their significance, success story of entrepreneurs, eg: Practo, global entrepreneurs, entrepreneurial journeys, challenges, and successes, characteristics of a successful entrepreneur, entrepreneurial styles, introduction to business model.

Unit-II: Importance of effective communication for entrepreneurs, communication barriers, miscommunication, incorrect assumptions about people, importance of listening, design thinking, sales skills, understanding the customer-centric approach, personal selling techniques, show and tell, elevator pitch, managing risks and learning from failures, women entrepreneurs.

Learning Resources:

1. Bruce R. Barringer and R. Duane Ireland, "Entrepreneurship: successfully launching new ventures", 3rd edition, Pearson Prentice Hall, 2009.
2. P. Denning and R. Dunham, "The Innovator's Way", MIT Press: Cambridge, Massachusetts, 2010.
3. Arya Kumar, "Entrepreneurship", Pearson Education, Delhi, 2012.
4. Michael H. Morris, D.F.Kuratko, J G Covin, "Corporate Entrepreneurship and Innovation", Cengage learning, New Delhi, 2010
5. Peter F. Drucker, "Innovation and Entrepreneurship", Routledge Classics, 2015.
6. Eric Ries, "The Lean Start-up", Currency, 1st edition, 2011.

Web Resources:

7. http://www.learnwise.org

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

1	No. of Internal Tests:	01	Max. Marks for each Internal Test:	20
2	No. of Assignments:	01	Max. Marks for each Assignment:	05
3	No. of Quizzes:	01	Max. Marks for each Quiz Test:	05

Duration of Internal Test: **1 Hour**

VASAVI COLLEGE OF ENGINEERING (Autonomous)

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IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF PHYSICS

SEMICONDUCTOR PHYSICS AND OPTOELECTRONICS LAB

SYLLABUS FOR B.E. I SEMESTER

(Common to CSE, AI&ML and IT)

L:T:P(Hrs./week):0:0:2	SEE Marks:50	Course Code: **U24BS111PH**
Credits :01	CIE Marks:30	Duration of SEE: 3 Hours

Course Objectives	**Course Outcomes** On completion of the course, students will be able to
1. To study and discuss the characteristics of a given device	1. Conduct experiment independently and in team to record the measurements
2. To identify probable errors and take in the readings and known possible precautions	2. Outline the precautions required to be taken for each experiment
3. To compare the experimental and theoretical values and draw possible conclusions.	3. Compare the experimental results with standard values and estimate errors
4. To interpret the results from the graphs drawn using experimental values.	4. Draw graphs and interpret the results with respect to graphical and theoretical values
5. To write the record independently with appropriate results.	5. Write the summary of the experiment and draw appropriate conclusions

1. Determination of wavelength of laser light.
2. Study of I-V characteristics of LED and Photodiode
3. Calculation of numerical aperture, acceptance angle and power loss due to bending of an optical fiber.
4. Study of I-V characteristics of solar cell and to calculate fill factor and efficiency.
5. Determination of Planck's constant using Photocell
6. Determination of Hall's coefficient, carrier concentration of given semiconductor- Hall's effect

7. Study of resonance in LCR series circuits and estimation of band width & Q- factor
8. Study of resonance in LCR parallel circuits.
9. Determination of energy gap of a given semiconductor by four probe method
10. Determination of Seebeck coefficient.
11. Helmholtz coil –calculation of magnetic field along the axis of a solenoid.
12. Study of I-V characteristics of P-N Junction diode.
13. Study of I-V characteristics of Zener Diode

*Each student should perform at least 10 (Ten) experiments.

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IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering

PROGRAMMING FOR PROBLEM SOLVING LAB

SYLLABUS FOR B.E. I-SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code :**UII24ES121CS**
Credits : 1	CIE Marks : 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1. Understand the fundamentals of programming in C Language 2. Write, compile and debug programs in C. 3. Formulate solution to problems and implement in C. 4. Effectively choose programming components to solve computing problems.	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.

Programming Exercise:

1. Programs to illustrate operators
2. Programs to illustrate selection control statements
3. Programs to illustrate loop control statements
4. Programs to illustrate nested loop control statements.
5. Programs to illustrate functions and recursion
6. Programs to illustrate one dimensional arrays, searching and sorting.

7. Programs to illustrate two dimensional arrays
8. Programs on pointers: pointer to arrays, pointer to functions.
9. Functions for string manipulations.
10. Programs on structures and unions.
11. Finding the number of characters, words and lines of given text file.
12. File handling programs.

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. Steve Oualline, Practical CProgramming,3rd Edition(2006),O'Reilly Press.
4. Balagurusamy E, Programming in ANSI C, 4th Edition(2008), TMG.

No. of Internal Test:	01	Max. Marks for Internal Test:	12
Marks for day-to-day laboratory class work			18
Duration of Internal Test: 120 Minutes			

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

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

INTRODUCTION TO ELECTRONICS ENGINEERING LAB
SYLLABUS FOR B.E. I – SEMESTER

L:T:P (Hrs/week): 0:0:2	SEE Marks : 50	Course Code: **U24ES111EC**
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 beable to 1. Plot the characteristics of active devices and to compute their parameters. 2. Analyze the functioning of voltage regulators, rectifiers andoscillators. 3. Perform operations such as addition, subtraction, comparison of voltage levels using operational amplifier. 4. Appreciate the usage of CRO for measuring different parameters of signals.

List of Experiments:

1. Characteristics of Semiconductor diodes (Si and Zener)
2. CRO Applications (measurement of Amplitude, Time constant and Phase)
3. Centre tapped Full wave rectifier with and without filter
4. Full Wave Bridge Rectifier with and without filter
5. Zener Voltage Regulator (Line and Load Regulations)
6. Characteristics of BJT (CB Configuration)
7. Characteristics of BJT (CE Configuration)
8. Characteristics of FET (Drain and Transfer characteristics)
9. RC Phase shift oscillator
10. Hartley oscillator
11. Calpitt's Oscillator
12. Applications of Operational Amplifier: Adder, Subtractor, Comparator

New / Additional experiments planned

1. Positive Diode Clipping Circuits
2. Negative Diode Clipping Circuits

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 Tests	:	1
2.	Max. Marks for internal tests	:	12
3.	Marks for day-to-day laboratory class work	:	18

Duration of Internal Test : 180 Minutes

With effect from the Academic Year 2024-25

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
SCHEME OF INSTRUCTION AND EXAMINATION(R-24)
FOR B.E 2024-25 ADMITTED BATCH 0TER (A.Y 2024-25)

B.E CSE (AI&ML) 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								
U24HS010EH	English Language and Communication	2	-	-	3	60	40	2
U24BS220MA	Advanced Calculus	3	-	-	3	60	40	3
U24BS210CH	Material Chemistry	3	-	-	3	60	40	3
U24ES010EE	Basic Electrical Engineering	2	-	-	3	60	40	2
UII24ES220CS	Logic and Switching Theory	3	-	-	3	60	40	3
UII24ES230CS	Python Programming	3	-	-	3	60	40	3
U24MC010CE	Environmental Science	2	-	-	3	60	40	0
PRACTICALS								
U24HS011EH	English Language and Communication Skills Laboratory	-	-	2	3	50	30	1
U24BS011CH	Chemistry Lab	-	-	2	3	50	30	1
U24ES011EE	Basic Electrical Engineering Lab	-	-	2	3	50	30	1
UII24ES231CS	Python Programming Lab	-	-	2	3	50	30	1
TOTAL		**18**	-	**8**		**620**	**400**	**20**
GRAND TOTAL		**26**				**1020**		
Student should acquire one online course certification equivalent to two credits during I Sem to VI Sem								

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

DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

ENGLISH LANGUAGE AND COMMUNICATION

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

L:T:P(Hrs./week): 2:0:0	SEE Marks :60	Course Code : **U24HS010EH**
Credits :2	CIE Marks :40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to :	***At the end of the course students should be able 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.	1. Communicate effectively, appropriately and ethically in both professional & personal spheres. 2. Listen to different types of spoken discourses and take notes for future reference. 3. Research, collect data and make effective presentations using, graphs, charts, statistical information and text. 4. Construct grammatically correct sentences using adequate vocabulary to compose written and spoken discourses. 5. Read, comprehend and appreciate various text types using the various techniques.

UNIT-1 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, inter personal and extra personal communication); styles, channels and barriers of communication.

1.2 Johari Window.
1.3 Persuasion techniques.
1.4 Stages of Team Building by Bruce Tuckman; Qualities of a team player/leader.

UNIT-2 2.0 Listening and Speaking skills

2.1 Importance of listening-- Types of listening; Note taking.
2.2 Speaking skills: Presentation Skills (on Projects/ Topics related to the branch).

UNIT-3 3.0 Reading and Writing skills

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.

UNIT-4 4.0 Vocabulary Building and Grammar

4.1**Vocabulary Building:** Synonyms, Antonyms, One-word substitutes; Words often Confused; Idioms.
1.2 Functional Grammar: Tense and Aspect; Subject-Verb agreement; Sentence types
(Declarative sentence, Interrogative sentence, Exclamatory sentence and Imperative sentence)

UNIT-5 5.0 Reading for appreciation of literary texts

5.1 **Prose text**- The Knowledge Society by APJ Abdul Kalam.
5.2 **Poem**-'What Life should be' by Patricia A Fleming.

Prescribed textbook for theory:

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

Suggested Reading

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. SunithaMishra,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.
8. Brown, Penelope and Stephen C. Levinson. 1978. Universals in language usage: politeness phenomena: Cambridge University Press.

The break-up of marks for CIE:

1	No. of Internal Tests	:	2	Max. Marks for each Internal Test	:	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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IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF MATHEMATICS

ADVANCED CALCULUS

SYLLABUS FOR B.E.II-SEMESTER

(Common to CSE, CSE-AIML & IT)

L:T:P(Hrs./week): 3:0:0	SEE Marks :60	Course Code :**U24BS220MA**
Credits :3	CIE Marks :40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES**
The course will enable the students to :	***At the end of the course students should be able to:***
1. Understand the fundamental concepts and techniques 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 the techniques to analyze LCR circuits. **3. Study** the concepts of vector differentiation. **4. Understand** the concept of double and triple integrals, as well as the line integral. **5. Learn** the fundamental concepts of sequences and series, including convergence criteria.	**1. Solve** various types of first-order differential equations, model and analyze physical systems such as LR and RC circuits and sketch orthogonal trajectories of Cartesian families of curves. **2. Solve** homogeneous and non-homogeneous linear differential equations with constant coefficients, including those arising in LCR circuits. **3. Differentiate** scalar and vector point functions. **4. Solve** the problems involving double, triple integrals and apply Green's Theorem to evaluate line integrals. **5. Identify** an appropriate test and determine convergence of the series.

UNIT – I (08 classes)

ORDINARY DIFFERENTIAL EQUATIONS OF FIRST ORDER

Exact first order differential equations - Integrating factors- Clairaut's equation - Applications of First Order Differential Equations - Orthogonal trajectories

(Cartesian families) – LR and RC Circuits.

UNIT – II (08 classes)
HIGHER ORDER LINEAR DIFFERENTIAL EQUATIONS
Solutions of Homogeneous and Non-Homogeneous linear equations with constant coefficients - Method of Variation of Parameters – Applications of linear differential equations to LCR circuits.

UNIT – III (08classes)
MULTIPLE INTEGRALS
Double integrals (Cartesian) - Change of order of integration (Cartesian Coordinates)- Change of the Variables (Cartesian to polar Coordinates in two dimensions) - Triple integrals (Cartesian).

UNIT – IV (10 classes)
VECTOR CALCULUS
Scalar and Vector point functions -Vector Differentiation - Level Surfaces - 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 - Line integrals - Green's Theorem (without proof).

UNIT – V (08 classes)
INFINITE SERIES
Definition of Sequence, Convergence of Sequence- Series – Convergence and Divergence- Series of positive terms-Geometric series- p-series test - Comparison tests - Limit comparison test- D'Alembert's Ratio Test – Cauchy's n^{th} root test - Alternating Series – Leibnitz test – Absolute and Conditional convergence.

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 Delhi.
2. Advanced Engineering Mathematics, 8th Edition by Erwin Kreyszig, John Wiley & Sons, Inc.

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 Test + Assignments + Quizzes

1	No. of Internal Test	:	2	Max. Marks for each Internal Test	:	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 CHEMISTRY

MATERIAL CHEMISTRY

SYLLABUS FOR B.E.II SEMESTER

(For CSE, AI & ML and IT branches)

L :T:P (Hrs./week):3:0:0	SEE Marks :60	Course Code **: U24BS210CH**
Credits :3	CIE Marks :40	Duration of SEE :3 Hours

COURSE OBJECTIVES:	**COURSE OUTCOMES**
The course will enable the students to:	**At the end of the course, students should be able 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. Get acquainted with different types of polymers and their applications 4. Appraise few engineering materials.	1. Construct a galvanic cell and calculate its EMF and pH wherever applicable. 2. Describe the construction, chemistry and applications of the selected primary, secondary batteries and fuel cells. 3. Classify the macro molecules and discuss the synthesis and applications of a few macro molecules. 4. Get expose to basic concepts of engineering materials such as composites and liquid crystals. 5. Familiarise with the classification, synthesis, characterization, properties and applications of nanomaterials.

UNIT-I: ELECTRODICS AND ITS APPLICATIONS (11)

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

Concept of electrode potential, Helmholtz electrical double layer theory, electro motive force (EMF). Electrochemical series – applications. Nernst equation – derivation, applications and numericals. Concentration cells – 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 and redox titration (Fe(II) Vs $KMnO_4$).

UNIT-II: CHEMISTRY OF BATTERIES (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 – numericals.

Primary batteries: Types-acidic, alkaline and reserve batteries. Construction and electrochemistry of Zn-C, 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(AFC), phosphoric acid and molten carbonate fuel cells.

UNIT-III: MACRO MOLECULES (11)

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.

Types of Polymerization - Addition and condensation polymerization.

Molecular weight- number average and weight average molecular weight, numericals.

Glass transition temperature (Tg), factors affecting Tg.

Plastics: Thermoplastics and thermosets - preparation, properties and applications of i) Aramid (Kevlar); ii) Poly carbonate iii) Bakelite

Elastomers: Natural rubber- structure – chemistry of vulcanization and its advantages.

Artificial rubbers- i) BuNa-S ii) BuNa-N

Biodegradable polymers: Concept, preparation and uses of poly lactic acid.

Conducting polymers: Definition- classification, mechanism of conduction in polyacetylene and applications.

UNIT-IV: ENGINEERING MATERIALS (8)

Composite materials:

Introduction, constituents of composites, advantages over conventional materials. Applications of composites. Types of composites based on matrix and dispersed phases. Fiber reinforced composites: glass, carbon and aramid

reinforced composites. Layered composites- applications. Manufacturing techniques – Hand layup, Resin transfer and filament winding methods.

Liquid Crystals:

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

UNIT-V: NANOMATERIALS (8)

Introduction – Concept of nanomaterials – quantum confinement and surface volume ratio.

Properties of nanomaterials: Catalytic and Optical - properties. Applications of Nanomaterials.

Types of Nanomaterials**:** Zero dimensional (0-D), One dimensional (1-D), Two dimensional (2-D), Three Dimensional(3-D).

Characterization of nanomaterials- Principle and block diagram of Scanning Electron Microscope (SEM), Atomic Force Microscope (AFM).

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

Graphene: Introduction, synthesis of graphene by chemical vapor deposition (CVD).

Carbon Nanotubes**:** Classification – single walled carbon nanotubes (SWCNTs – armchair, zig-zag, chiral) and Multi walled carbon nanotubes (MWCNTs- Russian doll and parchment model).

Synthesis of CNTs – Arc discharge and laser ablation methods.

Text Books:

1. P. C. Jain, M Jain Engineering Chemistry, Dhanapathi Rai publishing company (17^{th} edition), New Delhi.
2. Sashi Chawla, Text book of Engineering Chemistry, Dhanapathi Rai & Co, New Delhi.
3. O. G. PALANNA, Engineering Chemistry, TMH Edition.
4. J.C. Kuriacose and Rajaram, Chemistry in Engineering and Technology
5. Wiley Engineering Chemistry, Wiley India pvt Ltd, II edition.
6. The chemistry of nanomaterials – Synthesis, Properties and Applications by C. N. R. Rao, Wiley India Pvt. Ltd.

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.

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

1	No. of Internal Test	:	2	Max. Marks for each Internal Test	:	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 Electrical & Electronics Engineering

BASIC ELECTRICAL ENGINEERING

SYLLABUS FOR B.E II – SEMESTER

(Common to CSE and ECE Branches)

L:T:P(Hrs/week):2:0:0	SEE Marks:60	Course Code: **U24ES010EE**
Credits : 2	CIE Marks:40	Duration of SEE: 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1. To provide an understanding of basics in Electrical circuits 2. To explain the working principles of Electrical Machines.	1. Analyze Electrical Dc circuits using different analyzing methods and theorems. 2. Analyze Electrical single phase and three phase AC circuits 3. Comprehend the working principles of DC machines 4. Comprehend the working of single phase transformer and various Electrical switchgear, electrical energy consumption and power factor improvement 5. Comprehend the working principles of AC machines

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, Thevinin's and Norton's Theorem, Maximum power transfer theorem, Tellegen's 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, Three-

phase balanced circuits, voltage and current relations in star and delta connections, analysis of three phase balanced star and delta connected loads.

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 Transformers and Electrical Installation:
Principle of operation, Ideal and practical transformer on No-load and Load, Equivalent circuit, losses in transformers, efficiency.
Components of LT Switchgear: Switch fuse unit (SFU), MCB, Earthing, elementary calculations for Energy consumption, power factor improvement.

Unit V: Induction Motors and Stepper Motors:
Generation of rotating magnetic fields, Construction and working of a three-phase induction motor, torque derivation, losses and efficiency, torque-slip characteristics.
General construction, working and applications 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 Test	:	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)

ACCREDITED BY NAAC WITH 'A++' GRADE

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering

LOGIC AND SWITCHING THEORY

SYLLABUS FOR B.E. II-SEMESTER

L:T:P (Hrs./week):4:0:0	SEE Marks:60	Course Code:**UII24ES220CS**
Credits :3	CIE Marks:40	Duration of SEE : 3Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On *completion of the course, students will be abl*e to
1 Understand the use of logic minimization methods and to solve the Boolean logic expressions. 2 Design combinational and sequential circuits.	1 Apply Boolean logic postulates and Karnaugh-Map to simplify Boolean expressions. 2 Apply tabulation method to minimize Boolean expressions. 3 Design combinational circuits such as adders, encoders and multiplexers. 4 Design sequential circuits like counters and registers. 5 Design a circuit using programmable logic devices.

UNIT-I:Boolean Algebra: Axiomatic definition of Boolean Algebra, Basic Theorems and Properties of Boolean Algebra, Boolean Functions, Canonical and Standard Forms, The Map Method, Four Variable K-Map , Product of Sums Simplification, Don't Care Conditions.

UNIT-II:

Minimization of Switching Functions: Determination of Prime Implicants and Essential Prime Implicants, Quine-McCluskey Tabular Method.

Implementation of Boolean Functions: Single-Output and Multiple-Output Combinational Circuit Design, AND-OR, OR-AND and NAND &NOR Realizations, Exclusive-OR and Equivalence functions.

UNIT-III:

Combinational Logic: Introduction, Combinational Circuits, Analysis of

Combinational Circuits, Design of Combinational Circuits , Binary Adder—Subtractor, Binary Multiplier, Magnitude Comparator, Decoders, Encoders, Multiplexers

UNIT-IV:

Sequential Logic: Introduction, Sequential Circuits, Storage Elements: Latches, Storage Elements: Flip Flops, Analysis of Clocked Sequential Circuits, State Reduction and Assignment, Design Procedure.

Registers and Counters: Registers, Shift Registers, Ripple Counters, Synchronous Counters, Ring Counter, Johnson Counter.

UNIT-V:

Memory and Programmable Logic: Random Access Memory (RAM), Read Only Memory (ROM), Programmable Logic Array (PLA), Programmable Array Logic (PAL).

Learning Resources:

1. M. Morris Mano and Michael D. Ciletti, Digital Design, 6th Edition (2018), Pearson, India.
2. ZviKohavi, Switching and Finite Automata Theory, 2nd Edition(1978), Tata McGraw Hill.
3. Charles H. Roth, Jr., Larry L. Kenny, Fundamentals of Logic Design, 7th Edition(2013), Cengage Learning.
4. Anand Kumar A, Switching Theory and Logic Design, 2nd Edition(2014), PHI Publishers.
5. CH Roth , Fundamentals of Logic Design, 4th Edition(2006), Jaico Publishers.
6. https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-111-introductory-digital-systems-laboratory-fall-2002
7. http://www.facweb.iitkgp.ernet.in/~isg/SWITCHING/
8. Digital System design URL:https://nptel.ac.in/courses/108106177

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

1	No. of Internal Tests	:	2	Max. Marks for each Internal Test	:	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 : 1 Hour 30 Minutes

With effect from the Academic Year 2024-25

VASAVI COLLEGE OF ENGINEERING(Autonomous)

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IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

PYTHON PROGRAMMING

SYLLABUS FOR B.E. II-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code : **UII24ES230CS**
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1 Acquire problem solving skills 2 Write programs using Python language	1 Develop Python programs with conditionals, loops and functions 2 Write programs using strings,lists and Numpy 3 Construct Python data structures programs using tuples sets and dictionaries 4 Write programs using files and exception handling. 5 Design Programs on OOPS concept, inheritance and Modules.

UNIT-I:

Basics of Python Programming: Features of Python**,** Literal Constants, Variables and Identifiers, Data Types, operators and expressions, Type Conversions.

Decision control Statements: Selection/Conditional branching statements, basic loop structures/iterative Statements, nested loops, break, continue, and pass Statements.

Functions: function definition, function call, Variable Scope and Lifetime, more on defining functions, Recursive functions.

UNIT-II:

Data Structures: **Strings**: Introduction, built-in string methods and functions, slice operation, String Module, **Regular Expressions**, Meta-character in Regular Expression.

Lists: Introduction, nested list, cloning lists, basic list operations, list methods, List Comprehensions, Looping in Lists. **Functional programming**-filter(),map(),reduce() function.

Numpy: Numpy Fundamentals, creating arrays, array indexing, Basic Array Operations, one dimensional and n dimensional array, Creating Matricesusing Numpy arrays, Matrix multiplication.

UNIT –III:

Tuples: Introduction, basic tuple operations, tuple assignment, tuples for returning multiple values, nested tuples, tuple methods and functions, Variable length Argument Tuples, Advantages of Tuple Over List.

Set: Introduction, Set operations.

Dictionaries: Basic operations, sorting items, looping over dictionary, nested dictionaries, built-in dictionary functions, String Formatting with Dictionaries.

UNIT-IV:

Files Handling: Introduction, File Path, Types of files, Opening and closing Files, reading and writing files, File Positions, Renaming and Deleting Files, Directory Methods, Pickling and JSON.

Exception Handling: Introduction to Errors and Exceptions, Handling Exceptions, Multiple Except Blocks, The Else Clause, Raising Exceptions, Handling the Exceptions in invoked functions, Built-in and user-defined exceptions, The Finally Block, Re raising Exception, Assertions

Unit-V:

OOPS Concepts: Introduction, classes and object, class method and self argument, the__init__()method, class variables and object variables, public and private data members, Private Methods, Calling a Class method from another class Method, Built-in Class Attributes, Garbage Collection, Inheritance, Operator Overloading.

Modules: Modules, Package, Standard Library Modules, Math, Random, date and time, Matplotlib, Pandas, Turtle.

Learning Resources:

1. Reema Thareja ,"Python programming using problem solving approach ", Oxford university press.
2. Allen Downey," Think Python: How to Think Like a Computer Scientist",O'Reilly publications,2nd Edition.
3. Albert Lukaszewski, "Mysql for python ", PACKT publishers
4. Mark Lutz , "Learning Python",O'Reilly Publications.
5. Stewart Venit and Elizabeth Drake, Prelude to Programming:Concepts and Design, 6th Edition(2015), Pearson India
6. Mark J Guzdial, Introduction to Computing and programming in Python, 3rdEdition(2013), Pearson India

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

1	No. of Internal Tests	:	2	Max. Marks for each Internal Test	:	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 : 1 Hour 30 Minutes

With effect from the Academic Year 2024-25

VASAVI COLLEGE OF ENGINEERING (Autonomous)

ACCREDITED BY NAAC WITH 'A++' GRADE

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF CIVIL ENGINEERING

ENVIRONMENTAL SCIENCE

SYLLABUS FOR B.E. II-SEMESTER

(Common to CSE & IT)

L : T : P (Hrs./week): 2 : 0 : 0	SEE Marks:60	Course Code: **U24MC010CE**
Credits : - - -	CIE Marks:40	Duration of SEE: 3 Hrs

COURSE OBJECTIVES	**COURSE OUTCOMES**
In this subject the students will	*Upon the completion of this course students will be able to*
1. Describe various types of natural resources available on the earth surface. 2. Explain the concepts of an ecosystem and the biotic and abiotic components of various aquatic ecosystems. 3. Identify the values, threats of biodiversity, endangered and endemic species of India along with the conservation of biodiversity. 4. Explain the causes, effects and control measures of various types of environmental pollutions. 5. Describe the methods for water conservation, the causes, effects of global warming, climate change, acid rain, ozone layer depletion, population explosion.	1. Describe the various types of natural resources. 2. Differentiate between various biotic and abiotic components of ecosystem. 3. Examine the values, threats of biodiversity, the methods of conservation, endangered and endemic species of India. 4. Illustrate causes, effects, control measures of various types of environmental pollutions. 5. Explain the methods of water conservation, causes, effects of climate change, global warming, acid rain and ozone layer depletion, population explosion.

UNIT-I: Environmental Studies: Definition, importance of environmental studies. Natural resources: Water resources; floods**,** drought, conflicts over water, dams-benefits and problems. Food resources; Effects of modern agriculture, fertilizer-pesticide problems, Eutrophication, Biomagnification, water logging, salinity. Energy resources: Renewable and non-renewable energy resources. Land Resources, soil erosion and desertification.

UNIT-II: Ecosystems: Definition of ecosystem, classification of ecosystem, Structure and function of an ecosystem, producers, consumers and decomposers, food chains, food webs, ecological pyramids, aquatic ecosystem (ponds),Terrestrial ecosystem(Forest)

UNIT-III: Biodiversity: Definition, Genetic, species and ecosystem level diversity. Values of biodiversity, threats to biodiversity, endangered and endemic species of India, conservation of biodiversity. Biological diversity Act 2002.

UNIT-IV: Environmental Pollution: Causes, effects and control measures of air pollution, air pollution control devices (catalytic convertor) water pollution, water pollution monitoring devices, soil pollution, noise pollution, solid waste types, Municipal solid waste & e-waste recycling, Air act and water act.

UNIT-V: Social Aspects and the Environment: Water conservation, global warming, case study related to self cooling technologies, acid rain, ozone layer depletion, Kyoto protocol, Climate change, Dubai and Paris aggrements. Environmental Impact Assessment. Consumerism, Sustainable development goals (SDG-17), Environmental protection act 1986.

Learning Resources:

1. Deswal S. and Deswal A., A Basic Course on Environmental studies, Dhanpat Rai & Co Pvt. Ltd. 2013.
2. Benny Joseph, Environmental Studies, Tata McGraw-Hill, 2006.
3. Suresh K. Dhameja, Environmental Studies, S.K. Kataria & Sons, 2010.
4. De A.K., Environmental Chemistry, New Age International, 2003.
5. Odum E.P., Fundamentals of Ecology, W.B. Sunders Co., USA, 2004.
6. Sharma V.K., Disaster Management, National Centre for Disaster Management, IIPE, Delhi, 2013.
7. Rajagopalan R., Environmental Studies, Second Edition, Oxford University Press, 2013.

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	:	2	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	2	Max. Marks for each Quiz Test	:	5

Duration of Internal Tests : 90 Minutes

With effect from the Academic Year 2024-25

VASAVI COLLEGE OF ENGINEERING (Autonomous)

ACCREDITED BY NAAC WITH 'A++' GRADE

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

ENGLISH LANGUAGE AND COMMUNICATION SKILLS LABORATORY

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

L: T: P(Hrs/Week): 0:0:2	SEE Marks : 50	Course Code:**U24HS011EH**
Credits: 1	CIE Marks: 30	Duration of SEE:3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES**
The course will enable the learners to:	On completion of the course, students will be able to
1. Learn the speech sounds, parts of speech and distinguish between vowel and consonant sounds in the English language to reduce mother tongue influence when speaking English. 2. Understand and follow the rules in debates, group discussions, interviews. 3. Develop reading skills and analyse various text types.	1. Speak well using 'generally acceptable English' in terms of pronunciation and use of diction. 2. Participate effectively in group discussions, public speaking, debates (formal and informal). 3. Read, analyse, evaluate and infer meaning from different types of texts and Paraphrase them.

1.0 PHONETICS LAB- TOPICS

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.

2.0 INTERACTIVE COMMUNICATION SKILLS LAB-TOPICS

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

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

2.3 **Debate:**
Understanding the difference between a debate and a group discussion, essentials of debates.

3.0 READING SKILLS LAB - TOPICS

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.

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. PriyadarshiniPatnaik : 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:

Internal Tests	:	Quiz Tests (1) + Assignments(1)
No. of Internal Tests-1	:	Max. Marks for Internal Test: 30
Duration of Internal Test	:	120 Minutes

With effect from the Academic Year 2024-25

VASAVI COLLEGE OF ENGINEERING(Autonomous)

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IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF CHEMISTRY

CHEMISTRY LAB

SYLLABUS FOR B.E. II SEMESTER

L:T:P(Hrs./week):0:0:2	SEE Marks : 50	Course Code: **U24BS011CH**
Credits :01	CIE Marks : 30	Duration of SEE: 3 Hours

COURSE OBJECTIVES:	**COURSE OUTCOMES:**
The course will enable the students to:	**At the end of the course, students should be able to:**
1. Describe the quantitative analytical techniques 2. Learn the skills to handle the instruments 3. Apply the theoretical principles in experiments	1. Estimate the amount of metals 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.

Note: Minimum of Ten experiments of the following.

1. Preparation of standard FAS or oxalic acid solution and standardization of $KMnO_4$ or NaOH solution.
2. Estimation of ferrous iron 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 hypo.
5. Estimation of available chlorine in bleaching powder.
6. Estimation of total hardness of given water sample.
7. Estimation of alkalinity of a given sample.
8. Conductometric acid-base titrations -Determination of strength of given acids (HCl *Vs* NaOH and CH_3COOH *Vs* NaOH).
9. Conductometric acid-base titrations- Determination of strength of acids in a given mixture of acids (HCl and CH_3COOH *Vs* NaOH)
10. Determination of strength of a given acid by Potentiometry.

11. Determination of concentration of a given $FeSO_4$ using redox titration by Potentiometry.
12. Determination of strength of a given acid by pH metry.
13. Determination of strength of permanganate or copper in brass solution by Colorimetry.
14. Synthesis of Phenol formaldehyde resin / PANI.
15. Chemistry of blue printing.

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.

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Marks for assessment of each experiment			18
Duration of Internal Test: 3 Hours			

With effect from the Academic Year 2024-25

VASAVI COLLEGE OF ENGINEERING (Autonomous)

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IBRAHIMBAGH, HYDERABAD – 500 031

Department of Electrical & Electronics Engineering

Basic Electrical Engineering Laboratory

SYLLABUS FOR B.E II – SEMESTER (CSE and ECE Branches)

L:T:P(Hrs./week):0:0:2	SEE Marks:50	Course Code: **U24ES011EE**
Credits :1	CIE Marks:30	Duration of SEE: 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1. To provide the practical knowledge on operation of DC, AC machines and circuits.	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.

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 and maximum power transfer theorems.
4. Verification of Thevenin's and Tellegen's theorems.
5. Sinusoidal steady state response of R-L and R-C circuits, Measurement of phase angle.
6. Measurement of cumulative three-phase power in balanced three-phase circuits.
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.

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Marks for assessment of each experiment			18
Duration of Internal Test: **3 Hours**			

With effect from the Academic Year 2024-25

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

ACCREDITED BY NAAC WITH 'A++' GRADE

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

PYTHON PROGRAMMING LAB

SYLLABUS FOR B.E. II-SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code:**UII24ES231CS**
Credits : 1	CIE Marks : 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** *On completion of the course, students will be able to*
1 Acquire problem solving skills 2 Write programs using Python language	1 Develop Python programs with conditional statements and loops. 2 Write programs using functions, strings and lists. 3 Construct Python data structures programs using tuples, dictionaries and set. 4 Implement programs using files and exception handling. 5 Develop programs using Object oriented programming.

Programming Exercise:

1. Implementation of decision making, branching and looping
2. Implementation of functions and function calls
3. Implementation of recursive functions
4. Implementation of string traversal, searching and other string methods
5. Implementation of list and list operations
6. Implementation of tuples
7. Implementation of dictionary and its operations
8. Implementation of set operations
9. Implementation of basic operations in NumPy
10. Implementation of files and pickling in files

11. Implementation of classes
12. Implementation of OOPS concepts in Python

Learning Resources:

1. Reema Thareja ,"Python programming using problem solving approach ", Oxford university press.
2. Allen Downey," Think Python: How to Think Like a Computer Scientist", O'Reilly publications,2nd Edition.
3. Albert Lukaszewski, "Mysql for python ", PACKT publishers
4. Mark Lutz, "Learning Python", O'Reilly Publications.
5. Stewart Venit and Elizabeth Drake, Prelude to Programming: Concepts and Design, 6th Edition(2015), Pearson India
6. Mark J Guzdial, Introduction to Computing and programming in Python, 3rdEdition(2013), Pearson India

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Marks for day-to-day laboratory class work			18
Duration of Internal Test: 2 Hours			