TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
AN AUTONOMOUS INSTITUTION
Accredited by NBA and NAAC with 'A' Grade.
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Meerbowli, Meerpet, Balapur, Hyderabad, Telangana – 500 097
Phone: 9100377790, email: info@tkrcet.ac.in, web site: www.tkrcet.ac.in

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

1.1.3 Average percentage of courses having focus on employability/ entrepreneurship/ skill development offered by the institution during the last five years (10)

1.2.1 Percentage of new courses introduced of the total number of courses across all programmes offered during the last five years (20)

Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development	Year of introduction (during the last five years)
Big Data Analytics	B57PE1	Employability	2022-23
Network Security	B57PE1	Employability	2022-23
Mobile Computing	B57PE1	Skill development	2022-23
Cloud Computing	B57PE2	Employability	2022-23
WebServices	B57PE2	Employability	2022-23
Computer Graphics	B57PE2	Entrepreneurship	2022-23
Machine Learning	B57PE4	Employability	2022-23
Computer Forensics	B57PE4	Employability	2022-23
Internet of Things	B57PE4	Employability	2022-23
Predictive Analytics	B58PE1	Employability	2022-23
Design Patterns	B58PE1	Skill development	2022-23
Adhoc Wireless Networks	B58PE1	Skill development	2022-23
Software Testing Methodologies	B58PE2	Skill development	2022-23
Operation Research	B58PE2	Skill development	2022-23
Storage Area Networks	B58PE2	Skill development	2022-23
Object Oriented Analysis and Design	C55PC1	Employability	2022-23
Python Programming	C55PC2	Employability	2022-23
Computer Networks	C55PC3	Skill development	2022-23
Compiler Design	C55PC4	Employability	2022-23
Distributed Databases	C55PE5	Employability	2022-23
Distributed Computing	C55PE5	Entrepreneurship	2022-23
Network Protocol	C55PE5	Employability	2022-23
. Information Theory & Coding	C55PE5	Employability	2022-23
Software Process and Project Manager	C55PE5	Employability	2022-23
Artificial Intelligence	C55PE5	Employability	2022-23
Fundamentals of Management	CHSM2	Skill development	2022-23
Data Warehousing and Data Mining	C56PC1	Skill development	2022-23
Web Technologies	C56PC2	Skill development	2022-23
Advanced Databases	C56PE3	Skill development	2022-23

Subject	Code	Category	Year
Mobile Computing	C56PE3	Skill development	2022-23
Wireless Networks	C56PE3	Employability	2022-23
Cryptography	C56PE3	Employability	2022-23
Software Requirements Estimation	C56PE3	Skill development	2022-23
Machine Learning	C56PE3	Employability	2022-23
. Introduction to Analytics	C56PE4	Employability	2022-23
Cloud Computing	C56PE4	Entrepreneurship	2022-23
Mobile Ad hoc Networks	C56PE4	Employability	2022-23
Network Security	C56PE4	Employability	2022-23
Design Patterns	C56PE4	Employability	2022-23
Deep Learning	C56PE4	Employability	2022-23
Business Economics and Financial Anal	CHSM1	Skill development	2022-23
Mathematical Foundations of Compute	CBSM4 M	Skill development	2022-23
Logic Circuits Design	CESLC1	Skill development	2022-23
Database Management Systems	C53PC1	Skill development	2022-23
Data Structures	C53PC2	Skill development	2022-23
Operating Systems	C53PC3	Employability	2022-23
Probability & Statistics	CBSM3	Employability	2022-23
Computer Organization & Architecture	C54PC1	Skill development	2022-23
Software Engineering	C54PC2	Employability	2022-23
Design and Analysis of Algorithms	C54PC3	Employability	2022-23
Formal Languages & Automata Theory	C54PC4	Entrepreneurship	2022-23
Object Oriented Programming through	C54PC5	Employability	2022-23
English for skill Enhancement	D1HSE1	Employability	2022-23
Linear Algebra and Ordinary Differentia	D1BSM1	Employability	2022-23
Engineering Chemistry	D1BSEC1	Employability	2022-23
C Programming for Problem Solving	D1ESCP1	Skill development	2022-23
IT Workshop and Elements of Compute	D1ESITW1	Skill development	2022-23
Computer Aided Engineering Graphics	D1ESCEG	Skill development	2022-23
Business Economics and Financial Anal	D2HSBF	Skill development	2022-23
Statistical Methods and Vector Calculu	D2BSM5	Skill development	2022-23
Applied Physics	D2BSAP1	Skill development	2022-23
Basic Electrical Engineering	D2ESBEE	Skill development	2022-23
Data Structures	D2ESDS	Skill development	2022-23

Dr. A. SURESH RAO
HEAD OF THE DEPARTMENT
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Medbowli, Meerpet (V), Balapur (M) Ranga Reddy (D), Hyderabad, Telangana - 500097

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ELECTRICAL AND ELECRONICS ENGINEERING

1.1.3 Average percentage of courses having focus on employability/ entrepreneurship/ skill development offered by the institution during the last five years (10)

1.2.1 Percentage of new courses introduced of the total number of courses across all programmes offered during the last five years (20)

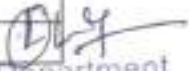| Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development	Year of introduction (during the last five years)	Link to the relevant document
Linear Algebra &Applied Calculus	D1BSM1	Skill development	2022-23	
Applied Chemistry	D2BSAC1	Skill development	2022-23	
Electrical Circuits	D1ESEC1	Employability	2022-23	
English Language & Communication Skills Lab	D2HSE2	Employability	2022-23	
Applied Chemistry Lab	D2BSAC2	Skill development	2022-23	
Electrical Circuits Lab	D1ESEC2	Employability	2022-23	
Basic Workshop	D2ESBW1	Employability	2022-23	
Mathematical Transforms	D2BSM3	Employability	2022-23	
Engineering Physics	D1BSEP1	Employability	2022-23	
Computer Aided Engineering Graphics	D1ESCEG	Employability	2022-23	
C Programming for Problem Solving	D1ESCP1	Employability	2022-23	
Engineering Physics Lab	D1BSEP2	Employability	2022-23	
Basic C Programming for Problem Solving Lab	D1ESCP2	Employability	2022-23	
Probability, Numerical Methods and Complex	CBSM12	Skill development	2022-23	
Network Analysis Lab	D2ESNA2	Employability	2022-23	
Network Analysis	D2ESNA1	Employability	2022-23	
Analog Electronics	C23PC	Employability	2022-23	

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Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development	Year of introduction (during the last five years)	Link to the relevant document
Electrical Machines-I	C23PC3	Employability	2022-23	
Electro Magnetic Fields	C23PC4	Employability	2022-23	
Analog Electronics Lab	C23PC5	Skill development	2022-23	
Electrical Machines Lab-1	C23PC6	Employability	2022-23	
Electrical Circuit Analysis Lab	C23PC7	Skill development	2022-23	
Cultural Activity	MC003	Skill development	2022-23	
Engineering Mechanics	CESEM1	Skill development	2022-23	
Digital Electronics	C24PC1	Employability	2022-23	
Electrical Machines-II	C24PC2	Skill development	2022-23	
Control Systems	C24PC3	Skill development	2022-23	
Power System-I	C24PC4	Skill development	2022-23	
Digital Electronics Lab	C24PC5	Skill development	2022-23	
Electrical Machines Lab –II	C24PC6	Skill development	2022-23	
Control Systems Lab	C24PC7	Skill development	2022-23	
Power Systems-I	C24PC4	Skill development	2022-23	
Power Electronics	C25PC1	Skill development	2022-23	
Microprocessors and Micro Controllers	C26PC3	Skill development	2022-23	
1. Electrical Machine Design	C25PE3	Skill development	2022-23	
2. Power System Dynamics and Control	C25PE3	Skill development	2022-23	
3. Digital Signal Processing	C25PE3	Skill development	2022-23	
Smart Grid Technologies (OE- I)	C25OE5	Skill development	2022-23	
Power Electronics Lab	C25PC7	Skill development	2022-23	
Microprocessors and Micro Controllers Lab	C26PC7	Skill development	2022-23	
Advanced Communication skills Lab	CHSE3	Skill development	2022-23	
Power Systems-II	C25PC4	Skill development	2022-23	
Electrical Measurements and Instrumentation	C25PC2	Skill development	2022-23	

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Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development	Year of introduction (during the last five years)	Link to the relevant document
1. Electrical Energy Conservation and Auditing	C26PE4	Skill development	2022-23	
2. Computer Architecture	C26PE4	Skill development	2022-23	
3. Line-Commutated and Active Rectifiers	C26PE4	Skill development	2022-23	
Renewable Energy Sources	C26OE5	Skill development	2022-23	
Electrical systems simulation Lab	C25PC6	Skill development	2022-23	
Electrical Measurements and Instrumentation Lab	C25PC8	Skill development	2022-23	
Power System Operation and Control	B27PC1	Skill development	2022-23	
1. Wind and Solar Energy Systems	B27PE2	Skill development	2022-23	
2. Hybrid Electrical Vehicles	B27PE2	Skill development	2022-23	
3. Flexible AC Transmission Systems	B27PE2	Skill development	2022-23	
Power System Protection	B27PC3	Skill development	2022-23	
Advanced Control systems	2O7BA	Skill development	2022-23	
Power systems Lab	B27PC5	Skill development	2022-23	
Project Stage-I	B27PW6	Skill development	2022-23	
1. HVDC Transmission Systems	B28PE1	Skill development	2022-23	
2. Computational Electromagnetics	B28PE1	Skill development	2022-23	
3. Electromagnetic Waves	B28PE1	Skill development	2022-23	
1. Industrial Electrical Systems	B28PE2	Skill development	2022-23	
2. Modern Control Theory	B28PE2	Skill development	2022-23	
3. Electrical Drives	B28PE2	Skill development	2022-23	
1. Utilization of Electrical Energy	B28PE3	Skill development	2022-23	
2. High Voltage Engineering	B28PE3	Skill development	2022-23	
3. Computer Aided Design of Electrical	B28PE3	Skill development	2022-23	
Project Stage-II	B28PW4	Skill development	2022-23	
Comprehensive Test	B28CT5	Skill development	2022-23	

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COMPUTER SCIENCE&ENGINEERING (DATA SCIENCE)

B.Tech I Year I Semester

L/T/P/C
3/0/0/3

C PROGRAMMING FOR PROBLEM SOLVING (D1ESCP1)

Course Objective:
Learn the fundamentals of computers and C Programming concepts.

Course Outcomes:
After learning the contents of this course, the student must be able to

1. Learn the taxonomy of computers and C fundamentals
2. Demonstrate arrays and functions to write c programming
3. Write C programs using pointers and strings
4. Analyze and write C programs using structures and unions
5. Develop C programs for various applications using file I/O functions.

UNIT I
Introduction to Computers Data Representation
Number Systems, Computer Languages, Algorithms. Introduction to C Language: Data types, Operators, Expressions, Statements-Selection Statements – if and Switch Statements, Repetition (Loop) statements.

UNIT II
Arrays
One and two dimensional arrays, multidimensional arrays, inter function communication Arrays applications- linear search, binary search, bubble sort, Implementation of stacks and queues.
Functions: Scope and Extent, storage classes, recursive functions.

UNIT III
Pointers
Introduction, Pointers for inter function communication, arrays of pointers, pointer arithmetic and arrays, passing an array to a function, memory allocation functions, pointers to functions, pointers to pointers.
Strings: Concepts, String Input/ Output functions, arrays of strings, string manipulation functions.

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UNIT IV
User Defined Data types Structure and Unions

Initialization, accessing structures, operations on structures. Complex structures-Nested structures, structures containing arrays, structures containing pointers, arrays of structures, structures and functions, Passing structures through pointers, self-referential structures, unions, bit fields, C programming examples, command–line arguments, pre-processor commands.

UNIT V
Input and Output
Concept of a file, streams, text files and binary files, file input/output functions (standard library input/output functions for files), error handling, positioning functions (fseek, rewind and ftell).

Text Books:

1. Computer Science: A Structured Programming Approach Using C, B. A. Forouzan and R. F. Gilberg,Third Edition, Cengage Learning.
2. Programming in C. P. Dey and M Ghosh, Second Edition, Oxford University Press.

Reference Books:

1. The C Programming Language, B.W. Kernighan and Dennis M. Ritchie,   Second Edition,Pearson education.
2. Programming with C, B. Gottfried, 3rd edition, Schaum's outlines,   McGraw Hill Education (India) Pvt Ltd.
3. C From Theory to Practice, G S. Tselikis and N D. Tselikas, CRC Press.
4. Basic computation and Programming with C, Subrata Saha and S. Mukherjee, Cambridge University Press.

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CSE (DATA SCIENCE)

B.Tech III Semester

L/T/P/C
3 /0/ 0/ 3

DATABASE MANAGEMENT SYSTEMS (C83PC1)

Course Objective:

It emphasizes the understanding of the fundamentals of relational systems including data models, databases.

Course Outcomes:

After completion of this course, the student will be able to
1. Demonstrate the basic elements of a relational database management system, and identify the data models for relevant problems.
2. Design entity relationship model and convert entity relationship diagrams into RDBMS and formulate SQL queries on the data.
3. Apply normalization for the development of application software.
4. Understand transaction processing, concurrency control and recovery techniques.
5. Understand the indexing data structures and hashing.

UNIT I
Introduction and Basic Concepts

File organization for conventional data management system, Higher-level file organization for DBMS, Database System Applications, Purpose of Database Systems, View of Data, Database Languages – DDL, DML, Relational Databases, Database Design, Data Storage and Querying, Transaction Management, Database Architecture, Data Mining and Information Retrieval, Specialty Databases, Database Users and Administrators. Relational Model-Introduction to the Relational Model, Integrity Constraints over Relations, Enforcing Integrity, constraints, Querying relational data, Logical data base Design: ER to Relational, Introduction to Views, Destroying /Altering Tables and Views.

UNIT II
Relational Algebra and Calculus

Preliminaries, Relational Algebra, Relational calculus, Tuple relational Calculus, Domain relational calculus, Expressive Power of Algebra and calculus.
Introduction to Database design: Database Design and ER diagrams, Entities, Attributes and Entity sets, Relationships and Relationship sets, Additional features of ER Model, Conceptual Design with the ER Model, Conceptual Design for Large enterprises.

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DATABASE MANAGEMENT SYSTEMS (C83PC1)

UNIT III
SQL

SQL data definition and Data types, Schema and catalog concepts in SQL, Queries, Constraints, Triggers: Form of Basic SQL Query, UNION, INTERSECT, and EXCEPT, Nested Queries, Aggregate Operators, NULL values, Complex Integrity Constraints in SQL, Triggers and Active Data bases, Designing Active Databases, NoSQL database (MongoDB introduction).

Schema Refinement and Normal Forms: Introduction to Schema Refinement, Functional Dependencies - Reasoning about FDs, Normal Forms - 1NF, 2NF, 3NF, Properties of Decompositions, Normalization, Schema Refinement in Database Design, Other Kinds of Dependencies.

UNIT IV
Transaction Management

Transactions, Transaction Concept, A Simple Transaction Model, Storage Structure, Transaction Atomicity and Durability, Transaction Isolation, serializability and Atomicity, Transaction Isolation Levels, Implementation of Isolation Levels. Concurrency Control, Lock-Based Protocols, Multiple Granularity, Timestamp-Based Protocols, Validation-Based Protocols, Multi-version Schemes. Recovery System-Failure Classification, Storage, Recovery and Atomicity, Recovery Algorithm, Buffer Management, Failure with loss of non-volatile storage, Early Lock Release and Logical Undo Operations, Remote Backup systems.
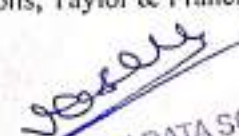
UNIT V
Indexing

Index Data Structures, and Comparison with File Organizations. Tree-Structured Indexing, Intuition for tree Indexes, Indexed Sequential Access Method (ISAM), B+ Trees: A Dynamic Index Structure, Search, Insert, Delete., Hash- Based Indexing, Static Hashing, Extendible hashing, Linear Hashing, Extendible vs. Linear Hashing.

Text Books:

1. Database Management Systems, Raghu Ramakrishnan, Johannes Gehrke, McGraw Hill Education (India) Private Limited, 3rd Edition.
2. Database System Concepts, A. Silberschatz, Henry. F. Korth, S. Sudarshan, McGraw Hill Education(India) Private Limited I, 6th edition.

Reference Books:

1. Database Systems, 6th edition, R Elmasri, Shamkant B.Navathe, Pearson Education.
2. Database System Concepts, Peter Rob & Carlos Coronel, Cengage Learning.
3. Introduction to Database Management, M. L. Gillenson and others, Wiley, Student Edition.
4. Database Development and Management, Lee Chao, Auerbach publications, Taylor & Francis Group.
5. Introduction to Database Systems, C. J. Date, Pearson Education.

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CSE (DATA SCIENCE)

B.Tech IV Semester

L/T/P/C
3 /0/ 0/ 3

DATA VISUALIZATION (C84PC4)

Course Objectives:

To understand the visual representation of structured and un structured data.

Course Outcomes:

After completion of course, the students will be able to
1. Understand the visualization and Data basics
2. Understand the Visualization process and know the representation of Spatial & Geo spatial data
3. Analyze various Visualization techniques for Multivariate data and other structures of data
4. Interacting the different operators and different data spaces
5. Design effective visualization of modern toolkits

UNIT I
Introduction

What is Visualization, History, Relationship visualization with other fields, The visualization Process, Pseudocode Conventions, The Scatter plot
Data Foundations: Types of Data, Structure within and between the records, Data Processing.

UNIT II
Visualization Foundations

The Visual Process, Semiology of Graphical Symbols, The Eight Visual Variables, Historical Perspective, Taxonomies.
Visualization Techniques for Spatial Data: One-Dimensional Data, Two-Dimensional Data, Three-Dimensional Data, Dynamic Data, Combining Techniques.
Visualization Techniques for Geospatial Data: Visualizing Spatial Data, Visualization of Point Data, Visualization of Line Data, Visualization of Area Data.

UNIT III
Visualization Techniques for Multivariate Data

Point-Based Techniques, Line-Based Techniques, Region-Based Techniques, Combinations of Techniques, Visualization Techniques for Trees, Graphs, and Networks: Displaying Hierarchical Structures, Displaying Arbitrary Graphs/Networks.

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DATA VISUALIZATION (C84PC4)

UNIT IV
Text and Document Visualization

Levels of Text Representation, The Vector Space Model, Single Document Visualizations, Document Collection Visualizations.

Interaction Concepts: Interaction Operators, Interaction Operands and Spaces, A Unified Framework.

Interaction Techniques: Object Space, Data Space, Attribute Space, Data Structure Space, Visualization Structure Space, Animating Transformations, Interaction Control.

UNIT V
Designing Effective Visualizations

Steps in Designing Visualizations, Problems in Designing Effective Visualizations

Comparing and Evaluating Visualization Techniques: User Tasks, User Characteristics, Data Characteristics, Visualization Characteristics, Structures for Evaluating Visualizations.

Visualization Systems: Systems Based on Data Type, Systems Based on Analysis Type, Text Analysis and Visualization, Modern Integrated Visualization Systems, Toolkits

Text Books:

1. Interactive Data Visualization Foundations, Techniques, and Applications by Grinstein, Georges Keim, Daniel Ward, Matthew O , CRC Press Taylor & Francis Group.
2. Digital Image. Processing. Third Edition. Rafael C. Gonzalez. University of Tennessee. Richard E. Woods. NledData Interactive. Pearson International Edition.

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CSE (DATA SCIENCE)

B.Tech III Semester   L/T/P/C
                                                                     3 /0/ 0/ 3

INTRODUCTION TO OBJECT-ORIENTED PROGRAMMING & DATA STRUCTURES USING JAVA (CESOP1)

Course Objective:

To understand the features of object-oriented paradigm and Data Structure concepts using JAVA programming Language.

Course Outcomes:

After completion of course, the students will be able to
1. Understand fundamentals of object-oriented programming in Java which includes defining classes, invoking methods
2. Implement the inheritance concept
3. Solve the exceptions in programs and recursion
4. Implement the Basic data structures and operations
5. Apply the ADTs and use the collections in Java

UNIT I
Object-Oriented Thinking

A way of viewing world – Agents and Communities, messages and methods, Responsibilities, Classes and Instances, Class Hierarchies- Inheritance, Method binding, Overriding and Exceptions, Summary of Object-Oriented concepts. History of object-oriented programming, overview of java, Object oriented design, Structure of java program, Java buzzwords, Data types, Variables and Arrays, operators, expressions, control statements, Introducing classes, Methods and Classes, String handling.
Stream based I/O (java.io): The Stream classes-Byte streams and Character streams, Reading console Input and Writing Console Output

UNIT II
Inheritance

Inheritance concept, Inheritance basics, Member access, Constructors, Creating Multilevel hierarchy, super uses, using final with inheritance, Polymorphism-ad hoc polymorphism, pure polymorphism, method overriding, abstract classes, Object class, forms of inheritance- specialization, specification, construction, extension, limitation, combination, benefits of inheritance, costs of inheritance.
Packages
Defining a Package, CLASSPATH, Access protection, importing packages. Interfaces Defining an interface, implementing interfaces, Nested interfaces, applying interfaces, variables in interfaces and extending interfaces.

INTRODUCTION TO OBJECT-ORIENTED PROGRAMMING & DATA STRUCTURES USING JAVA (CESOP1)

UNIT III
Exception Handling

Fundamentals of exception handling, Exception types, Termination or presumptive models, Uncaught exceptions, using try and catch, multiple catch classes, nested try statements, throw, throws and finally, built-in exceptions, creating own exception sub classes.
Recursion: Analyzing Recursion Algorithms, Designing of Recursive Algorithms.

UNIT IV
Sorting, Searching & Data Structure

Introduction to Sorting, Bubble Sort, Insertion Sort, Introduction to Searching, Linear Search and Binary Search.
Data Structures Fundamentals: Using Arrays, Singly Linked Lists, Circularly Linked Lists, Doubly Linked Lists.

Unit V
Stacks, Queues, and Deques

Stack, Queue, Double – ended queues.
List and Iterator ADTs: The List ADT, Array List, Positional Lists, Iterators, Java Collection Frameworks

Text Books:

1. Java The complete reference, 9 th edition, Herbert Schildt, McGraw Hill Education (India) Pvt. Ltd.
2. Data Structures & Algorithms in Java 6th Edition, Michale T. Goodrich, Roberto Tamssia, Michale H. Goldwasser, WILEY.

Reference Books:

1. An Introduction to programming and OO design using Java, J. Nino and F.A. Hosch, John Wiley & sons.
2. Introduction to Java programming, Y. Daniel Liang, Pearson Education.
3. Object Oriented Programming through Java, P. Radha Krishna, and Universities Press.

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COMPUTER SCIENCE AND ENGINEERING (DATA SCIENCE)

B.Tech. I Year II SEMESTER   L/T/P/C
                                                                                    3/0/0/3

INTRODUCTION TO OBJECT-ORIENTED PROGRAMMING &DATA STRUCTURES USINGJAVA (D2ES1OJ)

Course Objective:
To understand the features of object-oriented paradigm and Data Structure concepts
using JAVA programming Language.

Course Outcomes:
After completion of course, the students will be able to

1. Understand fundamentals of object-oriented programming in Java which includes defining classes, invoking methods
2. Implement the inheritance concept
3. Solve the exceptions in programs and recursion
4. Implement the Basic data structures and operations
5. Apply the ADTs and use the collections in Java

UNIT I
Object-Oriented Thinking

A way of viewing world – Agents and Communities, messages and methods, Responsibilities, Classes and Instances, Class Hierarchies- Inheritance, Method binding, Overriding and Exceptions, Summary of Object-Oriented concepts. History of object-oriented programming, overview of java, Object oriented design, Structure of java program, Java buzz words, Data types, Variables and Arrays, operators, expressions, control statements, Introducing classes, Methods and Classes, String handling.

Stream basedI/O(java.io): The Stream classes-Byte streams and Character streams, Reading console Input and Writing Console Output

UNIT II
Inheritance

Inheritance concept, Inheritance basics, Member access, Constructors, Creating Multilevel hierarchy, super uses, using final with inheritance, Polymorphism-adhoc polymorphism, pure polymorphism, method overriding, abstract classes, Object class, forms of inheritance- specialization, specification, construction, extension, limitation, combination, benefits of inheritance, costs of inheritance.

Packages: Defining a Package, CLASSPATH, Access protection, importing packages. Interfaces Defining an interface, implementing interfaces, Nested interfaces, applying interfaces,variables in interfaces and extending interfaces.

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UNIT III

Exception Handling

Fundamentals of exception handling, Exception types. Termination or presumptive models. Uncaught exceptions, using try and catch, multiple catch classes, nested try statements, throw, throws and finally,built-in exceptions, creating own exception sub classes.

Recursion: Analyzing RecursionAlgorithms, Designing of Recursive Algorithms.

UNIT IV

Sorting, Searching & Data Structure

Introduction to Sorting, Bubble Sort, Insertion Sort, Introduction to Searching, Linear Search and Binary Search.

Data Structures Fundamentals: Using Arrays, Singly Linked Lists, Circularly Linked Lists, Doubly Linked Lists.

Unit V

Stacks, Queues ,and Deques

Stack,Queue,Double-ended queues .List and Iterator

ADTs:The List ADT,Array List, Positional Lists, Iterators, Java Collection Frameworks

Text Books:

1.Java The complete reference, 9thedition,Herbert Schildt, Mc Graw Hill Education(India)Pvt.Ltd.
2.Data Structures & Algorithms in Java 6th Edition, Michale T.Goodrich, Roberto Tamssia, MichaleI. Goldwasser, WILEY.

Reference Books:

1.An Introduction to programming and OOdesign using Java, J.Ninoand F.A.Hosch, John Wiley & sons.
2.Introduction to Java programming, Y. DanielLiang, Pearson Education.
3.Object Oriented Programming through Java, P. Radha Krishna, and Universities Press.

CSE (DS)

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NAAC

CSE (DATA SCIENCE)

MACHINE LEARNING – C85PC2

B.Tech. V Semester

L/T/P/C
3/0/0/3

COURSE OBJECTIVES:

To be able to formulate machine learning problems corresponding to different applications and range of machine learning algorithms along with their strengths and weaknesses

COURSE OUTCOMES:

After completion of this course, the student will be able to
1. Understand the basic concepts such as decision trees and neural networks.
2. Develop the ability to formulate machine learning techniques to respective problems.
3. Apply machine learning algorithms to solve problems of moderate complexity.

UNIT-I:

Introduction - Well-posed learning problems, designing a learning system, Perspectives and issues in machine learning

Concept Learning And The General To Specific Ordering – Introduction, A concept learning task, Concept learning as search, Find-S: finding a maximally specific hypothesis, Version spaces and the candidate elimination algorithm, Remarks on version spaces and candidate elimination, Inductive bias

UNIT-II:

Decision Tree Learning – Introduction, Decision tree representation, appropriate problems for decision tree learning, The basic decision tree learning algorithm, Hypothesis space search indecision tree learning, Inductive bias in decision tree learning, Issues in decision tree learning

Artificial Neural Networks – Introduction, Neural network representation, appropriate problems for neural network learning, Perceptron, Multilayer networks and the back propagation algorithm, Remarks on the back propagation algorithm, An illustrative example face recognition Advanced topics in artificial neural networks

Evaluation Hypotheses – Motivation, Estimation hypothesis accuracy, Basics of sampling theory, A general approach for deriving confidence intervals, Difference in error of two hypotheses, Comparing learning algorithms

UNIT-III:

Bayesian Learning – Overview of Bayes theorem principle, Bayes theorem and concept learning, Maximum likelihood and least squared error hypotheses, Maximum likelihood hypotheses for predicting probabilities, Minimum description length principle, Bayes optimal classifier, Gibs algorithm, Naïve Bayes classifier.

Computational Learning Theory – Introduction, Probability learning an approximately correct hypothesis, Sample complexity for Finite Hypothesis Space.

Instance-Based Learning - Introduction, k -Nearest Neighbor Learning, Locally Weighted Regression, Radial Basis Functions, Case-Based Reasoning, Remarks on Lazy and Eager Learning.

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UNIT-IV:

Learning Sets of Rules – Introduction, Sequential Covering Algorithms, Learning Rule Sets: Summary, Learning First Order Rules, Learning Sets of First Order Rules: FOIL.
Analytical Learning - Introduction, Learning with Perfect Domain Theories: Prolog-EBG Remarks on Explanation- Based Learning, Explanation-Based Learning-Discovery new features.

UNIT V:

Combining Inductive and Analytical Learning – Motivation, Inductive-Analytical approaches to Learning.
Reinforcement Learning and Q Learning.

TEXT BOOKS:

1. Machine Learning – Tom M. Mitchell, -MGH
2. Machine Learning: An Algorithmic Perspective, Stephen Marsland, Taylor & Francis(CRC)

REFERENCE BOOKS:

1. Machine Learning Methods in the Environmental Sciences, Neural Networks, WilliamW Hsieh, Cambridge Univ Press.
2. Richard o.Duda, Peter E. Hart and David G. Stork, pattern classification, John Wiley& Sons Inc.,2001
3. Chris Bishop, Neural Networks for Pattern Recognition, Oxford University Press,1995

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R20

CSE (DATA SCIENCE)

NATURAL LANGUAGE PROCESSING - C86PC1

B.Tech. VI Semester

L/T/P/C
3 /1/ 0/ 4

COURSE OBJECTIVE:

Introduce to some of the problems and solutions of NLP and their relation to linguistics and statistics.

COURSE OUTCOMES:

After completion of this course, the student will be able to
1. Show sensitivity to linguistic phenomena and an ability to model them with formal grammars.
2. Understand and carry out proper experimental methodology for training and evaluating empirical NLP systems.
3. Able to design, implement, and analyze NLP algorithms
4. Able to design different language modeling Techniques.

UNIT – I:

Finding the Structure of Words: Words and Their Components, Issues and Challenges, Morphological Models Finding the Structure of Documents: Introduction, Methods, Complexity of the Approaches, Performances of the Approaches

UNIT – II:

Syntax Analysis: Parsing Natural Language, Tree banks: A Data-Driven Approach to Syntax, Representation of Syntactic Structure, Parsing Algorithms, Models for Ambiguity Resolution in Parsing, Multilingual Issues.

UNIT – III:

Semantic Parsing: Introduction, Semantic Interpretation, System Paradigms, Word Sense Systems, Software.

UNIT – IV:

Predicate Argument Structure: Resources, System, Softwares, Meaning Representation: Resources, System, Software.

UNIT – V:

Language Modeling: Introduction, N-Gram Models, Language Model Evaluation, Parameter Estimation, Language Model Adaptation, Types of Language Models, Language-Specific Modeling Problems, Multilingual and Cross lingual Language Modeling.

TEXT BOOKS:

1. Multilingual natural Language Processing Applications: From Theory to Practice – Daniel M. Bikel and Imed Zitouni, Pearson Publication.

REFERENCE BOOKS:

1. Speech and Natural Language Processing – Daniel Jurafsky & James H Martin, Pearson Publications.

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CSE (DATA SCIENCE)

B.Tech IV Semester

L/T/P/C
3 /0/ 0/ 3

PYTHON PROGRAMMING (C84PC5)

Course Objective:

Enable the student to do Python Programming which includes Regular Expressions and GUI

Course Outcomes:

After completion of course the student will be able to

1. Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.
2. Demonstrate proficiency in handling Strings and File Systems.
3. Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.
4. Interpret the concepts of Object-Oriented Programming as used in Python.
5. Implement exemplary applications related to Network Programming, Web Services and Databases in Python.

UNIT I
Introduction

Introduction to Python, History, Need of Python Programming, features Applications, python environment setup, Basic syntax, Variables, Data Types, Keywords, Input-Output, Indentation, script structure, Running Python Scripts.
Operators: Arithmetic Operators, Comparison (Relational) Operators, Assignment Operators, Logical Operators, Bitwise Operators, Membership Operators, Identity Operators, Expressions and order of evaluations, Conditional statements if, if-else Looping Control Structures for, while Control Statements: Break, Continue, Pass.

UNIT II
Functions

Defining Functions, Calling Functions, Passing Arguments, Keyword Arguments, Default Arguments, Variable-length arguments, Anonymous Functions, Fruitful Functions (Function Returning Values), Scope of the Variables in a Function - Global and Local Variables.
Data Structures : Lists, Tuples, dictionaries, sets, Sequences, Comprehensions.

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PYTHON PROGRAMMING (C84PC5)

UNIT III
Regular Expressions

Introduction/Motivation , Special Symbols and Characters, REs and Python.
OBJECT ORIENTED PROGRAMMING IN PYTHON
Classes, 'self-variable', Methods, Constructor Method, Inheritance, Overriding Methods, Data hiding.
ERROR AND EXCEPTIONS Difference between an error and Exception, Handling exceptions, try, except block, Raising Exceptions and User Defined Exceptions.

UNIT IV
Files

File input/output, Text processing file functions.
MODULES and   Introduction to Packages, Creating modules, import statement, from. Name spacing.
Packages, using packages, implementing packages: numpy, iterator tools, scipy, matplotlib.

UNIT V
GUI Programming

Introduction, Tkinter and Python Programming, Brief Tour of other GUIs, Related Modules and other GUIs.
Database Programming: Introduction, Python Database, Application Programmer's Interface (DB-API), Object Relational Managers (ORMs), Related Modules.

Text Book:

1. Core Python Programming, Wesley J. Chun, Second Edition, Pearson.

Reference Books:

1. Allen Downey, "Think Python", Second Edition , Green Tea Press.
2. Introduction to Computation & Programming Using Python, Spring 2013 Edition, By John V.Guttag.
3. 3. Programming in Python 3: A Complete Introduction to the Python Language (Developer's Library), by Mark Summerfield, 2nd Edition.

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CSE (DATA SCIENCE)

B.Tech III Semester

L/T/P/C
3 /0/ 0/ 3

R PROGRAMMING (C83PC3)

Course Objectives:

Gain knowledge on statistical data manipulation and analysis.

Course Outcomes:

After competition of this course, the students will be able to

1. Understand the basic functions of R and Create vectors in R.
2. Gain knowledge on creation of matrices and arrays in R.
3. Gain knowledge on creation of Factors and Data frames in R.
4. Understand and implement the searching and sorting techniques in R. and the file concepts in R.
5. Automate analyses and create new functions that extend the existing language features. Incorporates features found in object-oriented and functional programming languages.

UNIT I
Introduction to R

Introduction, Functions, Preview of Some Important R Data Structures, Regression Analysis of Exam Grades, Startup and Shutdown, Getting Help, The help() Function, The example() Function. Vectors, Scalars, Vectors, Arrays, and Matrices, Declarations, Common Vector Operations, Using all() and any(), Vectorized Operations, NA and NULL Values, Filtering, Vectorized if-then-else.

UNIT II
Matrices and Arrays

Creating Matrices, General Matrix Operations, Applying Functions to Matrix Rows and Columns, More on the Vector/Matrix Distinction, Avoiding Unintended Dimension Reduction, Naming Matrix Rows and Columns, Higher-Dimensional Arrays.
Lists: Creating Lists, General List Operations, Accessing List Components and Values Applying Functions to Lists, Recursive Lists.

UNIT III
Data Frames

Creating Data Frames, Other Matrix-Like Operations, Merging Data Frames, Applying Functions to Data Frames.
Factors and Tables: Factors and Levels, Common Functions Used with Factors, Working with Tables, Other Factor-and Table-Related Functions.

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R PROGRAMMING (C83PC3)

UNIT IV
R Programming Structures

Control Statements, Arithmetic and Boolean Operators and Values, Default Values for Arguments, Return values, Functions Are Objects, Environment and Scope Issues, No Pointers in R, Writing Upstairs, Recursion, Replacement Functions, Anonymous Functions.
Math and Simulations in R: Math Functions, Functions for Statistical, Sorting, Set Operations.

UNIT V
Files

Accessing the Keyboard and Monitor, Reading and Writing Files, Accessing the Internet.
String Manipulation: String-Manipulation Functions.
Graphics: Creating Graphs, Customizing Graphs.

Text Books:

1. The Art of R Programming by Norman Matloff-No Starch Press.

Reference Books:

1. R Programming for Bioinformatics by Robert Gentleman—CRC Press.
2. Data Analytics using R by Seema Acharya-TMH.
3. Hands-On Programming with R by Grrett Grolemund-OREILLY.
4. Beginners guide for Data Analytics using R by Jeeva Jose-Khanna Publications.
5. R for Beginners by Sandip Bakshit-TMH.

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CSE (DATA SCIENCE)

Web Technologies - C85PC1

B.Tech. V Semester

L/T/P/C
3/0/0/3

COURSE OBJECTIVE:

1. To introduce PHP language for server-side scripting
2. To introduce XML and processing of XML Data with Java
3. To introduce Server-side programming with Java Servlets and JSP To introduce Client-side scripting with Javascript and AJAX

COURSE OUTCOMES:

After completion of this course, the student will be able to

1. Gain knowledge on implementing server side scripting using PHP, know how to store and process data using XML.
2. Understand how to handle http requests based on the knowledge of servelets
3. Learn to implement server side programming with servelets, JSP
4. Learn to implement client side scripting, validation of forms, JS, AJAX programming.

UNIT – I:

Introduction to PHP: Declaring variables, data types, arrays, strings, operators, expressions, control structures, functions, Reading data from web form controls like text boxes, radio buttons, lists etc., Handling File Uploads, Connecting to database (MySQL as reference), executing simple queries, handling results, Handling sessions and cookies File Handling in PHP: File operations like opening, closing, reading, writing, appending, deleting etc. on text and binary files, listing directories.

UNIT – II:

XML: Introduction to XML, Defining XML tags, their attributes and values, Document Type Definition, XML Schemas, Document Object Model, XHTML Parsing XML Data – DOM and SAX Parsers in java.CSE (DS)   R20

UNIT – III:

Introduction to Servlets: Common Gateway Interface (CGI), Lifecycle of a Servlet, deploying a servlet, The Servlet API, Reading Servlet parameters, Reading Initialization Parameters, Handling HTTP Request & Responses, Using Cookies and Sessions, connecting to a database using JDBC.

UNIT – IV:

Introduction to JSP: The Anatomy of a JSP Page, JSP Processing, Declarations, Directives, Expressions, Code Snippets, implicit objects, Using Beans in JSP Pages, Using Cookies and session for session tracking, connecting to database in JSP.

UNIT – V:

Client-side Scripting: Introduction to Javascript: Javascript language – declaring variables, the scope of variables, functions, event handlers (click, on submit etc.), Document Object Model, Form validation, Simple AJAX application.

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TEXTBOOK

1. Web Technologies, Uttam K Roy, Oxford UniversityPress.
2. The Complete Reference PHP – Steven Holzner, TataMcGraw-Hill.

REFERENCE BOOKS

1. Web Programming, building internet applications, Chris Bates 2nd edition, Wiley Dreamtech.
2. Java Server Pages –Hans Bergsten, SPD O'Reilly Java Script, D. Flanagan, O'Reilly,SPD.
3. Beginning Web Programming-Jon Duckett WROX.
4. Programming World Wide Web, R. W. Sebesta, Fourth Edition, Pearson.
5. Internet and World Wide Web – How to program, Dietel and Nieto, Pearson.

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Department of Information Technology

Courses having focus on Employability/ Entrepreneurship/ Skill development during the Year: 2022-23

Name of the Course	Course Code	Activities/Content with a direct bearing on Employability/ Entrepreneurship/ Skill development
Problem Solving using C Programming (Iyear-Isem)	D1ESCP4	Skill development (Understands the concepts of C- Programming language)
Problem Solving using C Programming Lab (Iyear-Isem)	D1ESCP5	Employability (Develop knowledge in C- Programming)
Problem Solving using Python (Iyear-IIsem)	D2ESPP6	Skill development (Understands the concepts of Python Programming language)
Python Programming Lab (Iyear-IIsem)	D2ESPP7	Employability (Construct Programs using Python Programming concepts)
IT Workshop (Iyear-IIsem)	D2ESITW	Skill development (Develop Presentations, Documents and Spreadsheets)
Business Economics and Financial Analysis (IIyear-Isem)	CHSM1	Entrepreneurship (Analyzing the financial statement of the company through various ratios)
Data Structures (IIyear-Isem)	CESDS1	Skill development (Analyze the time and space complexities of algorithms)
Operating Systems (IIyear-Isem)	C63PC2	Skill development (Understand the performance of operating systems)
Linux Programming (IIyear-Isem)	C63PC3	Skill development (Understand the concepts to operate linux operating system)
Data Structures Lab (IIyear-Isem)	CESDS2	Employability (Apply data structures for solving real-world problems)
Linux/Operating Systems Lab (IIyear-Isem)	C63PC4	Employability (Develop Skills to operate various operating systems)
Computer Organization (IIyear-IIsem)	C64PC1	Skill development (Understand the internal organization of a system)
Database Management Systems (IIyear-IIsem)	C64PC2	Skill development (Understand the design of ER model,RDBMS and formulate SQL queries on the data, normalization and recovery techniques)
Java Programming (IIyear-IIsem)	C64PC3	Skill development (Design GUI based applications)

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Subject	Code	Description
Design and Analysis of Algorithms (IIyear-IIsem)	C64PC4	Skill development (Analyze the performance of the algorithms)
Java Programming Lab (IIyear-IIsem)	C64PC6	Employability (Develop GUI programs)
Database Management Systems Lab (IIyear-IIsem)	C64PC7	Employability (Design and implement a database schema for given problem and develop programs using PL/SQL)
Software Engineering (IIIyear-Isem)	C65PC1	Skill development (Able to test software by applying various testing strategies)
Python Programming (IIIyear-Isem)	C65PC2	Skill development (Understands the concepts of Python Programming language)
Compiler Design (IIIyear-Isem)	C65PC3	Skill development (Design algorithms to perform code optimization and to generate machine code)
Computer Networks (IIIyear-Isem)	C65PC4	Skill development (Gain Knowledge in Networking Concepts)
Object Oriented Analysis and Design (IIIyear-Isem)	C65PC5	Skill development (Gain Knowledge in UML Diagrams)
Object Oriented Analysis and Design Lab (IIIyear-Isem)	C65PC7	Employability (Develop UML Diagrams)
Python Programming Lab (IIIyear-Isem)	C65PC8	Employability (Construct Programs using Python Programming concepts)
Fundamentals of Management (IIIyear-IIsem)	CHSM2	Entrepreneurship (Analyzing the financial statement of the company through various ratios)
Web Technologies (IIIyear-IIsem)	C66PC1	Skill development (Create Dynamic Web pages)
Stack Technologies (IIIyear-IIsem)	C66PE3	Skill development (Make use of Express JS and and Node JS Frameworks)
Web Technologies Lab (IIIyear-IIsem)	C66PC5	Employability (Develop Web Applications)
Internet of Things (IVyear-Isem)	B67PE1	Skill development (Able to work on the IOT devices)
Advanced Communication Skills Lab (IVyear-Isem)	BE23	Skill development (Acquire behavioral skills for their personal and professional life)

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NAAC

INFORMATION TECHNOLOGY

B.Tech I YEAR I SEMESTER

L/T/P/C
3/0/03

PROBLEM SOLVING USING C PROGRAMMING (D1ESCP4)

COURSE OBJECTIVES

To impart knowledge on

- Write solutions using problem solving techniques and appropriate programming constructs
- Develop programs using selection, iteration statements and arrays
- Construct programs using functions and strings
- Implement programs using pointers, structures and unions
- Write programs using files and preprocessor directives

COURSE OUTCOMES

At the end of this course, the students will be able to:

CO1: Write solutions using problem solving techniques and appropriate programming constructs for solving problems

CO2: Develop programs using selection, iteration statements and arrays for a given scenario

CO3: Construct programs using functions & strings for a given application

CO4: Implement programs using pointers, structures & unions for various real time applications

CO5: Write programs using files & preprocessor directives and graphics functions for a given scenario

Unit I

C Programming Basics

General Problem solving strategy - Program development cycle - Problem Solving Techniques: Algorithm, Pseudo code and Flow Chart - Overview of C - Structure of C program - C Character set - keywords - Identifiers -Variables and Constants - Data types - Type conversion - Operators and Expressions - Managing formatted and unformatted Input & Output operation.

Unit II

Control Structures and Arrays

Storage classes - Statements: Selection statements - Jump statements - Iteration statements. Arrays: Characteristics of Array - Single-dimensional array - Two-dimensional array - Array Operations - Applications: Linear search, Selection sort, Matrix Operations.

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Department of Information Technology
A.Y.2022-23

Subject Name: Problem Solving using C Programming

Subject Code: D1ESCP4

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	2	2	1	1						2	2	2	2	1	1.67
CO2	1		1	1									1	1	1.00
CO3	2		2	2						2			2	1	1.83
CO4	1		2	3							2	1	1	1	1.57
CO5	2		3	2									1	1	1.80
PO Attainment	1.60	2.00	1.80	1.80	-	-	-	-	-	2.00	2.00	1.50	1.40	1.00	1.68

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INFORMATION TECHNOLOGY

B.Tech I YEAR I SEMESTER

L/T/P/C
0/0/2/1

PROBLEM SOLVING USING C PROGRAMMING LAB (D1ESCP5)

COURSE OBJECTIVES

To impart knowledge on
- Write solutions using problem solving techniques and appropriate programming constructs
- Develop programs using selection, iteration statements and arrays
- Construct programs using functions and strings
- Implement programs using pointers, structures and unions
- Write programs using files and preprocessor directives

COURSE OUTCOMES

At the end of this course, students will be able to:

CO1: Write solutions using problem solving techniques and appropriate programming constructs for solving problems

CO2: Develop programs using selection, iteration statements and arrays for a given scenario

CO3: Construct programs using functions & strings for a given application

CO4: Implement programs using pointers, structures & unions for various real time applications

CO5: Write programs using files & preprocessor directives and graphics functions for a given scenario

List of Exercises

1. Programs to process data types, operators and expression evaluation

2. Programs using decision and looping statements

3. Programs using arrays and strings

4. Programs using functions and pointers

5. Programs using structures and union

6. Programs using files and graphics functions

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Department of Information Technology
A.Y.2022-23

Subject Name: Problem Solving using C Programming Lab

Subject Code: D1ESCP5

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	2	2	2	2	2					2		2	2	2	2.00
CO2	2	3	2	2	2					2		2	2	2	2.11
CO3	2	2	3	3	2					2		2	2	2	2.22
CO4	2	3	2	2	2					2		2	2	2	2.11
CO5	2	2	2	2	3					2		2	2	2	2.11
PO Attainment	2.00	2.40	2.20	2.20	2.20	-	-	-	-	2.00	-	2.00	2.00	2.00	2.11

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INFORMATION TECHNOLOGY

B.Tech I YEAR II SEMESTER   L/T/P/C
                                                                          3/0/0/3

PROBLEM SOLVING USING PYTHON (D2ESPP6)

COURSE OBJECTIVES

To impart knowledge on

- To know the basics of algorithmic problem solving.
- To read and write simple Python programs.
- To develop Python programs with conditionals and loops.
- To define Python functions and call them.
- To use Python data structures –- lists, tuples, dictionaries.

COURSE OUTCOMES

At the end of this course, the students will be able to:

CO1: Develop algorithmic solutions to simple computational problems Read, write, execute by hand simple Python programs.
CO2: Structure simple Python programs for solving problems.
CO3: Decompose a Python program into functions.
CO4: Represent compound data using Python lists, tuples, and dictionaries.
CO5: Read and write data from/to files in Python Programs.

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), the efficiency of algorithms

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. 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.

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Department of Information Technology
A.Y.2022-23

Subject Name: Problem Solving using Python   Subject Code: D2ESPP6

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	3	2	1	1						2	2	2	2	2	1.89
CO2	1	3	1	1									1	1	1.33
CO3	2		2	3						2			2	1	2.00
CO4	1		2	3							2		1	1	1.57
CO5	2		3	2								1	1	1	1.80
PO Attainment	1.80	2.50	1.80	2.00	-	-	-	-	-	2.00	2.00	1.50	1.40	1.20	1.80

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INFORMATION TECHNOLOGY

B.Tech I YEAR II SEMESTER

L/T/P/C
0/0/3/1.5

PYTHON PROGRAMMING LAB (D2ESPP7)

COURSE OBJECTIVES

To impart knowledge on

- To know the basics of algorithmic problem solving.
- To read and write simple Python programs.
- To develop Python programs with conditionals and loops.
- To define Python functions and call them.
- To use Python data structures — lists, tuples, dictionaries.

COURSE OUTCOMES

At the end of this course, the students will be able to:

CO1: Develop algorithmic solutions to simple computational problems Read, write,
   execute by hand simple Python programs.
CO2: Structure simple Python programs for solving problems.
CO3: Decompose a Python program into functions.
CO4: Represent compound data using Python lists, tuples, and dictionaries.
CO5: Read and write data from/to files in Python Programs.

LIST OF PROGRAMS

1. Write a python program to print —Hello Worldl.
2. Write a python program to demonstrate different number data types in python.
3. Write a program to perform different Arithmetic Operations on numbers in Python.
4. Write a program to create, concatenate and print a string and
   accessing sub-string from a given string.
5. Write a python script to print the current date?
6. Write a program to create, append, and remove lists in python.
7. Write a program to demonstrate working with tuples in python
8. Write a program to demonstrate working with dictionaries in python.
9. Write a python program to find largest of three numbers.
10. Write a Python program to convert temperatures to and from Celsius, Fahrenheit.
11. Write a Python program to construct the following pattern, using a nested
    for loop

```
*
* *
* * *
* * * *
* * * * *
* * * *
* * *
* *
*
```

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A.Y.2022-23

Subject Name: Python Programming Lab   Subject Code: D2ESPP7

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	3	2	2	2	2					2		2	2	2	2.11
CO2	2	3	2	2	2					2		2	2	2	2.11
CO3	2	2	3	3	2					2		2	2	2	2.22
CO4	2	2	2	2	3					2		2	2	2	2.11
CO5	2	2	2	2	2		3			2		2	2	2	2.10
PO Attainment	2.20	2.20	2.20	2.20	2.20	-	3.00	-	-	2.00	-	2.00	2.00	2.00	2.20

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INFORMATION TECHNOLOGY

B.Tech I YEAR II SEMESTER

L/T/P/C
0/0/2/1

IT WORKSHOP (D2ESITW)

COURSE OBJECTIVES

1. The IT Workshop is a training lab course to get training on PC Hardware, Internet & World Wide Web, and Productivity tools for documentation, Spreadsheet computations, and Presentation.
2. To introduce to a personal computer and its basic peripherals, the process of assembling a personal computer, installation of system software like MS Windows, Linux and the required device drivers, hardware and software level troubleshooting process.
3. To introduce connecting the PC on to the internet from home and workplace and effectively usage of the internet, Usage of web browsers, email, newsgroups and discussion forums. To get knowledge in awareness of cyber hygiene, i.e., protecting the personal computer from getting infected with the viruses, worms and other cyber-attacks.
4. To introduce the usage of Productivity tools in crafting professional word documents, excel spreadsheets and power point presentations using open office tools and LaTeX.

COURSE OUTCOMES

1. Apply knowledge for computer assembling, disassembling and software installation.
2. Ability to solve the trouble shooting problems.
3. Apply the tools for preparation of PPT, Documentation and budget sheet etc.
4. Create standard documents and research documents using Latex.
5. Able to create project plans.

PC Hardware

The students should work on working PC to disassemble and assemble to working condition and install operating system like Linux or any other on the same PC. Students are suggested to work similar tasksin the Laptop scenario wherever possible.

Problem 1

Every student should identify the peripherals of a computer, components in a CPU and its functions. Draw the block diagram of the CPU along with the configuration of each peripheral and submit to your instructor.Every student should disassemble and assemble the PC back to working condition.

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Department of Information Technology

A.Y.2022-23

Subject Name: IT Workshop   **Subject Code:** D2ESITW

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	3	2	2	2	2					2		2	2	2	2.11
CO2	2	2	2	2	2					2		2	2	2	2.00
CO3	2	2	3	3	2					3		2	2	2	2.33
CO4	2	3	2	2	2					3		2	2	2	2.22
CO5	2	2	2	2	3					2	3	2	2	2	2.20
PO Attainment	2.20	2.20	2.20	2.20	2.20	-	-	-	-	2.40	3.00	2.00	2.00	2.00	2.24

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INFORMATION TECHNOLOGY

B.Tech III Semester   L/T/P/C
                                                                           3 /0/ 0/ 3

BUSINESS ECONOMICS AND FINANCIAL ANALYSIS (CHSM1)

Course Objectives:

1. To learn the basic business type of the organization.
2. To aquire the knowledge and impact of the economy on business firms.
3. To analyse the business from the financial perspective.
4. To know the financial position of the company.

Course Outcomes:

1. Analyze the total structure of the business and able to identify and classify the different types of business entities.
2. Asses the demand and supply analyses with the help of various measures and types of Elasticity of demand.
3. Infer the knowledge about production and cost analysis for product and services.
4. Interpret the fundamental concepts related to financial accounting.
5. Predict the financial position by analyzing the financial statement of the company through various ratios.

UNIT I
Introduction to Business and Economics

Business: Define Business, characteristics of business, Types of Business Entities, Limited Liability Companies, Sources of Capital for a Company.
Economics: Significance of Economics, Micro and Macro Economic Concepts and Importance of National Income, Business Cycle, Features and Phases of Business Cycle. Nature and Scope of Business Economics, Role of Business Economist.

UNIT II
Demand Analysis

Elasticity of Demand: Elasticity, Types of Elasticity, Law of Demand, Measurement and Significance of Elasticity of Demand, Factors affecting Elasticity of Demand, Elasticity of Demand in decision making, Demand Forecasting: Steps in Demand Forecasting, Methods of Demand Forecasting.

UNIT III
Production, Cost, Market Structures & Pricing

Production Analysis: Production function, Law of returns to scale, Internal and External Economies of Scale. **Cost Analysis:** Cost concepts, Types of costs, Break-Even Analysis (BEA)
Pricing: Types of pricing, product life cycle, GST (Goods & Service Tax).

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A.Y.2022-23

Subject Name: Business Economics and Financial Analysis   Subject Code: CHSM1

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	1	3	1	1						2	2	2	2	1	1.67
CO2	3		1	1									1	1	1.40
CO3	2		2	2						2	2		2	1	1.83
CO4	1		2	2						3	2	1	1	1	1.63
CO5	2		3	2						3	3		1	1	2.00
PO Attainment	1.80	3.00	1.80	1.60	-	-	-	-	-	2.33	2.33	1.50	1.40	1.00	1.86

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INFORMATION TECHNOLOGY

B.Tech III Semester   L/T/P/C
                                                                       3 /0/ 0/ 3

DATA STRUCTURES (CESDS1)

Course Objectives:

1. To understand the basic concepts such as Abstract Data Types, Linear and Non Linear Data structures.
2. To understand the notations used to analyze the Performance of algorithms.
3. To understand the behaviour of data structures such as stacks, queues, trees, hash tables, search trees, Graphs and their representations.
4. To choose an appropriate data structure for a specified application.
5. To understand and analyze various searching and sorting algorithms.
6. To learn to implement ADTs such as lists, stacks, queues, trees, graphs, search trees in C++ to solve problems.

Course Outcomes:

1. Understand the concept of ADT.
2. Ability to choose appropriate data structures to represent data items in real world problems.
3. Ability to analyses the time and space complexities of algorithms.
4. Ability to design programs using a variety of data structures such as stacks, queues, hash tables, binary trees, search trees, heaps, graphs, and B-trees.
5. Able to analyze and implement various kinds of searching and sorting techniques.

UNIT I
C++ Programming Concepts

Review of C, input and output in C++, functions in C++-value parameters, reference parameters, Parameter passing, function overloading, function templates, arrays, pointers, new and delete operators, class and object, access specifiers, friend functions, constructors and destructor, class templates, Inheritance and Polymorphism.

UNIT II
Linked List

Linear list ADT-array representation and linked representation, Singly Linked Lists-Operations-Insertion, Deletion, Circularly linked lists-Operations for Circularly linked lists, Doubly Linked Lists- Operations-Insertion, Deletion.
Stack and Queues: Stack ADT, definition, array and linked list implementations, applications-infix to postfix conversion, Postfix expression evaluation, Queue ADT, definition, array and linked list Implementations.

UNIT III
Trees

Definition, terminology, Binary trees-definition, Properties of Binary Trees, Binary Tree ADT, representation of Binary Trees-array and linked representations, Binary Tree traversals.
Heap Tree: Max Heap-Definition, Insertion into a Max Heap, Deletion from a Max Heap.

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Department of Information Technology
A.Y.2022-23

Subject Name: Data Structures

Subject Code: CESDS1

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	3		1	1						2	2	2	2	1	1.75
CO2	1	2	1	1									1	1	1.17
CO3	2		2	3						2			2	1	2.00
CO4	1		2	2								1	1	1	1.33
CO5	2		2	2							3		1	1	1.83
PO Attainment	1.80	2.00	1.60	1.80	-	-	-	-	-	2.00	2.50	1.50	1.40	1.00	1.73

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INFORMATION TECHNOLOGY

B.Tech III Semester

L/T/P/C
3 /0/ 0/ 3

OPERATING SYSTEMS (C63PC2)

Course Objectives:

To gain insight knowledge on performance and working of an operating system.

Course Outcomes:

The student will be able to

1. Able to understand the basic overview of operating systems and system calls
2. Ability to solve synchronization problem with Two-Process solution, Petersons solutions and apply the concepts of minimization of turnaround time, waiting time and response time to find CPU scheduling Problems
3. Apply the page replacement algorithms to identify the page fault in the given string.
4. Able to distinguish between file access methods and allocation methods.
5. Ability to apply Bankers Algorithm to avoid deadlocks and change access controls to protect files.

UNIT I
Overview

Introduction-Operating system objectives, User view, System view, Operating system definition, Computer System Architecture, OS Structure, OS Operations, Process Management, Memory Management, Storage Management, Computing Environments. Operating System services, User and OS Interface, System Calls, Types of System Calls, System Programs, Operating System Design and Implementation.

UNIT II
CPU Scheduling Process

Concepts-The Process, Process State, Process Control Block, Threads, Process Scheduling-Scheduling Queues, Schedulers, Context Switch, Operations on Processes, Inter-process communication-ordinary pipes and named pipes, message queues.
Process Scheduling: Basic concepts, Scheduling Criteria, Scheduling algorithms, Multiple-Processor Scheduling, Real-Time Scheduling, Thread scheduling. Process Synchronization, Background, The Critical Section Problem, Peterson's solution, Synchronization Hardware, Semaphores, Classic Problems of Synchronization, Monitors.

UNIT III
Memory Management

Memory Management Strategies- Background, Swapping, Contiguous Memory Allocation, Segmentation, Paging, Structure of Page Table.
Virtual Memory Management: Background, Demand Paging, Copy-on-Write, Page Replacement, Page Replacement Algorithms, Allocation of Frames, Thrashing, Virtual memory in Windows.

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A.Y.2022-23

Subject Name: Operating Systems Subject Code: C63PC2

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	3		1	1						2	2	2	2	1	1.75
CO2	1	2	1	3									1	1	1.50
CO3	2		2	3						2			2	1	2.00
CO4	1		2	2						3		1	1	1	1.57
CO5	2		2	2							3		1	1	1.83
PO Attainment	1.80	2.00	1.60	2.20	-	-	-	-	-	2.33	2.50	1.50	1.40	1.00	1.81

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INFORMATION TECHNOLOGY

B.Tech III Semester   **L/T/P/C
3 /0/ 0/ 3**

LINUX PROGRAMMING (C63PC3)

Course Objectives:

1. To understand and make effective use of Linux utilities and Shell scripting language (bash) to solve Problems.
2. To implement in C some standard Linux utilities such as ls, mv, cp etc. using system calls.
3. To develop the skills necessary for systems programming including file system programming, process and signal management, and interprocess communication.
4. To develop the basic skills required to write network programs using Sockets.

Course Outcomes:

1. Work confidently in Linux environment.
2. Work with shell script to automate different tasks as Linux administration.

UNIT I
Linux Utilities

File handling utilities, Security by file permissions, Process utilities, Disk utilities, Networking commands, Filters, Text processing utilities and Backup utilities. Sed-Scripts, Operation, Addresses, Commands, Applications, awk-Execution, Fields and Records, Scripts, Operation, Patterns, Actions, Associative Arrays, String and Mathematical functions, System commands in awk, Applications.

Shell programming with Bourne again shell (bash) - Introduction, shell responsibilities, pipes and Redirection, here documents, running a shell script, the shell as a programming language, shell meta characters, file name substitution, shell variables, command substitution, shell commands, the environment, quoting, test command, control structures, arithmetic in shell, shell script examples, interrupt processing, functions, debugging shell scripts.

UNIT II
Files and Directories

File Concept, File types, File System Structure, file metadata-Inodes, kernel support for files, system calls for file I/O operations- open, creat, read, write, close, lseek, dup2, file status information-stat family, file and record locking- fcntl function, file permissions - chmod, fchmod, file ownership-chown, lchown, fchown, links-soft links and hard links – symlink, link, unlink.

Directories - Creating, removing and changing Directories-mkdir, rmdir, chdir, obtaining current working directory-getcwd, Directory contents, Scanning Directories-opendir, readdir, closedir, rewinddir functions.

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Department of Information Technology
A.Y.2022-23

Subject Name: Linux Programming

Subject Code: C63PC3

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	2	2	1	1						2	2	2	2	1	1.67
CO2	1		1	1									1	1	1.00
CO3	2		2	2						2			2	1	1.83
CO4	1		2	3							2	1	1	1	1.57
CO5	2		3	2									1	1	1.80
PO Attainment	1.60	2.00	1.80	1.80	-	-	-	-	-	2.00	2.00	1.50	1.40	1.00	1.68

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INFORMATION TECHNOLOGY

B.Tech III Semester   L/T/P/C
                                                                          0 /0/ 2/ 1

DATA STRUCTURES LAB (CESDS2)

Course Objectives:

1. To understand basic concepts of data structures and abstract data types.
2. To write and execute programs in C++ to solve problems using data structures such as arrays, linked lists, stacks, queues, trees, graphs, hash tables and search trees.
3. To learn to write C++programs to implement various sorting algorithms.

Course Outcomes:

1. Able to identify the appropriate data structures and algorithms for solving real world problems.
2. Able to implement various kinds of searching and sorting techniques.
3. Able to implement data structures such as stacks, queues, Search trees, and hash tables to solve various computing problems.

LIST OF EXPERIMENTS:

1. Write a C++ Program to implement Stack using Array.

2. Write a C++ Program to Postfix evaluation.

3. Write a C++ Program to implement Queue using Array.

4. Write a C++ Program to implement Single linked list operations.

5. Program to implement Double linked list operations.

6. Program to implement Circular linked list operations.

7. Program to implement Stack using Linked list.

8. Program to implement Queue using Linked list.

9. Program to implement sorting techniques.

a) Insertion Sort b) Selection Sort c) Quick sort d) Heap Sort e) Merge sort

Reference Books:

1. Data Structures using C++, D. S. Malik, 2nd edition, Cengage learning.
2. Data Structures using C++, V. Patil, Oxford University Press.
3. Fundamentals of Data structures in C++, 2nd edition, E. Horowitz, S. Sahni and D. Mehta, Universities Press.
4. C++ Data Structures, 4th edition, Nell Dale, Jones and Bartlett student edition.

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A.Y.2022-23

Subject Name: Data Structures Lab

Subject Code: CESDS2

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	2	3	2	2	2					2		2	2	2	2.11
CO2	2	2	2	2	3					2		2	2	2	2.11
CO3	2	2	2	2	3					2		2	2	2	2.11
CO4	2	2	2	2	3					2		2	2	2	2.11
CO5	2	2	2	2	2		3			2	3	2	2	2	2.18
PO Attainment	2.00	2.20	2.00	2.00	2.60	-	3.00	-	-	2.00	3.00	2.00	2.00	2.00	2.25

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INFORMATION TECHNOLOGY

B.Tech III Semester

L/T/P/C
0 /0/ 4/ 2

LINUX/OPERATING SYSTEMS LAB (C63PC4)

Course Objectives:

1. To write shell scripts to solve problems.
2. To implement some standard Linux utilities such as ls,cp etc using system calls.
3. To understand the operating System functionalities

Course Outcomes:

1. 1. Ability to understand the Linux environment
2. Ability to perform the file management and multiple tasks using shell scripts in Linux Environment.
3. Able to implement various Scheduling algorithms.
4. Able to detect and solve deadlocks.

List of problems:

Note: Use Bash for Shell scripts.

1. Write a shell script that accepts a file name, starting and ending line numbers as arguments and displays all the lines between the given line numbers.
2. Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.
3. Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions.
4. Write a shell script that receives any number of file names as arguments checks if every argument supplied is a file or a directory and reports accordingly. Whenever the argument is a file, the number of lines on it is also reported.
5. Write a shell script that accepts a list of file names as its arguments, counts and reports the occurrence of each word that is present in the first argument file on other argument files.
6. Write a shell script to list all of the directory files in a directory.
7. Write a shell script to find factorial of a given integer.
8. Write an awk script to count the number of lines in a file that do not contain vowels.
9. Write an awk script to find the number of characters, words and lines in a file.
10. Implement in C the following Linux commands using System calls a) cat b) mv

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Department of Information Technology

A.Y.2022-23

Subject Name: Linux/Operating Systems Lab

Subject Code: C63PC4

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	3	1	2	2	2					2		2	2	2	2.00
CO2	2	2	2	2	3					2		2	2	2	2.11
CO3	2	2	2	2	3					2		2	2	2	2.11
CO4	2	3	2	1	2					2		2	2	2	2.00
CO5	2	2	2	3	2					2		2	2	2	2.11
PO Attainment	2.20	2.00	2.00	2.00	2.40	-	-	-	-	2.00	-	2.00	2.00	2.00	2.07

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INFORMATION TECHNOLOGY

B.Tech IV Semester

L/T/P/C
3 /0/ 0/ 3

COMPUTER ORGANIZATION (C64PC1)

Course Objectives:

1. To understand basic components of computers.
2. To understand the I/O organization.
3. To understand the Memory Organization.
4. To understand the Architecture of 8086.
5. To understand the instruction formats and representation of data at the machine level and how computations are performed.

Course Outcomes:

1. Able to understand the basic components and the design of CPU, ALU and Control Unit.
2. Ability to understand the data transfer between I/O devices.
3. Ability to understand Memory hierarchy and its impact on computer cost/performance.
4. Ability to use instruction sets and formats of 8086.
5. Able to write assembly language programs to solve problems.

UNIT I
Basic Computer Organization - Functions of CPU, I/O Units, Memory Instruction

Instruction Formats - One address, two addresses, zero addresses and three addresses and comparison, registers, Instructions timing and control, instruction cycle, addressing modes with numeric examples: Program Control - Status bit conditions, conditional branch instructions, Program Interrupts: Interrupt cycle, Types of Interrupts, control memory Micro programmed address sequencing, micro program control unit example and micro instruction format, RISC, CISC-Processors.

UNIT II
Input-Output Organizations - I/O Interface, I/O Bus and Interface Modules

I/O Vs memory Bus, Isolated Vs Memory-Mapped I/O, Asynchronous data Transfer-Strobe Control, Hand Shaking: Asynchronous Serial transfer- Asynchronous Communication interface, Modes of transfer programmed I/O, Interrupt Initiated I/O, DMA; DMA Controller, DMA Transfer, IOP-CPU-IOP Communication.

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Department of Information Technology

A.Y.2022-23

Subject Name: Computer Organization   Subject Code: C64PC1

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	3		1	1						2	2	2	2	1	1.75
CO2	1	3	1	1									1	1	1.33
CO3	2		2	3						2			2	1	2.00
CO4	1		2	2								1	1	1	1.33
CO5	2		2	2							3		1	1	1.83
PO Attainment	1.80	3.00	1.60	1.80	-	-	-	-	-	2.00	2.50	1.50	1.40	1.00	1.84

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INFORMATION TECHNOLOGY

B.Tech IV Semester

L/T/P/C
3 /0/ 0/ 3

DATABASE MANAGEMENT SYSTEMS (C64PC2)

Course Objectives:

1. To understand the basic concepts and the applications of database systems.
2. To master the basics of SQL and construct queries using SQL.
3. To understand the relational database design principles.
4. To become familiar with the basic issues of transaction processing and concurrency control.
5. To become familiar with database storage structures and access techniques.

Course Outcomes:

1. Demonstrate the basic elements of a relational database management system.
2. Ability to identify the data models for relevant problems.
3. Ability to design entity relationship model and convert entity relationship diagrams into RDBMS and formulate SQL queries on the data.
4. Apply normalization for the development of application software.
5. Understand transaction processing, concurrency control and recovery techniques.

UNIT I
Introduction

Database System Applications, Purpose of Database Systems, View of Data, Database Languages – DDL, DML, Database Design, Data Storage and Querying, Transaction Management, Database Architecture, Database Users and Administrators, History of Database Systems.
Introduction to Database design: Database Design and ER diagrams, Entities, Attributes and Entity sets, Relationships and Relationship sets, Additional features of ER Model, Conceptual Design with the ER Model.

UNIT II
Relational Model

Introduction to the Relational Model, Integrity Constraints over Relations, Enforcing Integrity constraints, Querying relational data, Logical data base Design: ER to Relational, Introduction to Views, Destroying /Altering Tables and Views. **Relational Algebra and Calculus:** Relational Algebra, Relational calculus – Tuple relational Calculus, Domain relational calculus. SQL Queries, Constraints, Form of Basic SQL Query, UNION, INTERSECT and EXCEPT, Nested Queries, Aggregate Operators, NULL values Complex Integrity Constraints in SQL, Triggers and Active Data bases, Designing Active Databases.

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Department of Information Technology

A.Y.2022-23

Subject Name: Database Management Systems

Subject Code: C64PC2

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	3		1	1						2	2	2	2	1	1.75
CO2	1	3	2	1									1	1	1.50
CO3	1		2	3						2			2	1	1.83
CO4	1		2	2								2	1	1	1.50
CO5	2		2	2							3	2	1	1	1.83
PO Attainment	1.60	3.00	1.80	1.80	-	-	-	-	-	2.00	2.50	2.00	1.40	1.00	1.90

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INFORMATION TECHNOLOGY

B.Tech IV Semester

L/T/P/C
3 /0/ 0/ 3

JAVA PROGRAMMING (C64PC3)

Course Objectives:

1. To introduce the object oriented programming concepts.
2. To understand object oriented programming concepts, and apply them in solving problems.
3. To introduce the principles of inheritance and polymorphism; and demonstrate how they relate to the design of abstract classes.
4. To introduce the implementation of packages and interfaces.
5. To introduce the concepts of exception handling and multithreading.
6. To introduce the design of Graphical User Interface using applets and swing controls.

Course Outcomes:

1. Able to understand the use of inheritance and abstract classes.
2. Able to gain knowledge on how to use packages, interfaces, I/O stream classes.
3. Able to handle exceptions by using exceptional handling mechanisms.
4. Able to develop multithreaded applications with synchronization.
5. Able to solve problems using java collection framework.
6. Able to develop applets for web applications and design GUI based applications

UNIT I
Object-Oriented Thinking

History of object-oriented programming, overview of java, Object oriented design, Structure of java program, Java buzzwords, Data types, Variables and Arrays, operators, expressions, control statements, Access specifiers, Introducing classes, Methods and Constructors, String handling.
Inheritance– Inheritance concept, Inheritance basics, Member access, Constructors, Creating Multilevel hierarchy, benefits of inheritance, costs of inheritance, super uses, using final with inheritance, method over loading ,method overriding, abstract classes, Object class, Polymorphism.

UNIT II
Packages

Defining a Package, Creating a package, Access protection, importing packages.
Interfaces- defining an interface, implementing interfaces, Nested interfaces, applying interfaces, variables in interfaces and extending interfaces.
Stream based I/O (java.io) – File class, The Stream classes-Byte streams and Character streams, Print Writer , The Console class, Serialization, De-Serialization, Enumerations, Wrapper Classes.

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Department of Information Technology

A.Y.2022-23

Subject Name: Java Programming

Subject Code: C64PC3

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	3	2	1	2									1	1	1.67
CO2	2	3	1	2									1	1	1.67
CO3	2	2	3	2						1			1	1	1.71
CO4	2	2	1	2						1			1	1	1.43
CO5	2	2	2	2						2			1	1	1.71
PO Attainment	2.20	2.20	1.60	2.00	-	-	-	-	-	1.33	-	-	1.00	1.00	1.62

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INFORMATION TECHNOLOGY

B.Tech IV Semester

L/T/P/C
3 /0/ 0/ 3

DESIGN AND ANALYSIS OF ALGORITHMS (C64PC4)

Course Objectives:

1. To analyze performance of algorithms.
2. To choose the appropriate data structure and algorithm design method for a specified application.
3. To understand how the choice of data structures and algorithm design methods impacts the performance of programs.
4. To solve problems using algorithm design methods such as the greedy method, divide and conquer, dynamic programming, backtracking and branch and bound.
5. To understand the differences between tractable and intractable problems.
6. To introduce P and NP classes.

Course Outcomes:

1. Able to analyze the performance of the algorithm in terms of time and space & apply the concept of divide & conquer method on various examples.
2. Able to find out the solution for the given example problems by using Backtracking & apply the concept of graph problems on various examples.
3. Able to solve the problems with Greedy method for the given example problems.
4. Able to solve optimization problems using Dynamic Programming.
5. Able to solve the given example problems using Branch & Bound and design the deterministic & non deterministic algorithms and categorize them as a Np-hard and Np-complete problems accordingly.

UNIT I
Introduction

Introduction: Algorithm definition, Algorithm specification, Performance analysis.
Divide and conquer- General method, applications - Binary search, Merge sort, Quick sort, Strassen's Matrix Multiplication.

UNIT II
Disjoint Set Operations

Disjoint set operations, union and find algorithms, AND/OR graphs, Graph Traversals, Connected Components and Spanning trees, Bi-connected components **Backtracking**-General method, applications- The 4-queen problem, The 8-queen problem, sum of subsets problem, graph coloring, Hamiltonian cycles.

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Subject Name: Design and Analysis of Algorithms

Subject Code: C64PC4

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	2		1	3						2	2	2	2	1	1.88
CO2	1	3	1	1									1	1	1.33
CO3	2		2	2						2			2	1	1.83
CO4	3		2	2									1	1	1.67
CO5	2		1	2							3	1	1	1	1.67
PO Attainment	2.00	3.00	1.40	2.00	-	-	-	-	-	2.00	2.50	1.50	1.40	1.00	1.87

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INFORMATION TECHNOLOGY

B.Tech IV Semester

L/T/P/C
0/0/3/1.5

JAVA PROGRAMMING LAB (C64PC6)

Course Objectives:

1. To write programs using abstract classes.
2. To write programs for solving real world problems using java collection frame work.
3. To write multithreaded programs.
4. To write GUI programs using swing controls in Java.
5. To introduce java compiler and eclipse platform.

Course Outcomes:

1. Able to write programs for solving real world problems using java collection frame work.
2. Able to write programs using abstract classes.
3. Design and develop programs using objects and inheritance in Java language.
4. Able to write multithreaded programs.
5. Able to write GUI programs using swing controls in Java.

Note:

1. Use Linux and MySQL for the Lab Experiments. Though not mandatory, encourage the use of Eclipse platform.
2. The list suggests the minimum program set. Hence, the concerned staff is requested to add more problems to the list as needed.

List of Programs

1.
   a) Write a JAVA program to display the Fibonacci sequence
   b) Write a JAVA program to check whether given string is palindrome or not.
   c) Write a JAVA program to give the example for 'this' keyword.

2.
   a) Write a JAVA program to demonstrate static variables, methods, and blocks.
   b) Write a JAVA program to demonstrate 'super' keyword.
   c) Write a JAVA program that illustrates simple inheritance.

3.
   a) Write a JAVA program that illustrates multi-level inheritance
   b) Write a JAVA program to demonstrate method overloading and method overriding.
   c) Write a JAVA program demonstrating the difference between method overloading and constructor overloading.
   d) Write a java program to demonstrate abstract classes.

4.
   a) Write a java program to demonstrate access specifiers.
   b) Write a java program to import packages.

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Department of Information Technology

A.Y.2022-23

Subject Name: Java Programming Lab   Subject Code: C64PC6

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	2	3	2	2	2					2		2	2	2	2.11
CO2	2	2	2	2	3					2		2	2	2	2.11
CO3	3	2	2	2	2					2		2	2	2	2.11
CO4	2	2	1	2	3				3	2		2	2	2	2.10
CO5	2	2	2	2	2		3			3	2	1	2	2	2.09
PO Attainment	2.20	2.20	1.80	2.00	2.40	-	3.00	-	3.00	2.20	2.00	1.80	2.00	2.00	2.22

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INFORMATION TECHNOLOGY

B.Tech IV Semester

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DATABASE MANAGEMENT SYSTEMS LAB (C64PC7)

Course Objectives:

This lab enables the students to practice the concepts learnt in the subject DBMS by developing a database for an example company named "Roadway Travels" whose description is as follows. The student is expected to practice the designing, developing and querying a database in the context of example database "Roadway travels". Students are expected to use "Mysql" database.

Course Outcomes:
1. Formulate queries using SQL DML/DDL/DCL commands.
2. Analyze the normalization techniques
3. Design and implement a database schema for given problem.
4. Develop programs using PL/SQL

Roadway Travels
"Roadway Travels" is in business since 1997 with several buses connecting different places in India. Its main office is located in Hyderabad. The company wants to computerize its operations in the following areas:

Reservations & Cancellation
Reservations are directly handled by booking office. Reservations can be made 30 days in advance and tickets issued to passenger. One Passenger/person can book many tickets (to his/her family). Cancellations are also directly handed at the booking office.

In the process of computerization of Roadway Travels you have to design and develop a Database which consists the data of Buses, Passengers, Tickets, and Reservation and cancellation details. You should also develop query's using SQL to retrieve the data from the database.

The above process involves many steps like 1. Analyzing the problem and identifying the Entities and Relationships, 2. E-R Model 3. Relational Model 4. Normalization 5.

Creating the database 6. Querying. Students are supposed to work on these steps week wise and finally create a complete "Database System" to Roadway Travels. Examples are given at every experiment for guidance to students.

Experiment 1: E-R Model
Analyze the problem carefully and come up with the entities in it. Identify what data has to be persisted in the database. This contains the entities, attributes etc. Identify the primary keys for all the entities. Identify the other keys like candidate keys, partial keys, if any.
Example: Entities: 1. Bus 2. Ticket 3. Passenger Relationships 1. Reservation. 2. Cancellation.
Primary Key Attributes: 1. Ticket_ID (Ticket Entity) 2. Passenger_ID (Passenger Entity)
3. Bus_No. (Bus Entity)
Apart from the above mentioned entities you can identify more. The above mentioned are few.
Note: The student is required to submit a document by writing the Entities and Keys to the lab teacher.

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Department of Information Technology

A.Y.2022-23

Subject Name: Database Management Systems Lab

Subject Code: C64PC7

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	2	3	2	2	2					2			2	2	2.11
CO2	2	2	2	2	3					2		2	2	2	2.11
CO3	3	2	2	1	2					2		2	2	2	2.00
CO4	2	2	1	2	3			3		2		2	2	2	2.10
CO5	2	2	2	2	2		3			3	2	1	2	2	2.09
PO.Attainment	2.20	2.20	1.80	1.80	2.40	-	3.00	-	3.00	2.20	2.00	1.80	2.00	2.00	2.20

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SOFTWARE ENGINEERING - C65PC1

B. Tech. V Semester   L/T/P/C
                                                              3/0/0/3

Course Objectives:

1. To understanding of software process models such as waterfall and evolutionary models.

2. To understanding of software requirements and SRS document.

3. To understanding of different software architectural styles.

4. To understanding of software testing approaches such as unit testing and integration testing

5. To understanding on quality control and how to ensure good quality software.

Course Outcomes:

1. An ability to identify and apply suitable process patterns and process models accordingly.

2. Able to identify requirements, apply requirements engineering process and design system models.

3. Designing Architecture to acquire knowledge of building an application and use of UML diagrams.

4. Able to test software by applying various testing strategies and product metrics to measure the product.

5. Assessing risk factors by formulating risk management and to assess the quality of software.

UNIT I

Introduction to Software Engineering: The evolving role of software, Changing Nature of Software, legacy software, Software myths.

A Generic view of process: Software engineering- A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models.

Prescriptive Process models: The waterfall model, incremental process models, evolutionary process models.

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A.Y.2022-23

Subject Name: Software Engineering   Subject Code: C65PC1

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	2	3	1	1						2	2	2	2	1	1.78
CO2	1		1	3									1	1	1.40
CO3	2		2	2						2			2	1	1.83
CO4	1		2	2					3		2	1	1	1	1.63
CO5	2		2	2							3		1	1	1.83
PO Attainment	1.60	3.00	1.60	2.00	-	-	-	-	3.00	2.00	2.33	1.50	1.40	1.00	1.94

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PYTHON PROGRAMMING - C65PC2

B. Tech. V Semester   **L/T/P/C**
                                                                 3/0/0/3

Course Objectives:

1. To understand the fundamentals of Python Programming concepts and its applications
2. To improve problem solving skills using control structures and lists.
3. To understand the basics of object- oriented concepts using python.
4. Apply string handling to solve real-time problems.
5. Design and implement programs using functions.

Course Outcomes:

1. Understand and comprehend the basics of python programming.
2. Express different conditional and decision making statements used to develop python applications.
3. Learn and implement various data structures provided by python library including string, list, dictionary and its operations etc
4. Define and demonstrate the use of the built-in functions and better usage of string methods in the development of python programming.
5. Develop real-world applications by using various object oriented programming concepts.

UNIT I

INTRODUCTION TO PYTHON Introduction to Python: Python Identifiers, Keywords, Data types in python: built-in data types, bool data type, sequences, sets. Input and Output statements, Operators: arithmetic operators, assignment operators, comparison operators, logical operators, identity operators, membership operators, bitwise operators.

UNIT II

CONTROL STRUCTURES Conditional Control structures: Conditional blocks using if statement, if-else statement, else if statement, Range function. Loops: for loops, Nested for loop, while loop, pass, continue, break statements.

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Subject Name: Python Programming

Subject Code: C65PC2

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	3	2	1	1						2	2	2	2	1	1.78
CO2	1		1	1						3			1	1	1.33
CO3	2		2	2						2			2	1	1.83
CO4	1		2	2							2	1	1	1	1.43
CO5	2		2	2					3				1	1	1.83
PO Attainment	1.80	2.00	1.60	1.60	-	-	-	-	3.00	2.33	2.00	1.50	1.40	1.00	1.82

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COMPILER DESIGN- C65PC3

B. Tech. V Semester

L/T/P/C

3/0/0/3

Course Objectives:

1. To understand the various phases in the design of a compiler.

2. To understand the design of top-down and bottom-up parsers.

3. To understand syntax directed translation schemes.

4. To introduce lex and yacc tools.

5. To learn to develop algorithms to generate code for a target machine.

Course Outcomes:

1. Ability to design, develops, and implements a compiler for any language.

2. Able to use lex and yacc tools for developing a scanner and a parser.

3. Able to design and implement LL and LR parsers.

4. Able to design algorithms to perform code optimization in order to improve the performance of a program in terms of space and time complexity.

5. Ability to design algorithms to generate machine code

UNIT - I

Introduction: Language Processors, the structure of a compiler, the science of building a compiler, programming language basics.

Lexical Analysis: The Role of the Lexical Analyzer, Input Buffering, Recognition of Tokens, The Lexical-Analyzer Generator Lex, Finite Automata, From Regular Expressions to Automata, Design of a Lexical-Analyzer Generator, Optimization of DFA-Based Pattern Matchers.

UNIT - II

Syntax Analysis: Introduction, Context-Free Grammars, Writing a Grammar, Top-Down Parsing, Bottom-Up Parsing, Introduction to LR Parsing: Simple LR, More Powerful LR Parsers, Using Ambiguous Grammars, Parser Generators.

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Subject Name: Compiler Design   Subject Code: C65PC3

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	2	3	1	1						2	2	2	2	1	1.78
CO2	1		1	1						2			1	1	1.17
CO3	2		2	3						2			2	1	2.00
CO4	3		2	2							2	1	1	1	1.71
CO5	2		2	2					3		2		1	1	1.86
PO Attainment	2.00	3.00	1.60	1.80	-	-	-	-	3.00	2.00	2.00	1.50	1.40	1.00	1.93

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COMPUTER NETWORKS - C65PC4

B. Tech. V Semester   L/T/P/C

                                                                              3/0/0/3

Course Objectives:

1. To introduce the fundamental various types of computer networks.
2. To demonstrate the TCP/IP and OSI models with merits and demerits.
3. To explore the various layers of OSI Model.
4. To introduce UDP and TCP Models.

Course Outcomes:

1. Able to understand and explore the basics of data communication.
2. Able to understand data link layer with transmission error to provide a well defined interface to the network layer.
3. Classify the routing protocols and analyzes how to assign the IP addresses for a given network.
4. Able to understand to perform end to end services in the transport layer.
5. Ability to access the global information about services on the Internet.

UNIT – I

Introduction: Data Communications, Networks, The Internet, Protocols and Standards, Layered Tasks, The OSI model, Layers in the OSI Model, TCP/IP, Addressing, **Physical layer:** Transmission modes, Multiplexing, Transmission Media, Switching - Circuit Switched Networks, Datagram Networks, Virtual Circuit Networks.

UNIT – II

Data link layer: Introduction, Error Detection and Correction, Framing, Flow and Error Control, Noiseless Channels, Noisy Channels, HDLC, Point to Point Protocols.

Multiple Access: Random Access, ALOHA, CSMA, CSMA/CD, CSMA/CA, Controlled access, Channelization.

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Department of Information Technology
A.Y.2022-23

Subject Name: Computer Networks

Subject Code: C65PC4

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	3	2	1	1						2	2	2	2	1	1.78
CO2	1	3	1	1						2			1	1	1.43
CO3	2		2	3						2			2	1	2.00
CO4	3		2	2							2	1	1	1	1.71
CO5	2		2	2					2	3	2		1	1	1.88
PO Attainment	2.20	2.50	1.60	1.80	-	-	-	-	2.00	2.25	2.00	1.50	1.40	1.00	1.83

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OBJECT ORIENTED ANALYSIS AND DESIGN - C65PC5

B. Tech. V Semester   **L/T/P/C**

                                                     3/0/0/3

Course Objectives:

1. Concisely define the following key terms: class, object, state, behavior, object class, class diagram, object diagram, operation, encapsulation, constructor operation, query operation, update operation, scope operation, association, association role, multiplicity, association class, abstract class, concrete class, class-scope attribute, abstract operation, method, polymorphism, overriding, multiple classification, aggregation, and composition.
2. State the advantages of object-oriented modeling vis-à-vis structured approaches.
3. Model a real-world application by using a UML class diagram.
4. Recognize when to use generalization, aggregation, and composition relationships.
5. Specify different types of business rules in a class diagram.

Course Outcomes:

Graduate can able to take up the case studies and model it in different views with respect user requirement such as use case, logical, component and deployment and etc, and preparation of document of the project for the unified Library application.

UNIT– I

Introduction to UML: Importance of modelling, principles of modelling, object oriented modelling, conceptual model of the UML, Architecture, Software Development Life Cycle.

UNIT– II

Basic Structural Modelling: Classes, Relationships, common Mechanisms, and diagrams. Advanced Structural Modelling: Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages. Class & Object Diagrams: Terms, concepts, modelling techniques for Class & Object Diagrams.

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Department of Information Technology
A.Y.2022-23

Subject Name: Object Oriented Analysis and Design   **Subject Code:** C65PC5

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	2	2	1	1						3	2	2	2	1	1.78
CO2	1	3	1	1						2			1	1	1.43
CO3	2		2	3						2			2	1	2.00
CO4	3		2	2							2	1	1	1	1.71
CO5	2		2	2						2	2		1	1	1.71
PO Attainment	2.00	2.50	1.60	1.80	-	-	-	-	-	2.25	2.00	1.50	1.40	1.00	1.78

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OBJECT ORIENTED ANALYSIS AND DESIGN LAB - C65PC7

B. Tech. V Semester   **L/T/P/C**
                                                            0/0/3/1.5

Course Objectives:

1. Able to identify the requirements specification for an intended software system.
2. Demonstrate how to draw the UML diagrams for the given specification.
3. Illustrate to map the design properly to code.

Course Outcomes:

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

1. Perform Object Oriented analysis and design for a given problem specification.
2. Identify and map basic software requirements in UML mapping.
3. Improve the software quality using design patterns and to explain the rationale behind applying specific design.

A) **Students have to draw the following diagrams using UML for an ATM system whose description is given below. UML diagrams to be developed are:**

- Use Case Diagram.
- Class Diagram.
- Sequence Diagram.
- Collaboration Diagram.
- State Diagram
- Activity Diagram.
- Component Diagram
- Deployment Diagram.
- Test Design.
- Description for an ATM System

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Department of Information Technology

A.Y.2022-23

Subject Name: Object Oriented Analysis and Design Lab

Subject Code: C65PC7

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	2	3	2	2	2					2		2	2	2	2.11
CO2	2	2	2	2	3					2		2	2	2	2.11
CO3	2	2	2	2	3					2		2	2	2	2.11
CO4	2	2	2	2	3					2	3	2	2	2	2.20
CO5	2	2	2	2	2					3		2	2	2	2.11
PO Attainment	2.00	2.20	2.00	2.00	2.60	-	-	-	-	2.20	3.00	2.00	2.00	2.00	2.20

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PYTHON PROGRAMMING LAB - C65PC8

B. Tech. V Semester   **L/T/P/C**
                                                           0/0/3/1.5

Course Objectives:

To Write and execute the programs based on operators, functions, simple data structures, basic packages using python programming constructs.

Course Outcomes:

After completion of course the students will able to

1. Implement the fundamental programming elements: operators, statements, conditional and control flow statements.
2. Use predefined functions and build functions.
3. Use python modules and implement data structure to solve various computing problems.

List of Programs:

1. Write a python program to print —Hello Worldl.
2. Write a python program to demonstrate different number data types in python.
3. Write a program to perform different Arithmetic Operations on numbers in Python.
4. Write a program to create, concatenate and print a string and accessing sub-string from a given string.
5. Write a python script to print the current date?
6. Write a program to create, append, and remove lists in python.
7. Write a program to demonstrate working with tuples in python
8. Write a program to demonstrate working with dictionaries in python.
9. Write a python program to find largest of three numbers.
10. Write a Python program to convert temperatures to and from Celsius, Fahrenheit.

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A.Y.2022-23

Subject Name: Python Programming Lab   Subject Code: C65PC8

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	2	3	2	2	2					2		2	2	2	2.11
CO2	2	2	2	3	2					2		2	2	2	2.11
CO3	2	2	2	2	2					2		2	2	2	2.00
CO4	2	2	2	2	3					2	3	2	2	2	2.20
CO5	2	2	2	2	2					3		2	2	2	2.11
PO Attainment	2.00	2.20	2.00	2.20	2.20	-	-	-	-	2.20	3.00	2.00	2.00	2.00	2.18

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FUNDAMENTALS OF MANAGEMENT - BHSFM2

B. Tech: V Semester

L/T/P/ C
3/0/0/ 3

COURSE OBJECTIVE:

To understand the Management Concepts, applications of Concepts in Practical aspects of business and development of Managerial Skills.

COURSE OUTCOME:

The students understand the significance of Management in their Profession. The various Management Functions like Planning, Organizing, Staffing, Leading, Motivation and Control aspects are learnt in this course. The students can explore the Management Practices in their domain area.

UNIT – I:

Introduction to Management: Definition, Nature and Scope, Functions, Managerial Roles, Levels of Management, Managerial Skills, Challenges of Management; Evolution of Management-Classical Approach- Scientific and Administrative Management; The Behavioral approach; The Quantitative approach; The Systems Approach; Contingency Approach, IT Approach.

UNIT – II:

Planning and Decision Making: General Framework for Planning - Planning Process, Types of Plans, Management by Objectives; Development of Business Strategy. Decision making and Problem Solving - Programmed and Non Programmed Decisions, Steps in Problem Solving and Decision Making; Bounded Rationality and Influences on Decision Making; Group Problem Solving and Decision Making, Creativity and Innovation in Managerial Work.

UNIT – III:

Organization and HRM: Principles of Organization: Organizational Design & Organizational Structures; Departmentalization, Delegation; Empowerment, Centralization, Decentralization, Recentralization; Organizational Culture; Organizational Climate and Organizational Change.

Human Resource Management & Business Strategy: Talent Management, Talent Management Models and Strategic Human Resource Planning; Recruitment and Selection; Training and Development; Performance Appraisal.

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Department of Information Technology
A.Y.2022-23

Subject Name: Fundamentals of Management   Subject Code: CHSM2

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	2	2	1	1		3				2	2	2	2	1	1.80
CO2	1	3	1	1						2	3		1	1	1.63
CO3	2		2	3						2			2	1	2.00
CO4	3		2	2							3	1	1	1	1.86
CO5	2		2	2						2	2	3	1	1	1.88
PO Attainment	2.00	2.50	1.60	1.80	-	3.00	-	-	-	2.00	2.50	2.00	1.40	1.00	1.98

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WEB TECHNOLOGIES – (C66PC1)

B. Tech. VI Semester

L/T/P/C
3/0/0/3

Course Objectives:

1. To design Static web pages using HTML.
2. To introduce Client Side scripting with JavaScript and AJAX.
3. To introduce PHP language for Server Side Scripting.
4. To introduce XML and XML data with Java
5. To introduce server side programming with Java Servlets and JSP.

Course Outcomes:

1. Able to design a static web page using forms and frames in HTML.
2. Able to validate client side scripting using onClick (), onSubmit(), onChange() events in JavaScript.
3. Able to design a dynamic web page using PHP.
4. Able to construct a validation page which connects to a data base given and able to perform the DML functionalities by using mysqli_connect() ,mysqli_query(), mysqli_fetch_array(), mysqli_close( ) in PHP.
5. Analyze how to develop a well formed and valid xml document by using DTDs and Schemas which allows the validation of text elements.
6. Able to write server side program by using servlets for given problem and able to develop a connection between both the ends by doGet() and doPost() methods.& Develop JSP applications implementing Session Management and Database Connectivity.

UNIT-I

Introduction to HTML: HTML basic tags, Elements, Attributes, list, table, image, text links, forms, frames, Cascading style sheets, Simple AJAX application.

UNIT-II

Introduction to Java script: Java script language- declaring variables, scope of variables, operators, loops, functions, Java script objects, event handlers (on click, on submit etc.), Document Object Model.

UNIT-III

Introduction to PHP: Declaring variables, data types, arrays, strings, operators, expressions, Arrays, control structures, functions, Reading data from web form controls

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Department of Information Technology

A.Y.2022-23

Subject Name: Web Technologies

Subject Code: C66PC1

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	2	2	1	1						2	2	2	2	1	1.67
CO2	1		1	1							3		1	1	1.33
CO3	2		2	3						2			2	1	2.00
CO4	1	3	2	2							2	1	1	1	1.63
CO5	2		2	2					3				1	1	1.83
PO Attainment	1.60	2.50	1.60	1.80	-	-	-	-	3.00	2.00	2.33	1.50	1.40	1.00	1.87

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STACK TECHNOLOGIES - C66PE3C

B. Tech. VI Semester

L/T/P/C

3/0/0/3

Course Objectives:

1. Translate user requirements into the overall architecture and implementation of new systems and manage project and coordinate with the client

2. writing optimized front end code HTML and Java Script

3. Design and implementation of Robust and scalable front end applications.

Course Outcomes:

1. Enumerate the Basic concepts of web & Markup Languages.

2. Develop web Applications using scripting Languages & Frameworks

3. Make use of Express JS and and Node JS Frameworks

4. Illustrate the uses of web services concepts like react js

UNIT I

Hibernate - An Introduction to Hibernate 3 , Integrating and Configuring Hibernate, Building a Simple Application ,The Persistence Life Cycle, An Overview of Mapping, Mapping with Annotations, Creating Mappings with Hibernate XML Files , Using the Session , Searches and Queries, Advanced Queries Using Criteria .

UNIT II

Spring - Springing into Action , Wiring beans, Advanced wiring(3.3,3.4), Building Spring web applications, Hitting the database with Spring and JDBC, Persisting data with object-relational mapping, Creating REST APIs with Spring MVC

UNIT III

Spring Boot - Spring Boot Introduction, Spring-boot basics, Spring MVC, Data Access

UNIT IV

React JS - Introduction to Meet React, <Hello World />: our first component , Data and data flow in React, Rendering and lifecycle methods in React, Working with forms in React, Integrating third-party libraries with React.

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Department of Information Technology

A.Y.2022-23

Subject Name: Stack Technologies

Subject Code: C66PE3

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	3	2	1	1						2	2	2	2	1	1.78
CO2	1		1	1							2		1	1	1.17
CO3	2		2	3						2			2	1	2.00
CO4	1	3	2	2							3	1	1	1	1.75
CO5	2		2	2						3			1	1	1.83
PO Attainment	1.80	2.50	1.60	1.80	-	-	-	-	-	2.33	2.33	1.50	1.40	1.00	1.81

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WEB TECHNOLOGIES LAB - C66PC5

B. Tech. VI Semester

L/T/P/C

0/0/2/1

Course Objective:

Develop an ability to design and implement static and dynamic website, choose best technologies for solving web client/server problems, use appropriate client-side or Server-side applications

Course Outcomes:

Upon successful completion of this course, the students will be able to:

1. Create web pages using HTML and Cascading Styles sheets
2. Create dynamic web pages using JavaScript & Analyze a web page and identify its elements and attributes
3. Build web applications using PHP
4. Understand, analyze and apply the role of languages like HTML, CSS, XML, JavaScript, PHP and protocols in the workings of the web and web applications
5. Create XML documents and XML Schema.
6. Create web based applications using Servlets &JSP and establish a database connectivity using JDBC.

List of Programs:

1. Write a HTML code to design a simple timetable using table tag.
2. Write a HTML code to design a static college website that holds the complete information about the all departments.
3. Write a JavaScript to design a simple calculator to perform the following operations: sum, product, difference and quotient.
4. Write a JavaScript that calculates the squares and cubes of the numbers from 0 to 10 and outputs HTML text that displays the resulting values in an HTML table format.
5. Write a JavaScript code that displays text "TEXT-GROWING" with increasing font size in the interval of 100ms in RED COLOR, when the font size reaches 50pt it displays "TEXTSHRINKING" in BLUE color. Then the font size decreases to 5pt.
6. Design an XML document to store information about a student in TKR engineering college affiliated to JNTUH. The information must include USN, Name, and Name of the College, Branch, Year of Joining, and email id. Make up sample data for 3 students. Create a CSS style sheet and use it to display the document.

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Department of Information Technology

A.Y.2022-23

Subject Name: Web Technologies Lab

Subject Code: C66PC5

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	2	2	2	2	3					2			2	2	2.11
CO2	2	2	2	3	2					2		2	2	2	2.11
CO3	2	2	2	2	2					2	3	2	2	2	2.10
CO4	3	2	2	2	2					2	2	2	2	2	2.10
CO5	2	2	2	2	2					2		3	2	2	2.11
PO Attainment	2.20	2.00	2.00	2.20	2.20	-	-	-	-	2.00	2.50	2.20	2.00	2.00	2.13

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T K R COLLEGE OF ENGINEERING & TECHNOLOGY
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DEPARTMENT OF INFORMATION TECHNOLOGY -R18
INTERNET OF THINGS - B67PE1

B.Tech. VII Semester

L/T/P/C
3/0/0/ 3

COURSE OBJECTIVES:
1. To introduce the terminology, technology and its applications
2. To introduce the concept of M2M (machine to machine) with necessary protocols
3. To introduce the Python Scripting Language which is used in many IoT devices
4. To introduce the Raspberry PI platform, that is widely used in IoT applications
5. To introduce the implementation of web based services on IoT devices.

COURSE OUTCOMES:
1. Able to understand IOT and API's and various technologies using IOT.
2. Able to identify network function virtualization.
3. Able to use various features of Python.
4. Able to work on the IOT devices.
5. Able to develop IOT web application using Python.

UNIT-I:
Introduction to Internet of Things –Definition and Characteristics of IoT, Physical Design of IoT – IoT Protocols, IoT communication models, Iot Communication APIs, IoT enabled Technologies – Wireless Sensor Networks, Cloud Computing, Big data analytics,

Communication protocols, Embedded Systems, IoT Levels and Templates, Domain Specific IoTs – Home, City, Environment, Energy, Retail, Logistics, Agriculture, Industry, health and Lifestyle.

UNIT-II:
IoT and M2M – Software defined networks, network function virtualization, difference between SDN and NFV for IoT. Basics of IoT System Management with NETCOZF, YANG- NETCONF, YANG, SNMP NETOPEER

UNIT- III:
Introduction to Python - Language features of Python, Data types, data structures, Control of flow, functions, modules, packaging, file handling, data/time operations, classes, Exception handling. Python packages - JSON, XML, HTTP Lib, URL Lib, SMTP Lib.

UNIT-IV:
IoT Physical Devices and Endpoints - Introduction to Raspberry PI - Interfaces (serial, SPI, I2C). Programming – Python program with Raspberry PI with focus of interfacing external gadgets, controlling output, reading input from pins.

UNIT-V:
IoT Physical Servers and Cloud Offerings – Introduction to Cloud Storage models and communication APIs. Webserver – Web server for IoT, Cloud for IoT, Python web application framework. Designing a RESTful web API

TEXT BOOKS:
1. Internet of Things - A Hands-on Approach, Arshdeep Bahga and Vijay Madisetti, Universities Press, 2015, ISBN: 9788173719547
2. Getting Started with Raspberry Pi, Matt Richardson & Shawn Wallace, O'Reilly (SPD), 2014, ISBN: 9789350239759

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Subject Name: Internet of Things   **Subject Code:** B67PE1

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	2	3	1	1						2	2	2	2	1	1.78
CO2	1		1	3							2		1	1	1.50
CO3	2		2	2						2			2	1	1.83
CO4	1	2	2	2					3		2	1	1	1	1.67
CO5	2		2	2						3			1	1	1.83
PO Attainment	1.60	2.50	1.60	2.00	-	-	-	-	3.00	2.33	2.00	1.50	1.40	1.00	1.89

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DEPARTMENT OF INFORMATION TECHNOLOGY -R18

ADVANCED COMMUNICATION SKILLS LAB – BE23

B.Tech. VII Semester

L/T/P/C
3/0/0/1.5

INTRODUCTION

A course on Advanced Communication Skills (ACS) Lab is considered essential at the third year level of B.Tech and B.Pharmacy courses. At this stage, the students need to prepare themselves for their career which requires them to listen to, read, speak and write in English both for their professional and interpersonal communication. The main purpose of this course is to prepare the students of Engineering for their placements.

COURSE OBJECTIVES:
1. To improve students' fluency in spoken English
2. To enable them to listen to English spoken at normal conversational speed
3. To help students develop their vocabulary
4. To read and comprehend texts in different contexts
5. To communicate their ideas relevantly and coherently in writing
6. To make students industry-ready
7. To help students acquire behavioral skills for their personal and professional life
8. To respond appropriately in different socio-cultural and professional contexts
9. To sensitize the importance of Soft Skills and people skills

COURSE OUTCOMES:
Students will be able to:
1. Acquire vocabulary and use it contextually
2. Listen and speak effectively
3. Develop proficiency in academic reading and writing
4. Increase possibilities of job prospects
5. Communicate confidently in formal and informal contexts
6. Develop interpersonal communication skills

Syllabus
The following course activities will be conducted as part of the Advanced English Communication Skills (AECS) Lab:

UNIT-I:
Inter-personal Communication and Building Vocabulary – Starting a Conversation – Responding Appropriately and Relevantly – Using Appropriate Body Language – Role Play in Different Situations – Synonyms and Antonyms, One-word Substitutes, Prefixes and Suffixes, Idioms and Phrases and Collocations.

UNIT-II:
Reading Skills and Group Discussion–General Vs Local Comprehension, Reading for Facts, Guessing Meanings from Context, Skimming, Scanning, Inferring Meaning and practice with different texts.

UNIT-III:
Writing Skills – Structure and Presentation of Different Types of Writing, Letter writing / Resume Writing/ e-correspondence/statement of purpose/ Technical Report Writing/Styles-Types-Report in Manuscript format.

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
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Accredited by NAAC with 'A' Grade)

Department of Information Technology
A.Y.2022-23

Subject Name: Advanced Communication Skills Lab

Subject Code: BE23

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attainment
CO1	2	2	1	1						3	2	2	2	1	1.78
CO2	1	1	1	2					3		2		1	1	1.50
CO3	2		2	2						2		3	2	1	2.00
CO4	1	2	2	2					2		3	1	1	1	1.67
CO5	2		2	2						3		1	1	1	1.71
PO Attainment	1.60	1.67	1.60	1.80	-	-	-	-	2.50	2.67	2.33	1.75	1.40	1.00	1.83

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