THIRD SEMESTER
(Detailed Syllabus)

'COMMUNICATION
&
COMPUTER NETWORKING'

PRINCIPLES OF ELECTRONIC COMMUNICATION

Course Code:	473001
Course Title	Principles of Electronic Communication
No. of Credits	6 (TH:4,T:0,P:4)

COURSE OUTCOMES: After completion of the course the Student will be able to:

1. Use of different modulation and demodulation techniques used in analog communication.
2. Identify and solve basic communication problems.
3. Compare and contrast design issues, advantages, disadvantages and limitations of analog Communication systems.

4: Knowledge of DSSS, FHSS, CDMA.

COURSE CONTENTS

1. Introduction to Communication System:

Basic definition, types, basic block diagram of communication system, advantages and disadvantages.

2. Analog Modulation:

Need of modulation, Types, amplitude modulation: Elementary idea of DSB, DSBSC, SSB and VSB, basic concept of FM & PM.

2. Pulse Analog Modulation:

Ideal sampling, nyquist ratio, sampling theorem, aliasing, interpolation, natural and flat top sampling, quantization process, quantization Error/noise, companding. introduction to PAM, PPM & PWM (Brief Idea only).

3. Digital Modulation:

Types of digital modulation techniques and their advantages. Introduction to shift keying technique: Amplitude shift keying(ASK), frequency shift keying (FSK), phase Shift keying (PSK).

4. Spread-Spectrum Modulation:

Introduction, Pseudo-Noise sequences, direct sequence spread spectrum (DSSS), frequency-hop spread spectrum (FHSS). Application of spread spectrum: CDMA.

Practical Outcomes:

1. Understand the principles of amplitude modulation (AM) and its application in modulating a high-frequency carrier with a sinusoidal signal.
2. Understand the principles of Frequency Modulation (FM) and its application in modulating a high-frequency carrier with a sinusoidal signal.

Gain practical knowledge of Pulse Width Modulation (PWM) and its use in modulating a pulse carrier with a sinusoidal signal, followed by successful demodulation.

3. Learn the concept of Pulse Position Modulation (PPM) and its implementation in modulating a pulse carrier with a sinusoidal signal, along with effective demodulation techniques.
4. Analyze the waveform and characteristics of Pulse Amplitude Modulation (PAM) signals, and gain hands-on experience in demodulating PAM signals.
5. Test and evaluate the performance of Amplitude Shift Keying (ASK) modulation technique, understanding its advantages and limitations in practical applications.
6. Conduct performance testing of Frequency Shift Keying (FSK) modulation technique and assess its effectiveness in transmitting and receiving digital data.

List of Practicals:

1. To observe an AM wave on CRO to measure the modulation index of the wave obtained
2. To observe an FM wave on CRO to measure the frequency deviation for different modulating signal
3. To observe PAM, PPM and PWM signal and compare it with the analog input signal

4. Demonstration of shift keying technique: Amplitude shift keying(ASK) and also observe the waveform on CRO.
5. Study the Spread spectrum technique by observing the FHSS signal on CRO.

References / Books:

1. Principles of communication systems By Taub Schilling, T.M.H.
2. Fundamentals of communication systems By Proakis & Salehi, Pearson education
3. Communication Systems by Simon Haykin, John Wiley
4. Communication Systems (Analog and Digital) By R.P. Singh, S.D. Sapre, T.M.H.
5. Modern Digital & Analog Communication By B.P. Lathi, Oxford Publications
6. Digital & Analog Communication Systems By K.S. Shanmugam, John Wiley

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ANALOG ELECTRONICS & DEVICES

Course Code:	453004
Course Title	Analog Electronics & Devices
No. of Credits	6 (TH:4,T:0,P:4)

COURSE OUTCOMES :- After completion of the course the Student is able to:

1. Develop a comprehensive understanding of semi-conductor materials as well as the characteristics of N-type and P-type semiconductors.
2. Gain proficiency in analyzing the V-I characteristics of PN junction diodes and their practical applications.
3. Acquire knowledge of various transistors configurations.
4. Acquire knowledge of FETs, MOSFETs, UJT and their applications.
5. Develop an in-depth understanding of SCR, DIAC, & TRIAC and explore their applications as switches.
6. Develop proficiency in using operational amplifiers (op-amps) in various configurations (inverting amplifier, summing amplifier, non-inverting amplifier, etc.). Besides, that also gain practical knowledge of the 555 timer and its applications as an astable multivibrator, monostable multivibrator, Schmitt trigger, sequence timer, and PWM generator.

COURSE CONTENTS

Unit - 1 : Diodes and Bipolar Junction Transistor (BJT)

1.1 Semiconductor: Definition, Extrinsic/Intrinsic, N-type & p-type;

1.2 PN Junction Diode – Forward and Reverse Bias Characteristics;

1.3 Diode Rectifiers – Half Wave and Full Wave, bridge rectifier;

1.4 NPN and PNP Transistor–Operation and characteristics;

1.5 Transistor CB, CE & CC Configurations.

Unit - 2 : Field Effect Transistors

2.1 FET – Working Principle, Classification;

2.2 N-Channel / P-Channel MOSFETs – characteristics;

2.3 Enhancement and depletion mode;

2.4 Uni-Junction Transistor – equivalent circuit and operation, Applications

Unit - 3 : SCR, DIAC & TRIAC

3.1 SCR - Construction, operation, working, characteristics;

3.2 DIAC-Construction, operation, working, characteristics;

3.3 TRIAC-Construction, operation, working, characteristics;

3.4 SCR and MOSFET as a Switch;

3.5 DIAC as bidirectional switch;

3.6 Comparison of SCR, DIAC, TRIAC & MOSFET.

Unit - 4 : Amplifiers and Oscillators

4.1 Classification of amplifiers Feedback Amplifiers – Properties of negative Feedback, impact of feedback on different parameters;

4.2 Oscillator – Basic Principles, Crystal Oscillator, Non-linear/ Pulse Oscillator.

Unit - 5 : Operational Amplifiers and Timers

5.1 Operational amplifier; Ideal Op. Amp; Block diagram and characteristics;

5.2 Op-amp parameters – CMRR, Slew rate, band width, Gain, Virtual ground, Applications of op-amp;

5.3 Inverting amplifier, Summing amplifier, Non inverting amplifier;

5.4 Instrumentation amplifier, Voltage follower

5.5 555 Timer – Functional Block diagram, Astable, Monostable and Schmitt Trigger, Sequence timer, 555 timer used as PWM.

PRACTICAL OUTCOMES: At the end of the course, the student will be able to:

1. Understand the characteristics and behavior of electronic components such as PN Junction diodes, transistors, FET transistors, and operational amplifiers (IC 741).
2. Gain practical knowledge of different rectifier circuits (half wave rectifier, full wave rectifier and bridge rectifier) and observe their respective wave shapes.
3. Develop skills in plotting input and output characteristics of transistors in CE configuration and calculating relevant parameters.
4. Gain hands-on experience in using the IC 555 timer as a monostable multivibrator and observe the output for different values of RC.
5. Verify and interpret truth tables for various logic gates (AND, OR, NOT, NAND, NOR, and EX-OR) using corresponding integrated circuits (7408, 7432, 7404, 7400, 7402, and 7486).
6. Design and implement digital circuits such as half adders, full adders, 4-bit parallel adders, Multiplexers, Demultiplexers, Decoders, D flip-flops, JK flip-flops, 4-bit SISO, SIPO using D Flip Flop, and 4-bit Binary Counters.

List of Practicals :

1. To plot V-I characteristics of PN Junction diode.
2. To observe the wave shape of following rectifier circuit
   - Half wave rectifier
   - Full wave rectifier
   - Bridge rectifier
3. To plot input and output characteristics and calculate parameter of transistor in CE configuration
4. To plot V-I characteristics of FET Transistor
5. Use of IC 555 as monostable multivibrator and observe the output for different values of RC
6. To use IC 741 (op-amplifier) as an i) Inverter, ii) Adder, iii) Subtractor iv) Integrator
7. Plot the V-I characteristics of SCR.
8. Plot the V-I characteristics of DIAC.
9. Plot the V-I characteristics of TRAIC.
10. Verification and interpretation of truth tables for AND (7408), OR (7432), NOT (7404), NAND (7400), NOR (7402) and Exclusive OR (EX-OR) (7486) gates
11. To design a half adder & full adder using XOR(7486) and NAND (7410)gates and verification of its Truth Table.
12. Verification of truth table of D flip-flop (7474) and JK flip-flops (7476)

References /Suggested Learning Resources:

1. Electronic Devices and Circuits S. Salivahanan and N. Suresh Kumar McGraw Hill Education; Fourth edition (1July 2017), ISBN: 978-9339219505.
2. Electronics Devices and circuit theory Boyestad & Nashelsky Pearson Education India; 11 edition (2015), ISBN: 978-9332542600.
3. Electronic Principles Albert Malvino & David Bates Tata McGraw Hill Publication 2010, ISBN: 978- 0070634244.
4. Electronics Devices & Circuits Jacob Millman McGraw Hill Education; 4 edition (2015), ISBN: 978-9339219543.
5. Design with operational amplifiers and analog integrated circuits, 3rd Edition Sergio Franco Tata McGraw-Hill, 2007.
6. OP-AMP and Linear ICs by Ramakant A.Gayakwad Prentice Hall / Pearson Education, 4th Edition, 2001.
7. Analog Circuits , A K Maini, Khanna Publishing House, Ed. 2018, ISBN: 978-93-86173-584.
8. Digital Electronics M.Morris Mano, Pearson.

Suggested Software/learning Websites:

1. https://www.electronics-tutorials.ws/
2. https://www.youtube.com/watch?v=Rx43l-QpeWQ
3. https://electronicsforu.com/resources/electronic-devices-and-circuit-theory

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E-GOVERNANCE

Course Code:	433006
Course Title	E-Governance
No. of Credits	4 (TH:4,T:0,P:0)

COURSE OUTCOMES: The student will be able to:

1. Develop an understanding of the emerging trends in ICT for development and their application in the context of e-Governance.
2. Acquire knowledge of the design and implementation of e-Government projects, along with the lifecycle involved.
3. Recognize the need for Government Process Re-engineering (GPR) and its role in improving governance practices.
4. Understand the National e-Governance Plan (NeGP) for India & its impact on transforming governance processes.
5. Gain insights into the architecture and models of e-Governance, including Public Private Partnership (PPP) approaches.
6. Develop skills in evaluating e-Governance projects and identifying critical success factors, while addressing challenges such as corruption, resistance to change, e-Security, and Cyber laws.

COURSE CONTENTS

UNIT - 1

Exposure to emerging trends in ICT for development; Understanding of design and implementation of e-Government projects, e-governance lifecycle.

UNIT - 2

Need for Government Process Re-engineering (GPR); Features of National e-Governance Plan (NeGP) for India; SMART Governments & Thumb Rules.

UNIT - 3

Architecture and models of e-Governance, including Public Private Partnership (PPP); Need for Innovation and Change Management in e-Governance; Critical Success Factors; Major issue including corruption, resistance for change, e-Security and Cyber laws.

UNIT - 4

Focusing on Indian initiatives and their impact on citizens; Sharing of case studies to highlight best practices in managing e-Governance projects in Indian context. Visits to local e-governance sites (CSC, eSeva, Post Office, Passport Seva Kendra, etc) as part of Tutorials.

UNIT - 5

Mini Projects by students in groups – primarily evaluation of various e-governance projects.

Reference Books:

1. Managing Transformation –Objectives to Outcomes. J Satyanarayana, Prentice Hall India
2. The State, IT and Development. Kenneth Kenniston, RK Bagga and Rohit Raj Mathur, Sage Publications India Pvt Ltd.
3. e-Government -The Science of the Possible. J. Satyanarayana, Prentice Hall, India
4. http://www.csi-sigegov.org/publications.php
5. https://negd.gov.in
6. https://www.nisg.org/case-studies-on-e-governance-in-india

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DATA STRUCTURE USING 'C'

Course Code:	433003
Course Title	Data Structure Using 'C'
No. of Credits	6 (TH:4,T:0,P:4)

COURSE OUTCOMES : At the end of the course, the student will be able to:

1. Understand the fundamental concepts of data structures and their importance in programming.
2. Gain proficiency in implementing and using various data structures such as arrays, linked lists, stacks, queues, trees, and graphs using the C programming language.
3. Develop problem-solving skills by applying appropriate data structures and algorithms to solve real-world programming challenges.
4. Acquire knowledge of different sorting and searching techniques and their implementation using C.
5. Learn the concept of recursion and its applications in solving problems related to data structures.
6. Develop proficiency in using dynamic memory allocation and pointers to efficiently manage and manipulate data structures.

COURSE CONTENTS

1. Fundamental Notations

1.1 Problem solving concept, top down and bottom up design, structured programming

1.2 Concept of data types, variables and constants

1.3 Concept of pointer variables and constants

1.4 Introduction to data Structure (Linear, Non Linear, Primitive, Non Primitive)

1.5 Concepts of Data Structure(Array, Linked List, Stack, Queue, Trees, graphs)

2. Arrays

2.1 Concept of Arrays

2.2 Single dimensional array

2.3 Two dimensional array: Representation of Two dimensional Array (Base Address, LB, UB)

2.4 Operations on arrays with Algorithms (searching, traversing, inserting, deleting)

3. Linked

3.1 Introduction to linked list and double linked list

3.2 Representation of linked lists in Memory, Comparison between Linked List and Array

3.3 Traversing a linked list

3.4 Searching linked list

3.5 Insertion and deletion into linked list (At first Node, Specified Position, Last node

3.6 Application of linked lists

4. Stacks, Queues and Recursion

4.1 Introduction to stacks

4.2 Representation of stacks with array and Linked List

4.3 Implementation of stacks

4.4 Application of stacks

4.5 Recursion: Concept and Comparison between recursion and Iteration

4.6 Introduction to queues

4.7 Implementation of queues

5. Trees: Introduction

5.1 Concept of binary trees (complete, extended binary tree)

5.2 Concept of representation of Binary Tree

5.3 Concept of balanced Binary Tree

5.4 Traversing binary trees (pre order, post order & in order)

5.5 Searching, inserting and deleting in binary search trees

6. Sorting and Searching

6.1 Introduction

6.2 Search algorithm (Linear and Binary)

6.3 Concept of sorting

6.4 Sorting algorithms (Overview only)

PRACTICAL OUTCOMES : At the end of the course, the student will be able to:

1. Gain hands - on experience in implementing various data structures using the C programming language.
2. Develop proficiency in using C language constructs and functions to create and manipulate data structures such as arrays, linked lists, stacks, queues, trees, and graphs.
3. Acquire practical knowledge of implementing algorithms for sorting, searching, and other operations on different data structures.
4. Enhance problem-solving skills by applying appropriate data structures and algorithms to solve programming challenges in a laboratory setting.
5. Develop the ability to analyze and evaluate the efficiency and performance of different data structures and algorithms through practical experiments and benchmarking.
6. Improve teamwork and collaboration skills by working on group projects and assignments that involve implementing and testing data structures using C programming.

List of Practicals :-

Write Programs in 'C' language to implement:-

1. The addition of two matrices using functions.
2. Inserting and deleting elements in array.
3. Push and pop operation in stack.
4. Conversion from in-fix notation.
5. The factorial of a given number using recursion.
6. Insertion and Deletion of elements in queue using pointers.
7. Insertion and Deletion of elements in circular queue using pointers.
8. Insertion and Deletion of elements in linked list.
9. Insertion and Deletion of elements in doubly linked list.
10. The linear search procedures to search an element in given list.
11. The binary search procedures to search an element in a given list.

References /Suggested Learning Resources:

1. Digital principles & Applications Albert Paul Malvino & Donald P. Leach McGraw Hill Education; Eighth edition ISBN: 978-9339203405
2. Digital Electronics Roger L. Tokheim Macmillan McGraw-Hill Education (ISE Editions); International 2 Revised edition ISBN: 978-0071167963
3. Digital Electronics – an introduction to theory and practice William H. Gothmann Prentice Hall India Learning Private Limited; 2 edition ISBN: 978-8120303485
4. Fundamentals of Logic Design Charles H. Roth Jr. Jaicoh Publishing House; First edition ISBN: 978-8172247744
5. Digital Electronics R. Anand Khanna Publications, New Delhi (Edition 2018) ISBN: 978-93-82609445

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PYTHON PROGRAMMING BASICS

Course Code	473002
Course Title	Python Programming Basics
No. of Credits	6 (TH:4,T:0,P:4)

COURSE OUTCOMES: Upon completion of the course, students will be able to:

1. Develop algorithmic solutions to simple computational problems
2. Read, write, execute by hand simple Python programs.
3. Structure simple Python programs for solving problems.
4. Decompose a Python program into functions.
5. Represent compound data using Python lists, tuples, dictionaries.
6. Read and write data from/to files in Python Programs.

COURSE CONTENTS

Unit - I : Algorithmic Problem Solving

Algorithms, building blocks of algorithms (statements, state, control flow, functions), notation (pseudo code, flow chart, programming language), algorithmic problem solving, simple strategies for developing algorithms (iteration, recursion).

Unit - II : Data, Expressions, Statements

Python interpreter and interactive mode; values and types: int, float, Boolean, string, and list; variables, expressions, statements, tuple assignment, precedence of operators, comments; modules and functions, function definition and use, flow of execution, parameters and arguments; Illustrative programs: exchange the values of two variables, circulate the values of n variables, distance between two points.

Unit - III : Control Flow, Functions

Conditionals: Boolean values and operators, conditional (if), alternative (if-else), chained conditional (if-elif-else); Iteration: state, while, for, break, continue, pass; Fruitful functions: return values, parameters, local and global scope, function composition, recursion, Strings: string slices, immutability, string functions and methods, string module; Lists as arrays.

Unit - IV : Lists, Tuples, Dictionaries

Lists: list operations, list slices, list methods, list loop,

mutability, aliasing, cloning lists, list parameters; Tuples: tuple assignment, tuple as return value; Dictionaries: operations and methods.

Unit - V : Files, Modules, Packages

Files And Exception: Text Files, Reading And Writing Files, Format Operator; Command Line Arguments, Errors And Exceptions, Handling Exceptions, Modules, Packages.

PRACTICAL OUTCOMES: Upon completion of the course, student will be able to:

1. Write, test, and debug simple Python programs.
2. Implement Python programs with conditionals and loops.
3. Develop Python programs step-wise by defining functions and calling them.
4. Use Python lists, tuples, dictionaries for representing compound data.
5. Read and write data from/to files in Python.

List of Practicals:

1. Programs related to basic input/output.
2. Programs related to variables, strings, numbers
3. Programs related to Lists and Tuples
4. Programs related to Functions
5. Programs related to If Statements
6. Programs related to While Loops and Input
7. Programs related to Basic Terminal Apps
8. Programs related to Dictionaries
9. Programs related to Classes
10. Programs related to Exceptions
11. Case study of application areas of python.

Refrences/Suggested Learning Resourses:

1. Allen B. Downey, ``Think Python: How to Think Like a Computer Scientist'', 2nd edition, Updated for Python 3, Shroff/O'Reilly Publishers, 2016
2. Guido van Rossum and Fred L. Drake Jr, "An Introduction to Python – Revised and updated for Python 3.2, Network Theory Ltd., 2011.
3. John V Guttag, "Introduction to Computation and Programming Using Python'', Revised and expanded Edition, MIT Press , 2013
4. Robert Sedgewick, Kevin Wayne, Robert Dondero, "Introduction to Programming in Python: An Inter-disciplinary Approach, Pearson India Education Services Pvt. Ltd., 2016.
5. Timothy A. Budd, "Exploring Python", Mc-Graw Hill Education (India) Private Ltd.,, 2015.
6. Kenneth A. Lambert, "Fundamentals of Python: First Programs", CENGAGE Learning, 2012.

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COMPUTER NETWORKING

Course Code	473003
Course Title	Computer Networking
No. of Credits	6 (TH:4,T:0,P:4)

COURSE OUTCOMES: Upon completion of the course, students will be able to:

1. Understand the fundamentals of computer networks, including network types and topologies.
2. Identify and describe different types of LAN media, connectors, and standards.
3. Familiarize with various networking devices such as NICs, repeaters, hubs, bridges, switches, and routers.
4. Explain the layers of the OSI model and TCP/IP model, and compare the two models.
5. Understand the concepts and protocols related to the physical and data link layers, including MAC addressing, error control, and framing.
6. Gain knowledge of the network and transport layers, including IP addressing, routing types, ICMP, and the TCP and UDP protocols.

COURSE CONTENTS

1. Introduction to Networks

Introduction to Computer Networks, Element of Networks, Types of Networks, Network Topologies: Bus, Star, Mesh, Ring.

2. Media and Connectors

Network Media: STP, UTP, Coaxial cable, Optical fibre, TIA/EIA standards, Crossover Cable, Connectors, Jacks, Patch Panels.

3. Networking Devices

NIC, Repeaters, Hub and its types, Bridges and their types, Switches, Routers.

4. Network Model

Brief description of OSI Model, TCP/IP Model, Comparison of OSI & TCP/IP Model.

5. Physical and Data Link Layer

MAC Sub-layer, LLC, MAC Addressing, Framing, Error control, Flow control, Token Ring, Ethernet, FDDI.

6. Network and Transport Layer

Role of Network layer, Types of Routing, ICMP, Introduction to Transport layer, TCP and UDP Protocols and Comparison. Network Layer, IP address, IP address Classes, Basics of Sub-netting, Subnet Masking.

7. Presentation and Session Layer

Session layer function, Token Management and Session Layer Protocols, Presentation layer function and Protocols

8. Application Layer

Introduction to Application Layer Protocols and their role. The Domain name system, Electronic Mail, the World Wide Web, FTP, Telnet, HTTP, DHCP

9. Internet and its Service Provider:

Internet, connection types, ISP Web hosting, Top Web Hosting Companies, Registration of a domain, Top Domain Registrars, Registrar for .EDU.IN, .RES.IN, .AC.IN, .GOV.IN in INDIA

PRACTICAL OUTCOMES: Upon completion of the course, student will be able to:

1. Understand different LAN topologies and their applications in computer networks.
2. Identify and describe various network devices used in LAN environments.
3. Demonstrate knowledge of different types of transmission media and their characteristics.
4. Create network cables using RJ45 connectors.
5. Install network interface cards (NICs) and locate MAC addresses.
6. Identify & troubleshoot common network problems such as connectivity issues, card or cable problems & server errors.

List of Practicals:

1. To connect and built computers in different ways in a LAN (Topologies-star, ring, bus, tree)
2. To connect and understand different network devices used in LAN- Hubs, Switches, Routers, Bridges, Repeaters, Gateways, Modems.
3. To study the constructional details of transmission media-co-axial cables, TWP cables, optical fiber cable.
4. To create network cable using RJ 45 connectors.
5. Connections of two hubs by creating cross over connections.
6. To install a network interface card (NIC) and locate mac address of computer
7. To install TCP/IP protocol & configure its advance property.
8. To discover and assign IP address in windows & Linux.

References:

1. Computer Networks, 4th Edition (or later), Andrew S. Tanenbaum, PHI
2. TCP/IP Illustrated, Volume-1, W. Richard Stevens, Addision Wesley
3. Data and Computer Communications, William Stallings, PHI
4. An Engineering Approach to Computer Networking, S. Keshav, Addision Wesley/Pearson
5. An Integrated Approach to Computer Networks, Bhavneet Sidhu, Khanna Publishing House

Recommended Books:

1. Data Communications and Networks, Achyut S. Godbole, Tata McGraw Hill
2. Data Communications and Networking (Forth Edition), Behrouz A. Forouzan, Tata McGraw Hill
3. Complete Reference Networking, Craig Zacker, Tata McGraw Hill
4. Computer Networking, Tularam M Bansod Drea C Nech, Wiley
5. Networking + Certification (Second Edition) Microsoft Press PHI (Prentice-Hall of India Private Limited)
6. Computer Network by Andrew S. Tanenbaum Pearson
7. Software to be used as recommended by AICTE/ UBTER / NITTTR.

Websites for Reference:

http://swayam.gov.in | http://spoken-tutorial.orgs

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SUMMER INTERNSHIP-I

Course Code:	AS301
Course Title	Summer Internship - I
No. of Credits	2 (TH:0,T:0,P:0)

Summer Internship provides an invaluable opportunity for students pursuing their Diploma in Engineering to gain real-world experience and exposure to various industrial production units and commercial activities related to their field of study. This program aims to bridge the gap between theoretical knowledge and practical application, equipping students with the necessary skills and expertise to thrive in the branch related industry.

At the end of the **Second semester**, students will undertake a minimum 3 to 4-week Summer Internship, scheduled during the semester break following the Second Semester examinations. The respective Heads of Departments (HoDs) and experienced faculty members will guide and assist students in securing suitable training opportunities that align with their specialization. Each student will have a personalized training schedule developed in collaboration with the training providers, ensuring a comprehensive and enriching learning experience.

Before starting their training, students will receive a comprehensive briefing about the organizational setup, product range, manufacturing processes, and significant machinery and materials used in the training organization. This preliminary understanding will enhance their engagement and productivity during the internship.

To ensure a fruitful learning experience, faculty members will supervise students during their training in the industry or field organization. Each faculty member will mentor a small group of 4-5 students, providing personalized attention and guidance. Students will be encouraged to maintain daily reports in their diaries, which will assist them in composing their final training report and presentation.

The evaluation process for the Summer Internship will include both internal and external assessments, as per the study and evaluation scheme of the **Third Semester**. During the viva - voce / presentation examination, students' understanding of materials, industrial processes, practices in the industry, and problem-solving abilities will be assessed. The evaluation will also focus on their application of knowledge and skills in real-life situations.

The components of evaluation will comprise:

(a) Punctuality and regularity: 15%

(b) Initiative in learning new things: 15%

(c) Relationship with peers and colleagues: 10%

(d) Summer Internship report: 25%

(e) Viva-Voce: 35%

The purpose of summer Internship program is to create a transformative experience for students, empowering them to excel in their future careers and make meaningful contributions to the Engineering industry. The collaborative efforts of experienced faculty members and industry partners will ensure that students may gain valuable insights and practical skills during this immersive learning journey.

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