VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

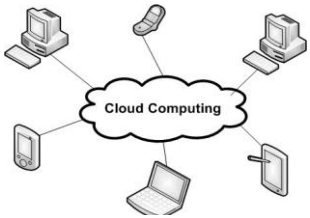
IBRAHIMBAGH, HYDERABAD-500 031

ACCREDITED BY NAAC WITH A++ GRADE

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. (IT) I and II Semesters with effect from 2025-2026
(For the batch admitted in 2025-26)
(R-25)



DEPARTMENT OF INFORMATION TECHNOLOGY
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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

ACCREDITED BY NAAC WITH A++ GRADE

IBRAHIMBAGH, HYDERABAD-500 031

Vision

Striving for a symbiosis of technological excellence and human values.

Mission

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

Quality Policy

Education without quality is like a flower without fragrance. It is our earnest resolve to strive towards imparting high standards of teaching, training and developing human resources.

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(AUTONOMOUS)

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DEPARTMENT OF INFORMATION TECHNOLOGY

Vision

To be a center of excellence in the emerging areas of Information Technology.

Mission

- Provide a comprehensive learning experience on the latest technologies and applications.
- Equip the stakeholders with latest technical knowledge and leadership skills with collaboration to become competent professionals.
- Motivate innovation and contribute to the societal issues with human values and professional ethics.

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DEPARTMENT OF INFORMATION TECHNOLOGY

Programme Educational Objectives (PEOs) for IT Program

A Graduate of Information Technology will be able to:

PEO1: Pursue higher studies in multidisciplinary areas with research orientation.

PEO2: Develop core IT competencies aligned with emerging industry trends to become global leaders with ethical values.

PEO3: Engage in continuous learning and address the societal problems with sustainable solutions.

Program Specific Outcomes (PSOs) for IT Program

Our students, upon graduation from the program, will be able to

PSO1: Identify and develop software solutions using programming languages, tools and AI/ML concepts.

PSO2: Design, develop and maintain secure stand-alone, embedded and networked systems.

PSO3: Analyze the architectures of autonomous or semi-autonomous intelligent systems and apply to real-time scenarios.

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IBRAHIMBAGH, HYDERABAD-500 031

Program Outcomes (POs) for IT Program

At the end of the program, the graduates will demonstrate

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **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.
3. **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.
4. **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.
5. **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.
6. **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.
7. **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.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **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.
11. **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.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
SCHEME OF INSTRUCTION AND EXAMINATION (R-25)
B.E. – INFORMATION TECHNOLOGY : FIRST SEMESTER (2025 - 2026)

SEMESTER – I									
S No	**Course Code**	**Course Name**	**Scheme of Instruction**			**Scheme of Examination**			
			Hours per week			**Duration in Hrs**	**Maximum Marks**		**Credits**
			L	**T**	**P/D**		**SEE**	**CIE**	
THEORY									
1	U25HS010EH	English Language and Communication	2	-	-	3	60	40	**2**
2	U25BS120MA	Calculus and Linear Algebra	3	-	-	3	60	40	**3**
3	U25BS110PH	Physics Of Semiconductors	2	-	-	3	60	40	**2**
4	U25ES110IT	Python Programming	3	-	-	3	60	40	**3**
5	U25ES010EE	Basic Electrical Engineering	2	-	-	3	60	40	**2**
6	U25ES030CE	Basic Engineering Drawing	1	-	2	3	60	40	**2**
7	U25HS040EH	**Learning to Learn**	1	-	-	2	40	30	**1**
8	U25PE110IT	**Skill Development Course-I (Technical Skills-I)**	1	-	-	2	40	30	**1**
PRACTICALS									
9	U25HS011EH	English Language and Communication Skills Lab	-	-	2	3	50	30	**1**
10	U25BS111PH	Semiconductor and Optoelectronics Lab	-	-	2	3	50	30	**1**
11	U25ES111IT	Python Programming Lab	-	-	2	3	50	30	**1**
12	U25ES011EE	Basic Electrical Engineering Lab	-	-	2	3	50	30	**1**
		Library / Sports / Mentor Interaction	-	-	-	-	-	-	-
		RC/AC	-	-	-	-	-	-	-
Student should acquire one NPTEL Certification Course equivalent to 2 credits (8 weeks) by the end of VI Semester. Students opting for Honours should complete one NPTEL Course of 2 credits (8 Weeks) by the end of IV Semester.									
Total			**15**	**-**	**10**	--	**640**	**420**	**20**
Grand Total			**15+10 = 25**			--	**1060**		

VASAVI COLLEGE OF ENGINEERING
(Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031
DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

ENGLISH LANGUAGE AND COMMUNICATION

(Common to all branches)
SYLLABUS FOR B.E. 1/4

Instruction: 3:0:0	SEE : 60	Course code: **U25HS010EH**
Credits : 3	CIE: 40	Duration of SEE: 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES**
The course will enable the learners to:	**At the end of the course the learners will 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.

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
CO1								1	2	3		3
CO2								1	2	3		3
CO3								1	2	3		3
CO4								1	1	3		3
CO5								1	1	3		3

Summary (CO to PO Contribution)

Co-1 Demonstrate effective verbal and non-verbal communication skills and apply emotional intelligence and team-building concepts to real-life scenarios.
Co-2 Listen actively and speak clearly and confidently in academic and professional contexts, including delivering structured presentations.
Co-3 Employ reading techniques and write coherent, well-organized paragraphs, emails, and letters for different purposes and audiences.
Co-4 Apply a broadened vocabulary and correct grammatical structures to construct meaningful and grammatically accurate sentences.
Co-5 Analyse and appreciate literary texts, identifying themes, tone, and stylistic devices, and relate them to personal or societal contexts.

UNIT-1 1.0 Effective communication and Interpersonal skills

1.1 Roleand 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 4.0Vocabulary BuildingandGrammar

4.1**Vocabulary Building:** Synonyms,Antonyms,One-wordsubstitutes;Words often Confused; Idioms.
4.2 Functional Grammar: Tense and Aspect; Subject-Verb agreement; Sentence types (Declarative sentence, Interrogative sentence, Exclamatorysentence 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
Paul V. Anderson – Technical Communication
E.Suresh Kumar, P. Sreehari and J. Savithri - Essential English
Reading comprehension - Nuttal.J.C - Orient Blackswan
SunithaMishra,C. Murali Krishna, Communication Skills for Engineers, Pearson, 2004.
M. Ashraf Rizvi. Effective Technical Communication. Tata McGraw Hill, 2005.
Allen and Waters. How English Works.
Willis Jane., English through English.
Brown, Penelope and Stephen C. Levinson. 1978. Universals in language usage: politeness phenomena: Cambridge University Press.

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

1	No. of Internal tests	:	2	Max.Marks	:	30
2	No. of assignments	:	3	Max. Marks	:	5
3	No. of Quizzes	:	3	Max. Marks	:	5

Duration of Internal Tests : 90 Minutes

With effect from Academic Year 2025-26(R-25)

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
Accredited by NAAC with A++ Grade
9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State
DEPARTMENT OF MATHEMATICS

CALCULUS & LINEAR ALGEBRA

For B.E., I- Sem., (CBCS)
(Common to CSE, AIML & IT Branches)

Instruction: 3:0:0	SEE : 60	Course code: **U25BS120MA**
Credits : 3	CIE: 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. ***Develop*** a deep understanding of **the** concepts of Improper integrals Beta, Gamma functions and their properties. **2.** ***Learn*** the concepts of limits, continuity, partial derivatives of functions of several variables and derivative of composite functions, Taylor's series for functions of two variables, and 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 transformation and their properties. **5.** ***Understand*** of linear algebra concepts, including the rank of a matrix, characteristic equation, eigen values and eigenvectors, Diagonalization using Similarity Transformation.	**1.** ***Evaluate*** Improper integrals using Beta, Gamma functions. **2.** ***Find*** partial derivatives of functions of several variables and apply Taylor's series for functions of two variables and to find maxima and minima of a function of several variables. **3.** ***Analyze*** vector spaces and their subspaces, determine linear dependence and independence of vectors, determine basis of a vector space and compute the dimension of a vector space. **4.** ***Determine*** Linear transformations, their Null space and Range Space, 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, eigen values and eigen vectors and to Diagonalize a matrix using similarity transformation to real-world problems.

UNIT- I : SPECIAL FUNCTIONS

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

UNIT –II : MULTIVARIABLE CALCULUS

Limits- Continuity (Concepts) - Partial Derivatives - Higher Order Partial Derivatives - Total

Derivatives - 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-III: VECTOR SPACES

Definition of Vector Space - Vector Subspaces – Linear Dependence and Independence of vectors - Span of a set of vectors - Basis of Vector Space – Dimension of a Vector Space –Co-ordinates.

UNIT-IV :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 : MATRICES

Rank of a Matrix - Characteristic equation - Eigen values and Eigenvectors – Diagonalization using Orthogonal Transformation - Quadratic form - Reduction of Quadratic form to Canonical form.

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 40th. Edition, Khanna Publishers.
3. Introduction to Linear algebra with applications, Jim DeFranza, Daniel Gagliardi, Tata McGraw-Hill

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
4	Duration of Internal Tests	:	90 Minutes			

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

PHYSICS OF SEMICONDUCTORS (POS)

B.E Syllabus for CSE, CSE (AI & ML) and IT Branches

L:T:P(Hrs/week):2:0:0	SEE Marks:60	Course Code: **U25BS110PH**
Credits :02	CIE Marks:40	Duration of SEE: 90 min

CO code	Course Objectives	Course Outcomes	Highest BTL
BS110PH.1	To appreciate the merits of quantum mechanics over classical mechanics.	To apply quantum mechanical laws and interpret quantum tunnelling phenomenon.	3
BS110PH.2	To arrive at the expression for carrier concentration in semiconductors and analyze various semiconductor devices	To estimate required carrier concentration and elucidate working of optoelectronic devices	4
BS110PH.3	To comprehend lasing action and relate the use of lasers in optical fiber communication	To compare different types of lasers and summarize merits and demerits of optical fibers.	3
BS110PH.4	To introduce basics of quantum computing	To interpret various types of qubits and their probable advantages	2

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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: LASERS AND OPTICAL FIBERS

Lasers: Stimulated emissions, characteristics of lasers, population inversion, meta-stable states, pumping mechanisms, components of laser, types of lasers, construction and working of semiconductor laser, advantages, and applications of lasers.

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

UNIT-IV: BASICS OF QUANTUM COMPUTING

Introduction to Ket and Bra vectors, Qubits, superposition, entanglement, interference, decoherence of qubits, difference between quantum and classical computers, basics of quantum gates: Pauli's X-gate, CNOT gate and Hadamard gate.

Physical implementation of qubits (very qualitative description)
Solid State Qubits: Semiconducting Qubits- quantum dots, spins
Superconducting Qubits: Josephson's junctions, SQUIDS, 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 Pillai, Solid State Physics, 8th edition, New Age International Publishers, 2018
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. 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
7. "Quantum Computing for Computer Scientists" by Noson S. Yanofsky and Mirco A. Mannucci Cambridge University Press, 2008.

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

1	No. of Internal Tests:	02	Max.Marks for each Internal Tests:	30
2	No. of Assignments:	03	Max. Marks for each Assignment:	05
3	No. of Quizzes:	03	Max. Marks for each Quiz Test:	05

Duration of Internal Test: **90 Minutes**

With effect from Academic Year 2025-26(R-25)

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERBAD-500031,
DEPARTMENT OF INFORMATION TECHNOLOGY

PYTHON PROGRAMMING

SYLLABUS FOR B.E. I SEMESTER

L:T:P(Hrs./week):3:0:0	SEE Marks :60	Course Code:**U25ES110IT**
Credits : 3	CIE Marks :40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES**
The Objectives of the course:	*On completion of the course, students will be able to:*
1. Demonstrate the key features of python, containers and its applications. 2. Explain OOP concepts, exception handling.	1. Understand the basics of computers, features of python and control structures. 2. Solve computational problems using recursive functions, strings in python 3. Implement lists, modules and tuples data structures in python. 4. Implement sets and dictionary data structures in python. 5. Develop python programs to implement object oriented concepts and perform file operations and exception handling

UNIT – I

Introduction: Computer Systems, Computing Environments, Computer Languages, Creating and Running Programs**,** Features of Python, variables and identifiers, operators and expressions, Algorithm, Flowchart.

Decision making: if, if else, nested if-else and else if.

Unit – II

Repetition: while loops and for loops, nested loops, break, continue, pass

Functions: Definition, function call, more on defining functions, recursive functions.

Strings: Introduction, accessing strings, basic operations, string slice, String function and methods, Loops over strings, Regular Expressions.

UNIT – III

Lists: Introduction, Operations on lists, nested list, list methods, list comprehension, Functional programming - filter(), map(), reduce() function.

Modules: Math, random, calendar, turtle.

Tuples: Introduction, operations on tuples, packing and unpacking, tuple comprehension, nested tuples, tuple methods and functions.

UNIT – IV

Set: Introduction, Set operations.
Dictionaries: Basic operations, sorting items, looping over dictionary, dictionary comprehension, nested dictionaries, built-in dictionary functions.

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, Inheritance, Polymorphism, Operator Overloading.
Files and Exceptions: reading and writing files, handling exceptions, assertions, built-in and user-defined exceptions.

Learning Resources:

1. Allen Downey, "Think Python: How to Think Like a Computer Scientist", O'Reilly publications,2nd Edition.
2. Reema Thareja, "Python programming using problem solving approach ", Oxford university press.
3. Mark J Guzdial, Introduction to Computing and programming in Python, 3rd Edition (2013), Pearson India
4. https://onlinecourses-archive.nptel.ac.in/noc19_cs09/
5. http://nptel.ac.in/courses/117106113/34
6. https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-01sc-introduction-to-electricalengineering-and-computer-science-i-spring-2011/python-tutorial/

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

1	No. of Internal Tests:	02	Max.Marks for each Internal Tests:		30
2	No. of Assignments:	03	Max. Marks for each Assignment:		05
3	No. of Quizzes:	03	Max. Marks for each Quiz Test:		05

Duration of Internal Test: **90 Minutes**

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031
Department of Electrical & Electronics Engineering

Basic Electrical Engineering
SYLLABUS FOR B.E I –
SEMESTER

With effect from Academic Year 2025-26(R-25)

(Common to CSE & AIML, IT and ECE Branches)

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** On completion of the course, students will be
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 circuits and power factor improvement. 3. Comprehend the working principles of DC 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, 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 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)
IBRAHIMBAGH, HYDERABAD – 500 031
DEPARTMENT OF CIVIL ENGINEERING

BASIC ENGINEERING DRAWING

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

L:T:P(Hrs./week):1:0:2	SEE Marks: 60	CourseCode:**U25ES030CE**
Credits:2	CIEMarks: 40	DurationofSEE: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.	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.

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 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. 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. NPTELCourse(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 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), HYDERABAD
DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

COURSE NAME-LEARNING TO LEARN

SYLLABUS FOR B.E. 1/4 – I & II SEMESTERS

Instruction: 1 Hour	**SEE: 40**	**Course code: U25HS040EH**
Credits: 1	**CIE: 30**	**Duration of SEE: 2 Hours**

COURSE OBJECTIVES	**COURSE OUTCOMES**
The course will enable the learners to:	**At the end of the course the learners will be able to: -**
1. Understand the importance of a growth mindset and personal learning styles.	**1.** Students will be able to adopt a growth mindset and customize learning strategies based on their strengths.
2. Learn techniques to improve memory retention and focus for effective learning.	**2.** Students will apply mnemonic devices, active recall, and focus strategies to enhance their learning process.
3. Develop practical time management skills to prioritize tasks effectively.	**3.** Students will implement time-blocking and prioritization techniques for better productivity.
4. Emphasize the value of self-reflection and feedback in continuous improvement.	**4.** Students will maintain reflective journals and use feedback to improve their learning habits.

CO/ PO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1					3							
CO2					3							
CO3												3
CO4					3							
CO5												
CO6												

Summary (CO to PO Contribution)

CO1: Adopt a growth mindset and customize learning strategies based on their strengths.

CO2: Apply mnemonic devices, active recall, and focus strategies to enhance their learning process.
CO3: Implement time-blocking and prioritization techniques for better productivity.
CO4: Apply strategies to interpret questions and write clear, effective answers within time limits.

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.

LEARNING RESOURCES

learn.talentsprint.com

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

1	No. of Internal tests	:	1	Max. Marks	:	20
2	No. of assignments	:	1	Max. Marks	:	5
3	No. of Quizzes	:	1	Max. Marks	:	5

Duration of Internal Tests : 90 Minutes

With effect from Academic Year 2025-26(R-25)

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

Skill Development Course-I (Technical Skills-I)

Problem Solving Through Python

{Tailormade for VCE IT –Sem I}

SYLLABUS FOR B.E. I-SEMESTER

L:T:P(Hrs./week):1:0:0	SEE Marks : 40	Course Code :**U25PE110IT**
Credits : 1	CIE Marks : 30	Duration of SEE : 3 Hours

#1: Problem Solving using Python – Data Operations

Problem solving through Coding, Introduction to Python, Syntax of the language, datatypes and variables, Input-Output statements, Operators and precedence, Expressions, Keywords, Company Specific Examples & Competitive Programming Practice Problems.

Contextual implementation using Competitive Coding using global coding platforms: Code chef/ Leet code / Codeforces / Hackerrank etc

#2: Problem Solving using Python – Control Statements

Introduction to conditional branching, if statement, for statement, range function, break and continue statements, usage of else clause in loops, pass statements, match statements, Company Specific Examples & Competitive Programming Practice Problems.

Contextual implementation using Competitive Coding using global coding platforms: Code chef/ Leet code / Codeforces / Hackerrank etc

#3: Problem Solving using Python – Strings and Lists

Problem solving on accessing strings, string operations, string slices, functions and methods, Introduction to lists, accessing list, working on Lists, Matrix data, Company Specific Examples & Competitive Programming Practice Problems.

Contextual implementation using Competitive Coding using global coding platforms: Code chef/ Leet code / Codeforces / Hackerrank etc

#4: Problem Solving using Python – Methods, Dictionaries

Introduction to tuple, accessing tuples, tuple operations, introduction to dictionaries, accessing values in dictionaries, properties and functions, importing modules, math module, random module, packages and composition, Company Specific Examples & Competitive Programming Practice Problems.

Contextual implementation using Competitive Coding using global coding platforms: Code chef/ Leet code / Codeforces / Hackerrank etc

#5: Problem Solving using Python – Exception handling

Problem solving through user defined functions and methods, implementing exception handling, except clause, try? finally clause, user defined exceptions, Advanced data types, Company Specific Examples & Competitive Programming Practice Problems.

Contextual implementation using Competitive Coding using global coding platforms: Code chef/ Leet code / Codeforces / Hackerrank etc

With effect from Academic Year 2025-26(R-25)

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031
DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

English Language and Communication Skills Laboratory

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

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

COURSE OBJECTIVES **The course will enable the learners to:**	**COURSE OUTCOMES** **On completion of the course, learners 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 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.

CO/ PO	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO1 0**	**PO1 1**	**PO1 2**
CO1								1	3	3		3
CO2								1	3	3		3
CO3								1	3	3		3

Summary (CO to PO Contribution)

1. Co-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. Co-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. Co-3 Apply advanced reading techniques (e.g., SQ3R, scanning, skimming) to comprehend, paraphrase, and summarize content from diverse sources including technical and journalistic texts.

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.

1.2 **Aspects of language learning and ear training activities-** Word stress and intonation, Pronunciation of silent letters, mispronounced words, and Foreign words used in English

2.0 INTERACTIVE COMMUNICATION SKILLS LAB-TOPICS

2.1 **Formal and informal conversations**—From initiating to terminating stage.

2.2 **Group discussion:** Objectives of GD, Types of GDs; Initiating, Sustaining, and concluding a GD—Using discourse markers.

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

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

3.0 READING SKILLS LAB

3.1 Strategies of reading using SQ3R, applying it to various text types.

3.2 Teaching different types of texts for comprehension—Fromshort stories to technical articles.

2.3.1 Newspaper reading. Summarizing, paraphrasing, and presenting news articles.

Learning Resources:

Prescribed textbook for laboratory:

1. Speak Well: JayshreeMohanraj, KandulaNirupa Rani and Indira Babbellapati - Orient Black Swan
2. Longman Dictionary of Contemporary English–Latest Edition.

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.

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, Hyderabad-31
DEPARTMENT OF PHYSICS

SEMICONDUCTOR AND OPTOELECTRONICS LAB (SOE LAB)

B.E Syllabus for CSE, CSE (AI & ML) and IT Branches

L : T : P	Credits	**CIE** Marks	**SEE** Marks	**Semester**	**Course Code**
0 : 0 : 2	01	30	50	**I**	**U25BS111PH**

Course Objectives	**Course Outcomes**	**Highest BTL**
• to study and discuss the characteristics of a given device	1. to 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. To outline the precautions required to be taken in each experiment	1
• to compare the experimental and theoretical values and draw possible conclusions.	3. To compare the experimental results with standard values and estimate error percentage	2
• To interpret the results from the graphs drawn using experimental values.	4. To draw graphs and interpret the results with respect theoretical results.	2
• To write the record independently with appropriate results.	5. To effectively write summary of the experiment and draw appropriate conclusions	1

CO-PO 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
4. Study of characteristics of Photodiode
5. Study of I-V characteristics of solar cell and to calculate fill factor

and efficiency

6. Determination of wavelength of laser light.
7. Determination of energy gap of a given semiconductor by four probe method
8. Hall's effect- Determination of Hall's coefficient, carrier concentration of given semiconductor
9. Calculation of numerical aperture, acceptance angle and power loss due to bending of an optical fiber.
10. Determination of Planck's constant using Photocell
11. Determination of e/m of an electron by Thomson's method
12. Determination of Seebeck coefficient

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Day-to-day laboratory class work which will be awarded based on the average of assessment for each experiment considering at the end of the course			18
Duration of Internal Test: 3 Hours			

With effect from Academic Year 2025-26(R-25)

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

PYTHON PROGRAMMING LAB

SYLLABUS FOR B.E. I SEMESTER

L:T:P(Hrs./week): 0:0:2	SEE Marks :50	Course Code: **U25ES111IT**
Credits : 1	CIE Marks :30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The Objectives of the course:	*On completion of the course, students will be able to:*
1. Provide hands on experience to use python containers. 2. Explain object-oriented concepts, file handling in python.	1) Solve problems using different decision-making statements, loops and functions. 2) Implement Strings, Lists, Tuples, Sets and Dictionaries data structures. 3) Interpret Object Oriented concepts in Python 4) Understand and perform different File handling operations.

List of Programs:

1) Introduction to Unix Commands.
2) Programs on operators and expressions.
3) Programs on decision making.
4) Programs on loops.
5) Programs on functions and recursion.
6) Programs on Strings.
7) Programs on Lists.
8) Programs on Modules and Tuples.
9) Programs on Sets.
10) Programs on Dictionaries.
11) Programs on classes and objects.
12) Programs on Inheritance.
13) Programs on file handling and exceptions.

Virtual Lab

14) Constructors and Inheritance
15) File operations

Learning Resources:

1. Allen Downey, "Think Python: How to Think Like a Computer Scientist", O'Reilly publications,2nd Edition.
2. Reema Thareja, "Python programming using problem solving approach ", Oxford university press.
3. Mark J Guzdial, Introduction to Computing and programming in Python, 3rd Edition (2013), Pearson India
4. https://onlinecourses-archive.nptel.ac.in/noc19_cs09/
5. http://nptel.ac.in/courses/117106113/34
6. https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-01sc-introduction-to-electricalengineering-and-computer-science-i-spring-2011/python-tutorial/
7. https://python-iitk.vlabs.ac.in/exp/constructors-and-inheritance/
8. https://python-iitk.vlabs.ac.in/exp/file-operators/

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Day-to-day laboratory class work which will be awarded based on the average of assessment for each experiment considering at the end of the course			18
Duration of Internal Test: 3 Hours			

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031
Department of Electrical & Electronics Engineering

BASIC ELECTRICAL ENGINEERING LABORATORY

SYLLABUS FOR B.E I – SEMESTER
(Common to CSE & AIML, IT and ECE Branches)

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** On completion of the course, students will be able to
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.
4. Verification of Maximum Power transfer theorem.
5. Verification of Thevenin's theorem.
6. Sinusoidal steady state response of R-L and R-C circuits, 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.

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

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
SCHEME OF INSTRUCTION AND EXAMINATION (R-25)
B.E. – INFORMATION TECHNOLOGY : SECOND SEMESTER(2025 - 2026)

SEMESTER - II									
S No	**Course Code**	**Course Name**	**Scheme of Instruction**			**Scheme of Examination**			
			Hours per week			**Duration in Hrs**	**Maximum Marks**		**Credits**
			L	**T**	**P/D**		**SEE**	**CIE**	
THEORY									
1	U25BS220MA	Advanced Calculus	3	-	-	3	60	40	**3**
2	U25BS210CH	Material Chemistry	2	-	-	3	60	40	**2**
3	U25ES010CE	Basic Engineering Mechanics	2	-	-	3	60	40	**2**
4	U25ES210IT	Basic Electronics	2	-	-	3	60	40	**2**
5	U25ES220IT	Digital Electronics & Logic Design	3	-	-	3	60	40	**3**
6	U25ES230IT	Structured Programming for Problem Solving	3	-	-	3	60	40	**3**
7	U25HS020EH	Human Values & Professional Ethics – I	1	-	-	2	40	30	**1**
8	U25PE210IT	**Skill Development Course – II (Technical Skills-II)**	1	-	-	2	40	30	**1**
PRACTICALS									
9	U25BS011CH	Chemistry Lab	-	-	2	3	50	30	**1**
10	U25ES211IT	Basic Electronics Lab	-	-	2	3	50	30	**1**
11	U25ES231IT	Structured Programming for Problem Solving Lab	-	-	2	3	50	30	**1**
		Library / Sports / Mentor Interaction	-	-	-	-	-	-	**-**
		RC/AC	-	-	-	-	-	-	**-**
Student should acquire one NPTEL Certification Course equivalent to 2 credits (8 weeks) by the end of VI Semester. Students opting for Honours should complete one NPTEL Course of 2 credits (8 Weeks) by the end of IV Semester.									
Total			**17**	**-**	**6**	--	**590**	**390**	**20**
Grand Total			**17 +6 = 23**			--	**980**		

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
Accredited by NAAC with A++ Grade
9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State
DEPARTMENT OF MATHEMATICS

ADVANCED CALCULUS

B.E., II- Sem., (CBCS)
(Common to CSE, CSE-AIML & IT)

L :T:P (Hrs./week):3:0:0	SEE Marks :60	Course Code: **U25BS220MA**
Credits : 3	CIE Marks :40	Duration of SEE : 3 Hrs

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 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.** ***Learn*** the concepts of evaluation of double integrals and changing the order of integration. **4.** ***Study*** the concepts of vector differentiation, Directional derivative, Divergence and Curl of a vector point function. **5.** ***Understand*** the fundamental concepts of infinite series and various tests for convergence.	**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.** ***Evaluate*** the double integrals and also evaluate the double integrals by changing the order of integration and by change of variables. **4.** ***Find*** the gradient of a scalar point function, divergence and curl of vector field and its applications. **5. Identify** an appropriate test and determine nature of a series.

UNIT – I : ORDINARY DIFFERENTIAL EQUATIONS OF FIRST ORDER

Exact differential equations - Integrating factors- Clairaut's equation - Applications of First Order Differential Equations - 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 [Where $r(x) = e^{ax}$, $\sin(ax +$

$b)(or)\cos(ax+b)$, x^k, $e^{ax}V(x)]$ - Method of Variation of Parameters – Applications of Linear Differential Equations to LCR circuits.

UNIT – III : DOUBLE INTEGRALS

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

UNIT – IV : DIFFERENTIAL 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 .

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 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 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
4	Duration of Internal Tests	:	90 Minutes			

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

ACCREDITED BY NAAC WITH A++ GRADE

DEPARTMENT OF CHEMISTRY

MATERIAL CHEMISTRY

(For CSE, CSE (AIML) and IT branches)

SYLLABUS FOR B E II SEMESTER

L:T:P(Hrs./week):2:0:0	SEE Marks: 60	Course Code: **U25BS210CH**
Credits : 2	CIE Marks : 40	Duration of SEE : 3H

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 polymers, liquid crystals and their applications 4. To introduce the concepts, synthesis and characterization techniques of nanomaterials along with their applications.	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. Differentiate various types of polymers, liquid crystals and explain their fundamental properties and applications. 4. Explain synthesis methods, Properties of nanomaterials and their characterization techniques.

CO-PO MAPPING FOR MATERIAL CHEMISTRY

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	3	2	-	-	-	-	-	-	-	-	-	1
2	3	1	-	-	-	-	2	-	-	-	-	2
3	3	1	-	-	-	-	2	-	-	-	-	2
4	3	1	-	-	-	-	1	-	-	-	-	1

UNIT-I: ELECTRODICS AND ITS APPLICATIONS (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, weak acid *vs* strong base and mixture of acids *vs* strong base.

Concept of electrode potential, electro motive 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: 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 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) and phosphoric acid fuel cells.

UNIT-III: MACRO MOLECULES AND LIQUID CRYSTALS (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.

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

Glass transition temperature (T_g) and factors affecting T_g.

Elastomers: Natural rubber- chemistry of Vulcanization

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

Conducting polymers: Definition- classification, mechanism of conduction in polyacetylene(doping and undoping) and applications.

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-IV: NANOMATERIALS (09)

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.

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 (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:	02	Max.Marks for each Internal Tests:	30
2	No. of Assignments:	03	Max. Marks for each Assignment:	05
3	No. of Quizzes:	03	Max. Marks for each Quiz Test:	05

Duration of Internal Test: **90 Minutes**

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

BASIC ENGINEERING MECHANICS

(IT)
SYLLABUS FOR B.E. II SEMESTER

L : T : P(Hrs./week):2 : 0 : 0	SEE Marks:60	Course Code: U25ES010CE
Credits: 2	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 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.

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., 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			

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

BASIC ELECTRONICS

SYLLABUS FOR II-SEMESTER

L:T:P(Hrs./week): 2:0:0	SEE Marks :60	Course Code:**U25ES210IT**
Credits : 2	CIE Marks :40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The Objectives of the Course:	*On completion of the course, students will be able to:*
Introduce different electronic devices, their characteristics and apply this knowledge in building simple electronic circuits.	1. Design simple circuits like rectifiers, voltage regulators, clipping and clamping circuits for the given specifications based on the operating principles of the diode. 2. Analyze different bipolar junction transistor circuits to determine Input impedance, output impedance, Voltage gain, current gain using exact and approximate h parameter models. 3. Verify the implementation of simple Boolean functions using CMOS circuits with the help of Truth table indicating the different transistors ON/OFF conditions. 4. Analyze simple operational amplifier circuits to determine the voltages at specific points in the circuit and design simple operational amplifier circuits for given application.

UNIT – I

Diode and its applications

Ideal diode characteristics, simple diode circuit analysis using ideal characteristics, Diode used in Rectifier circuits: Half wave Rectifier, center tapped transformer full wave Rectifier and Bridge rectifier, Derivation various parameters in rectifiers, Shunt capacitor filter and derivation of its ripple factor, other filter circuits and ripple factors in those filters (no derivation), Different diode Clipping circuits, Basic clamping circuit, Zener diode characteristics and Zener diode used as Voltage Regulator.

UNIT – II

Bipolar Junction Transistors

Types of BJT, different configurations of BJT, Regions of operation, BJT collector current equation in CE and CB configurations, BJT input and output characteristics in all three configurations, BJT used as a switch and an Amplifier, Concept of Stability Factor, Different BJT biasing circuits and stability factor in each of them, An example illustrating the use of h-

parameters in determining the current gain, voltage gain, input impedance and output impedance of a BJT Amplifier.

UNIT – III

Field Effect Transistors

Different types of FETs and their circuit symbols, Advantages of FET over BJT, CMOS logic circuits: simple switch operation of NMOS and PMOS transistors, NMOS logic gates, structure of CMOS logic circuit: PUN and PDN, CMOS NOT gate, CMOS NAND gate, CMOS implementation of Boolean function, Illustrating the operation of CMOS logic circuits indicating the transistor ON/OFF conditions.

UNIT – IV

Operational Amplifier (Op Amp):

Basic Information of Op Amp: Advantage using Op Amp IC and its pin configuration, Circuit Symbol of Op Amp, power supply connection to Op Amp, Ideal Op Amp Characteristics, OpAmp Application circuits: Inverting and Non Inverting Amplifier, Differential Amplifier, Concept fo Difference mode gain, common mode gain, CMRR, Inverting and Non inverting Summing Amplifier, Subtractor, Adder-Subtractor, V-I Converter, I-V Converter, Differentiator, Integrator, Log Amplifier, Inverting and Non inverting Comparators, Square and Triangular wave Generator.

Learning Resources :

1. Jacob Millman, Christos CHalkais, Satybratajit, Electronic Devices and Circuits,Mc Graw Hill India Private Ltd, 3rd Edition
2. Adel S. Sedra, Kenneth C. Smith, Microelectronic Circuits, 5th Edition, Oxford International Student Edition, 2006
3. D. Roy Choudhury, Shail B. Jain, Linear Integrated Circuits, New Age International Publishers, 4th Edition.
4. Donald L. Schilling, Charles Belove, Electronic Circuits Discrete and Integrated, Tata Mc Graw Hill Education, 3rd Edition
5. https://nptel.ac.in/courses/117103063/

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

1	No. of Internal Tests:	02	Max.Marks for each Internal Tests:		30
2	No. of Assignments:	03	Max. Marks for each Assignment:		05
3	No. of Quizzes:	03	Max. Marks for each Quiz Test:		05

Duration of Internal Test: **90 Minutes**

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF INFORMATION TECHNOLOGY

DIGITAL ELECTRONICS AND LOGIC DESIGN

SYLLABUS FOR II-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks :60	Course Code : **U25ES220IT**
Credits : 3	CIE Marks :40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES**
The Objectives of the course:	*On completion of the course, students will be able to:*
1. Introduce the concepts of combinational and sequential circuit design. 2. Introduce VHDL Programming Language to implement digital circuits.	1. Simplify Boolean Functions using algebraic and K-map techniques to specific number of literals. 2. Design combinational circuits using fundamental logic gates and programmable logic devices for a given problem. 3. Draw the circuits of different types of flipflops and explain their operation using Truth tables and excitation tables. 4. Analyze any given synchronous or asynchronous sequential circuit and design synchronous or asynchronous sequential circuits for a given specification of the problem. 5. Implement combinational and sequential circuits using VHDL programming language.

UNIT – I:

Introduction to Boolean algebra and number system, Logic Gates, Optimized implementation of logic functions – Karnaugh Map, Strategies for minimization of product-of-sum and sum-of-product functions. Multiple output circuits. NAND and NOR logic networks, Cost functions, Introduction to CAD tools and VHDL

UNIT – II:

Combinational circuit building blocks – Multiplexers. Decoders. Encoders. Code converters, Arithmetic comparison circuits. General structures of a PLA, gate level diagram, schematic diagram, PAL. Structure of CPLDs and FPGAs, 2-input and 3-input lookup tables(LUT). Design of Arithmetic-circuits using CAD tools. VHDL for Combinational circuits

UNIT – III:

Basic Latch, Gated SR Latch, gated D Latch, T Flip-flop, JK Flip-flop, excitation tables. Master-Slave edge triggered flip-flops. Set up and hold time of a flip-flop. Registers, Counter. Using registers and counters with CAD tools. Design examples using VHDL.

UNIT – IV:

Synchronous Sequential Circuits – Analysis of Synchronous sequential Circuits Basic design steps. State-Assignment problem Moore and Mealy state models. State minimization, Design of FSM with CAD Tools. Implementation using VHDL.

UNIT – V:

Introduction to Asynchronous sequential circuits, Analysis of Asynchronous sequential circuits. Hazards: static and dynamic hazards. Significance of Hazards. Clock skew, ASM Charts, Digital Hardware Design Flow.

Learning Resources :

1. M. Moris Mano, Charles R. Kime, Logic and Computer Design Fundamentals, 2nd edition, Pearson Education Asia, 2001.
2. Stephen Brown , Zvonko Vranesic – Fundamentals of Digital Logic with VHDL design, McGraw Hill – 2000.
3. Virendrakumar Digital ElectronicsTheory& Experiments, New Age International Publishers, 2002
4. John F. Walkerly, Digital Design : Principles and Practices, Pearson India, 4th Edition.
5. Ronald J. Tocci, Neal S. Widmer, Gregory L. Moss, Digital Systems: Principles and Applications, Pearson India, 10th Edition.
6. https://nptel.ac.in/courses/117106086/

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)
IBRAHIMBAGH, HYDERABAD – 500 031
DEPARTMENT OF INFORMATION TECHNOLOGY

STRUCTURED PROGRAMMING FOR PROBLEM SOLVING
SYLLABUS FOR B.E. II-SEMESTER

L:T:P(Hrs./week):3:0:0	SEE Marks : 60	Course Code :**U25ES230IT**
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES**
The Objectives of the Course:	*On completion of the course, students will be able to:*
1. Introduce the fundamentals of C Programming. 2. Describe control structures, searching, sorting on arrays and other user-defined data types. 3. Illustrate the applications of pointers and files.	1. Illustrate number systems and evaluate expressions using C program. 2. Apply functions and control structures for problem solving. 3. Understand recursion, preprocessor directives, and analyze searching and sorting on arrays. 4. Develop C programs for string manipulation and dynamic memory allocation using pointers. 5. Apply user-defined data types and file handling operations for problem solving using C.

UNIT-I:

Introduction to Computers: Creating and Running Programs, Software Development. 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, SideEffects, Evaluating Expressions, Type Conversion, Statements, Bitwise Operators.

UNIT-II:

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.

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

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

UNIT-III:

Recursion: Recursive Functions, Preprocessor Commands.

Arrays: Concepts, Using Arrays in C, Inter-Function Communication, Array Applications, Two-Dimensional Arrays, Multi-dimensional Arrays, Linear Search and Binary Search, Selection Sort, Bubble Sort, Insertion sort, Count sort, Radix 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),CengageLearning.
2. Brian W.Kernighan & 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 Tests+ Assignments + Quizzes

1	No. of Internal Tests:	02	Max.Marks for each Internal Tests:	30
2	No. of Assignments:	03	Max. Marks for each Assignment:	05
3	No. of Quizzes:	03	Max. Marks for each Quiz Test:	05

Duration of Internal Test: **90 Minutes**

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

HUMAN VALUES AND PROFESSIONAL ETHICS-1
(Common to all branches) SYLLABUS FOR B.E. 1/4 - I & II SEMESTERS

Instruction: 1 Hour	SEE: 40	Course code: **U25HS020EH**
Credits: 1	CIE: 30	Duration of SEE: 2 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES**
The course will enable the learners to:	**At the end of the course the learners will be able 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.	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.

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 CIE: Internal Tests + Assignments + Quizzes

1	No. of Internal tests	:	1	Max. Marks	:	20
2	No. of assignments	:	2	Max. Marks	:	5
3	No. of Quizzes	:	2	Max. Marks	:	5

Duration of Internal Tests : 90 Minutes

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

Skill Development Course – II (Technical Skills -II)

Problem Solving Through Python

{Tailormade for VCE IT –Sem II}

SYLLABUS FOR B.E. II-SEMESTER

L:T:P(Hrs./week):3:0:0	SEE Marks : 60	Course Code :**U25ES210IT**
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

#1: Problem Solving through Computing and Expression Evaluation

Introduction to coding, datatypes and I/O Statements, Expression Evaluation, Arithmetic Operations, Assignment Operations, Relational Operations, Logical Operations, Bitwise Operations, Ternary Operations, Increment Operations, Decrement Operations, Special Operators usage, Conditional Statements, Company Specific Examples & Competitive Programming Practice Problems

Contextual implementation using Competitive Coding using global coding platforms: Code chef/ Leet code / Codeforces / Hackerrank etc

#2: Problem Solving using Iterative Statements and Number Theory Problems

Problem solving using Branching & Control Statements, Pattern Display problems, Number Theory problems, Company Specific Examples & Competitive Programming Practice Problems.

Contextual implementation using Competitive Coding using global coding platforms: Code chef/ Leet code / Codeforces / Hackerrank etc

#3: Problem Solving using Linear List data: Arrays

Problem Solving using Linear data structures, Subscripts, Array problems, Company
Specific Examples & Competitive Programming Practice Problems.

Contextual implementation using Competitive Coding using global coding platforms: Code chef/ Leet code / Codeforces / Hackerrank etc

#4: Problem Solving using Linear List data: Matrix

Problem Solving using Matrix data, 2D Array Subscript, Row Major Order & Column Major Order Representation, Matrix Problems, Company Specific Examples & Competitive Programming Practice Problems.

Contextual implementation using Competitive Coding using global coding platforms: Code chef/ Leet code / Codeforces / Hackerrank etc

#5: Problem Solving through Coding - Functions

Introduction to Modular Programming, Problem solving implementing functions, Inter Function communication, Problem solving on parameter passing and return values, Coding on various scopes of data in a program, Company Specific Examples & Competitive Programming Practice Problems.

Contextual implementation using Competitive Coding using global coding platforms: Code chef/ Leet code / Codeforces / Hackerrank etc

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

ACCREDITED BY NAAC WITH A++ GRADE

DEPARTMENT OF CHEMISTRY

CHEMISTRY LAB

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:	**At the end of the course, students should be able 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	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 MAPPING FOR CHEMISTRY LAB												
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	3	2	-	-	-	-	-	-	2	-	-	1
2	3	2	-	-	-	-	-	-	2	-	-	1
3	3	2	-	-	-	-	-	-	2	-	-	1
4	3	2	-	-	-	-	-	-	2	-	-	1

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 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.

No. of Internal Tests:	02	Max. Marks for Internal Test:	12
For day-to-day laboratory class work which will be awarded based on the average of assessment for each experiment considering at the end of the course			18

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

BASIC ELECTRONICS LAB
SYLLABUS FOR B.E. II SEMESTER

L:T:P(Hrs./week): 0:0:2	SEE Marks :50	Course Code:**U24ES211IT**
Credits : 1	CIE Marks :30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The Objectives of the Course:	On completion of the course, students will be able to
1. Introduce different electronic devices and measurement equipments. 2. Demonstrate building simple electronic circuits.	1. Identify and use different electronic devices and measuring equipment. 2. Use PN diode, Zener diode for applications like rectifiers, clipping and clamping circuits and voltage regulators. 3. Use BJT transistor in the design of amplifier circuit. 4. Use operational amplifier for different applications and verify the operation of different digital circuits.

EXPERIMENTS:
1. CRO and its applications: Measurement of amplitude, frequency.
2. Characteristics of pn junction diode.
3. Characteristics of Zener diode.
4. Zener diode as a Voltage Regulator.
5. Half-wave Rectifier.
6. Full-wave rectifier.
7. Clipping Circuits.
8. Clamping Circuits.
9. Characteristics of Common Emitter Transistor configuration.
10. Characteristics of Common Base Transistor configuration.
11. Frequency response of Common Emitter amplifier.
12. Operational Amplifier as an adder, subtractor, and comparator.

Virtual Lab:
13. BJT CE amplifier - https://be-iitkgp.vlabs.ac.in/exp/ce-amplifier/

ADDITIONAL EXPERIMENTS:
1. RC phase shift oscillators.
2. Truth table verification of logic gates using TTL 74 series ICs.
3. Implementation of Half Adder, Full Adder.

4. Verification of Multiplexer Operation.
5. Implementation of Boolean logic using decoders and MUXes.
6. Truth table verification of D flip flop, T flip-flop and JK flip-flop.

Learning Resources:

1. Paul B Zbar and Alber P Malvino, Michael A Miller, "Basic Electronics: A Text Lab Manual", 7th edition, Tata McGraw Hill, 2009.
2. David A Bell, "Laboratory Manual for Electronic Devices and Circuits", 4th edition, PHI, 2001.
3. Muhammed H Rashid, "SPICE for circuits and electronics using PSPICE", 2nd edition, PHI, 1995.
4. Mithal. G.K, "Practicals in Basic Electronics", G K Publishers Private Limited, 1997.
5. Maheswari. L.K and Anand.M.M.S, "Laboratory Manual for Introductory Electronic Experiments", New Age, 2010.
6. PoornachandraRao.S and Sasikala.B, "Handbook of Experiments in Electronics and Communication Engineering", Vikas publishers, 2003
7. http://www.nptelvideos.in/2012/11/basic-electronics-prof-tsnatarajan.html

No. of Internal Tests:	02	Max. Marks for Internal Test:	12
For day-to-day laboratory class work which will be awarded based on the average of assessment for each experiment considering at the end of the course			18

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

STRUCTURED PROGRAMMING FOR PROBLEM SOLVING LAB

SYLLABUS FOR B.E. II-SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code: **U25ES231IT**
Credits : 1	CIE Marks : 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The Objectives of the Course:	***On completion of the course, students will be able to***
1.Introduce various control statements, functions, arrays in C language. 2.Demonstrate user defined data types and file handling.	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 on operators and expressions.
2. Programs on selection control statements. [if, if-else, elseif ladder, nested if, switch case]
3. Programs on loop control statements. [while, for, do-while]
4. Programs on nested loop control statements. [printing patterns]
5. Programs on functions and recursion [factorial, Fibonacci, GCD]
6. Programs on one dimensional array. [Searching and Sorting]
7. Programs on two-dimensional array. [Matrix addition, Matrix Multiplication]
8. Programs on pointers. [pointer to arrays, pointer to functions]
9. Programs on strings. [string handling functions]
10. Programs on structures and union.
11. Programs on File handling.

Virtual Lab:

12. Call by value and call by reference with pointers - https://cse02-iiith.vlabs.ac.in/exp/pointers/simulation.html

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.
5. https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-087-practical programming-in-c-january-iap-2010/syllabus/
6. http://nptel.ac.in/syllabus/syllabus.php?subjectId=106104128

No. of Internal Tests:	02	Max. Marks for Internal Test:	12
Day-to-day laboratory class work which will be awarded based on the average of assessment for each experiment considering at the end of the course			18
Duration of Internal Test: 120 Minutes			