



Department of Computer Science and Engineering

MINUTES OF THE BOARD OF STUDIES

Meeting held on 19th December 2025 at 10:00AM in the Board Room

The following members were present in the meeting.

S.No	Name of the Member	Designation	Signature
1.	Dr. D Aruna Kumari, Professor & Head, CSE, VJIT	Chairman	
2.	Dr. S. Suresh Kumar, Asst. Professor in IT, JNTUH UCEJ	JNTU Nominee	
3.	Dr. V. Vijay Kumar, Dean, CSE & IT and Director C&ACR, AU	Member	
4.	Dr. M. Nagamani, Associate Professor, School of Computer and Information Sciences, University of Hyderabad	Member	
5.	Dr. M. Rama Bai, Professor, Dept. of Emerging Technology, MGIT	Member	
6.	Dr. Kalyan Sarvepalli, Principal Consultant, Infosys.	Member	
7.	Ms. G. Srija, Software Engineer, HSBC	Member	
8.	Dr. A. Obulesh, Head, IT, VJIT	Member	
9.	Dr. KSRK Sarma, Head, CSE(DS), VJIT	Member	
10.	Dr. N. Anusha, Head, CSE(AI&ML), VJIT	Member	
11.	Dr. Ravi Mathey, Professor, CSE, VJIT	Member	
12.	Dr. Ch. Ramesh, Associate Professor, CSE, VJIT	Member	
13.	Dr. K. Rajesh Kannan, Associate Professor, CSE, VJIT	Member	
14.	Mrs. B. Sailaja, Associate Professor, CSE, VJIT	Member	



Resolutions

- Item No. 1** : **Approval of B.Tech. (CSE) II Year Course Structure of R-25 regulations**
The Chairman of BoS presented a detailed course structure of B.Tech.(CSE) II year under R-25 regulations.
- Resolution 1** : The members after thorough discussion approved the course structure of B.Tech. (CSE) II Year. The details of the course structure are given in **Annexure - 1**
Noted and Approved.
- Item No. 2** : **Approval of B.Tech. (CSE) II Year Syllabi of R-25 regulations**
The Chairman presented a detailed syllabus of B.Tech. (CSE) II Year.
- Resolution 2** : The members after thorough discussion approved the syllabi of B.Tech. (CSE) II Year. The details of the syllabi approved are given in **Annexure – 2**.
Noted and Approved.
- Item No. 3** : **Approval of Substitute subjects for Rejoining students**
The Chairman presented the details of substitute subjects to study by the rejoining students.
- Resolution 3** : The members after thorough discussion approved the substitute subjects to the rejoined students (Regulation Change)
The details of the substitute subjects are given in **Annexure – 3**.
Noted and Approved.
- Item No.4** : **Approval of courses of B.Tech. (ECE) II Year Skill Development Courses of R-25 regulations**
The Chairman of BoS presented the details of skill development courses offered to ECE students.
- Resolution 4** : The members after thorough discussion approved the skill development courses of B.Tech. (ECE) II Years.
Noted and Approved
- Item No.5** : The BoS Chairman is also authorized to add or remove professional/substitute/Open Elective courses with the approval of internal BoS members and through mail confirmation from the external BoS members.
- Resolution 5** : The BoS Members have agreed to authorize the BoS Chairman to add or remove professional/substitute/Open Elective courses with the approval of internal BoS members and through mail confirmation from the external BoS members.
Noted and Approved.
- Item No.6** : **To approve the Panel of examiners**
The BoS Chairman emphasized the necessity of Panel of Examiners. Their services will be utilized

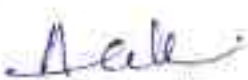
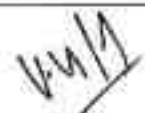


in the preparation of End-Semester Question paper(s), Evaluation of End-Semester Examination Answer Scripts. They will be paid remuneration as per the recommendations of College Finance Committee.

Resolution 6 : The BoS Chairman is authorized to prepare the Panel of Examiners for all the B.Tech (CSE) courses in consultation with the senior faculty members of the dept. the same may be presented to the Examination branch (Autonomous) for further processing

Noted and Approved.

Signatures of the Members Present:

 Dr. D Aruna Kumari	 Dr. S. Suresh Kumar	 Dr. V. Vijay Kumar	 Dr. M. Nagamani
 Dr. M. Rama Bai	 Dr. Kalyan Sarvepalli	 Ms. G. Srija	 Dr. A. Obulesh
 Dr. KSRK Sarma	 Dr. N. Anusha	 Dr. Ravi Mathey	 Dr. Ch. Ramesh
 Dr. K. Rajesh Kannan	 Mrs. B. Sailaja		

B. TECH SECOND YEAR COURSE STRUCTURE**B. Tech II Year I Semester**

Sl. No.	Course Category	Course Title	L	T	P	Credits
1	PC	Discrete Mathematics	3	0	0	3
2	PC	Computer Organization and Architecture	3	0	0	3
3	PC	Object Oriented Programming through java	3	0	0	3
4	PC	Operating Systems	3	0	0	3
5	PC	Database Management Systems	3	0	0	3
6	HS	Innovation and Entrepreneurship	2	0	0	2
7	PC Lab	Object Oriented Programming through java Lab	0	0	2	1
8	PC Lab	Operating Systems Lab	0	0	2	1
9	PC Lab	Database Management Systems Lab	0	0	2	1
10	SD	Django Lab	0	0	2	1
11	ES	Environmental Science	1	0	0	1
Total			18	0	8	22

B. Tech II Year II Semester

Sl. No.	Course Category	Course Title	L	T	P	Credits
1	HS	Probability and Statistics	3	0	0	3
2	PC	Full Stack Development	3	0	0	3
3	PC	Algorithm design and Analysis	3	0	0	3
4	PC	Computer Networks	3	0	0	3
5	PC	Machine Learning	3	0	0	3
6	HS	Computational Mathematics Lab	0	0	2	1
7	PC Lab	Full Stack Development Lab	0	0	2	1
8	PC Lab	Computer Networks Lab	0	0	2	1
9	PC Lab	Machine Learning Lab	0	0	2	1
10	SD	Data Visualization - Power BI	0	0	2	1
Total			15	0	10	20

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Maganani
5. Dr. M. Rama Bai	6. Dr. Kalyan Garrepalli	7. Ms. V. Srija	8. Dr. A. Ganesh
9. Dr. N. Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. Ch. Ramesh
13. Dr. K. Rajesh Kannan	14. Dr. B. Saralaja	B. Tech (CSE – R25)	

DISCRETE MATHEMATICS**B.Tech II Year I Semester****Course Code:**

L	T	P	C
3	0	0	3

Course Outcomes:

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

1. Understand and construct precise mathematical proofs.
2. Apply logic and set theory to formulate precise statements.
3. Analyze and solve counting problems on finite and discrete structures.
4. Describe and manipulate sequences.
5. Apply graph theory in solving computing problems

UNIT-I

Mathematical logic: Introduction, Statements and Notation, Connectives & Truth Tables, Normal Forms (DNF, CNF, PDNF, PCNF).

UNIT-II

Theory of Inference for the Statement Calculus, The Predicate Calculus, Inference Theory of the Predicate Calculus.

Set theory: Introduction, Basic Concepts of Set Theory,

Relations: Special Properties of Binary Relations, Partially ordered relations, Hasse diagrams, Lattices.

UNIT-III

Functions: Composition of functions Inverse Functions

Algebraic Structures: Algebraic Systems-Examples and General Properties, Semi groups and Monoids, groups; sub groups, homomorphism, Isomorphism.

UNIT-IV

Elementary Combinatorics: Basics of Counting, Combinations and Permutations, Enumeration of Combinations and Permutations, Enumerating Combinations and Permutations with Repetitions, Enumerating Permutation with Constrained Repetitions, Binomial Coefficient, The Binomial and Multinomial Theorems, The Principle of Exclusion.

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Jagannath
5. Dr. M. Rama Bai	6. Dr. Kalpana Suresh Palle	7. Ms. G. Srida	8. Dr. A. Chaitanya
9. Dr. K. Ramesh Kumar	10. Dr. N. Anusha	11. Dr. Ravi Mathay	12. Dr. J. Ramesh
13. Dr. K. Ramesh Kumar	14. Dr. B. Sallaja		B. Tech (CSE – R25)

UNIT-V

Graph Theory: Basic Concepts, Isomorphism and Subgraphs, Trees and their Properties, Spanning Trees, Directed Trees, Binary Trees, Planar Graphs, Euler's Formula, Multi-graphs and Euler Circuits, Hamiltonian Graphs, Chromatic Numbers, The Four-Color Problem.

TEXT BOOKS:

1. Discrete Mathematical Structures with Applications to Computer Science: J.P. Tremblay, R. Manohar, McGraw-Hill, 1st ed.
2. Discrete Mathematics for Computer Scientists & Mathematicians: Joe L. Mott, Abraham Kandel, Theodore P. Baker, Prentis Hall of India, 2nd ed.

REFERENCE BOOKS:

1. Discrete and Combinatorial Mathematics - an applied introduction: Ralph. P. Grimald, Pearson education, 5th edition.
2. Discrete Mathematical Structures: Thomas Kosy, Tata McGraw Hill Publishing co.

1. Dr. A. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vinay Kumar	4. Dr. M. Nagamani
5. Dr. M. Rama Bai	6. Dr. Kalyan Sarvepalli	7. Mr. G. Sri	8. Dr. A. Dhanesh
9. Dr. K. S. Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. A. Ramesh
13. Dr. K. Ramesh Babu	14. Dr. B. Sathya		B. Tech (CSE – R25)

COMPUTER ORGANIZATION AND ARCHITECTURE**B.Tech II Year I Semester****Course Code:**

L	T	P	C
3	0	0	3

Course Outcomes:

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

1. Understand the basics of instruction sets and their impact on processor design.
2. Demonstrate an understanding of the design of the functional units of a digital computer system.
3. Evaluate cost performance and design trade-offs in designing and constructing a computer processor including memory.
4. Design a pipeline for consistent execution of instructions with minimum hazards.
5. Recognize and manipulate representations of numbers stored in digital computers.

UNIT-I**Boolean Algebra and Logic Gates:** Binary codes, Binary Storage and Registers, Binary logic, Digital logic gates.**Data Representation:** Data types, Complements, Fixed Point Representation, Floating Point Representation**Digital Computers:** Introduction, Block diagram of Digital Computer, Definition of Computer Organization, Computer Design and Computer Architecture.**UNIT-II****Combinational Logic:** Combinational Circuits, Analysis procedure Design procedure, Binary Adder Subtractor Decimal Adder, Binary multiplier, magnitude comparator, Decoders, Encoders, Multiplexers, HDL for combinational circuits.**Sequential Logic:** Sequential circuits, latches, Flip-Flops Analysis of clocked sequential circuits, state Reduction and Assignment, Design Procedure. Registers, shift Registers, Ripple counters; synchronous counters, other counters:**UNIT-III****Register Transfer Language and Micro operations:** Register Transfer language, Register Transfer, Bus and memory transfers, Arithmetic Micro operations, logic micro operations, shift micro operations, Arithmetic logic shift unit.

1. Dr. B. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Jagamani
5. Dr. M. Rama Bai	6. Dr. Kalpana Saravalli	7. Ma. G. Saja	8. Dr. A. Chandra
9. Dr. K. R. Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathrey	12. Dr. Ramesh
13. Dr. K. Ramesh Kannan	14. Dr. B. Suleja		B. Tech (CSE – R25)

Basic Computer Organization and Design: Instruction codes, Computer Registers, Computer Instructions, Timing and Control, Instruction cycle, Memory Reference Instructions, Input – Output and Interrupt.

UNIT-IV

Microprogrammed Control: Control memory, Address sequencing, micro program example, design of control unit.

Central Processing Unit: General Register Organization, Instruction Formats, Addressing modes, Data Transfer and Manipulation, Program Control.

Computer Arithmetic: Addition and subtraction, multiplication Algorithms, Division Algorithms, Floating – point Arithmetic operations. Decimal Arithmetic unit, Decimal Arithmetic operations.

UNIT-V

Input-Output Organization: Input-Output Interface, Asynchronous data transfer, Modes of Transfer, Priority Interrupt Direct memory Access.

Memory Organization: Memory Hierarchy, Main Memory, Auxiliary memory, Associate Memory, Cache Memory.

TEXT BOOKS:

1. Digital Design – M. Morris Mano, Third Edition, Pearson/PHI.
2. Computer System Architecture – M. Morris Mano, Third Edition, Pearson/PHI.

REFERENCE BOOKS:

1. Switching and Finite Automata Theory, ZVI. Kohavi, Tata Mc Graw Hill.
2. Computer Organization – Carl Hamacher, Zvonks Vranesic, SaeedZaky, 5th Edition, McGraw Hill.
3. Computer Organization and Architecture – William Stallings Sixth Edition, Pearson/PHI.
4. Structured Computer Organization – Andrew S. Tanenbaum, 4th Edition, PHI/Pearson.

1. Dr. D. Arana Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Nagamani
5. Dr. M. Rama Bsi	6. Dr. Kalyanaravipalli	7. Ms. G. S. S.	8. Dr. A. Ojha
9. Dr. K. R. Sarmu	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. Ch. Ramesh
13. Dr. K. Rajesh Kannan	14. Dr. B. Sallaja		B. Tech (CSE – R25)

OBJECT ORIENTED PROGRAMMING THROUGH JAVA**B.Tech II Year I Semester****Course Code:**

L	T	P	C
3	0	0	3

Course Outcomes:

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

1. Demonstrate the behavior of programs involving the basic programming constructs like control structures, constructors, string handling and garbage collection.
2. Demonstrate the implementation of inheritance (multilevel, hierarchical and multiple) by using extend and implement keywords
3. Use multithreading concepts to develop inter process communication.
4. Understand the different types of file I/O, Exploring String, usage of Container classes
5. Develop web applications using Servlets and JDBC.

UNIT-I

Object oriented thinking and Java Basics- OOP concepts, History of Java, Java buzzwords, data types, variables, operators, expressions, control statements, arrays, type casting, simple java program, concepts of classes, objects, constructors, methods, access control, this keyword, garbage collection, overloading methods and constructors, parameter passing, object Class and wrapper classes.

UNIT-II

Inner classes in Java: Types of inner classes, Creating static / non-static inner classes, Local and anonymous inner classes.

Inheritance, Interfaces and Packages— Types of Inheritance, benefits of inheritance, super, final keyword with inheritance, method overriding, abstract classes. Defining and implementing interfaces.

Packages: Defining, Creating and Accessing a Package, Understanding CLASSPATH, Importing packages.

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Sugumar
5. Dr. M. Rama Bai	6. Dr. Kalyan Satepalli	7. Ms. G. Sita	8. Dr. A. Obulesh
9. Dr. K. K. Srinu	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. Ch. Ramesh
13. Dr. K. Rajesh Kumar	14. Dr. B. Sridha		B. Tech (CSE – R25)

UNIT-III

Exception handling and Multithreading-- Concepts of exception handling, benefits of exception handling, exception hierarchy, usage of try, catch, throw, throws and finally, built in exceptions, User Defined Exceptions, Differences between multithreading and multitasking, thread life cycle, creating threads, thread priorities, synchronizing threads, inter thread communication, thread groups, daemon threads.

UNIT-IV

Exploring String, StringBuffer, StringBuilder classes and StringTokenizer.

Java.io package: File, Byte Streams: InputStream, OutputStreams, FileInputStream, FileOutputStream, Character Streams: Reader, Writer, FileReader, FileWriter, BufferedReader, BufferedWriter, InputStreamReader.

java.util package- Collection Interfaces: List, Set, Map. Collection classes: LinkedList, TreeSet, HashMap, Enumerator, Iterator, ListIterator, Calendar, Random, Scanner, Comparator, Comparable.

UNIT-V

Java Servlets: Overview of Java Servlet, Servlet Life cycle, Request and Response methods, Servlet Configuration, Servlet Context, Approaches to Session tracking, Servlet Collaboration.

Database Connections: Introduction to JDBC, JDBC Drivers, Connecting to a Database using JDBC.

TEXT BOOKS:

1. Java the complete reference, 13th edition, Herbert schildt, Dr. Denny Coward, Mc Graw Hill.
2. Understanding OOP with Java, updated edition, T. Budd, Pearson education.

REFERENCE BOOKS:

1. An Introduction to programming and OO design using Java, J.Nino and F.A. Masch, John Wiley & sons.
2. An Introduction to OOP, third edition, T. Budd, Pearson education.
3. Introduction to Java programming, Y. Daniel Liang, Pearson education.

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Sugamini
5. Dr. M. Rama Eki	6. Dr. Kalyan Sarvepalli	7. Ms. G. Srija	8. Dr. A. Obhatesh
9. Dr. K. R. Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. Ch. Ramesh
13. Dr. K. Rajesh Karman	14. Dr. B. Sathya		B. Tech (CSE – R25)

4. An introduction to Java programming and object-oriented application development, R.A. Johnson- Thomson,
5. Core Java 2, Vol 1, Fundamentals, Cay.S. Horstmann and Gary Cornell, eighth Edition, Pearson Education.

1. Dr. B. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Nagamani
5. Dr. M. Rama Bai	6. Dr. Kalyan Chinnappalli	7. Ms. G. Sana	8. Dr. A. Ojha
9. Dr. KS. S. Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. N. Ramesh
13. Dr. K. Rajesh Kannan	14. Dr. B. Sathya		B. Tech (CSE – R25)

OPERATING SYSTEMS**B.Tech II Year I Semester****Course Code:**

L	T	P	C
3	0	0	3

Course Outcomes:

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

1. Understand the fundamental concepts, structures of operating systems, and process management techniques.
2. Analyze CPU scheduling, process management, and synchronization mechanisms.
3. Explain memory management techniques and virtual memory concepts with page replacement algorithms.
4. Explain and apply interprocess communication mechanisms and file system interfaces using appropriate system calls
5. Analyze deadlock situations and apply suitable prevention, avoidance, detection, and recovery techniques

UNIT-I

Operating System: Introduction, Structures - Simple Batch, Multiprogrammed, Time-shared, Personal Computer, Parallel, Distributed Systems, Real-Time Systems, System components, Operating System services, System Calls

Process: Process concepts, Process Control block (PCB), Operations on processes, Cooperating Processes, Threads

UNIT-II

CPU Scheduling: Scheduling Criteria, Scheduling Algorithms, Multiple -Processor Scheduling, System call interface for process management-fork, exit, wait, waitpid, exec

Process Management and Synchronization: The Critical Section Problem, Synchronization Hardware, Semaphores, and Classical Problems of Synchronization, Critical Regions, Monitors

UNIT-III

Memory Management and Virtual Memory: Logical versus Physical Address Space, Swapping, Contiguous Allocation, Paging, Segmentation, Segmentation with Paging, Demand Paging, Page Replacement, Page Replacement Algorithms.

1. Dr. D. Aruna Kumari	2. Dr. S. Surash Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Nigamathi
5. Dr. M. Rama Bai	6. Dr. Salyan Sarvepalli	7. Ms. G. Srija	8. Dr. A. Chandra
9. Dr. K. S. Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathy	12. Dr. Ch. Ramesh
13. Dr. N. Rajesh Kannan	14. Dr. B. Sallaja		B. Tech (CSE – R25)

UNIT-IV

Interprocess Communication Mechanisms: IPC between processes on a single computer system, IPC between processes on different systems, using pipes, FIFOs, message queues, shared memory.

File System Interface and Operations: Access methods, Directory Structure, Protection, File System Structure, Allocation methods, Free-space Management. Usage of open, create, read, write, close, lseek, stat, ioctl system calls.

UNIT-V

Deadlocks: System Model, Deadlocks Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, and Recovery from Deadlock.

TEXT BOOKS:

1. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley
2. Advanced programming in the UNIX environment, W.R. Stevens, Pearson education.

REFERENCE BOOKS:

1. Operating Systems- Internals and Design Principles, William Stallings, Fifth Edition-2005, Pearson Education/PHI
2. Operating System A Design Approach- Crowley, TMH.
3. Modern Operating Systems, Andrew S. Tanenbaum 2nd edition, Pearson/PHI
4. UNIX programming environment, Kernighan and Pike, PHI/ Pearson Education
5. UNIX Internals -The New Frontiers, U. Vahalia, Pearson Education.

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Angamam
5. Dr. M. Rama Hai	6. Dr. Kalyani Sarvepalli	7. Ms. D. Saja	8. Dr. A. Obulesu
9. Dr. N. Anusha	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. Ch. Ramesh
13. Dr. K. Jayash Kannan	14. Dr. B. Saranya		B. Tech (CSE – R25)

DATABASE MANAGEMENT SYSTEMS**B.Tech II Year I Semester****Course Code:**

L	T	P	C
3	0	0	3

Course Outcomes:

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

1. Gain knowledge of fundamentals of DBMS, database design.
2. Apply basic SQL concepts for effective retrieval and management of data.
3. Analyze various Normal Forms to carry out the concepts of Schema Refinement.
4. Understand the basics of transaction processing and concurrency control.
5. Understand the database storage structures and access techniques

UNIT-I

Database System Applications: A Historical Perspective, File Systems versus a DBMS, the Data Model, Levels of Abstraction in a DBMS, Data Independence, Structure of a DBMS

Introduction to Database Design: Database Design and ER Diagrams, Entities, Attributes, and Entity Sets, Relationships and Relationship Sets, Additional Features of the ER Model, Conceptual Design With the ER Model

UNIT-II

Introduction to the Relational Model: Integrity constraint over relations, enforcing integrity constraints, querying relational data, logical database design, introduction to views, destroying/altering tables and views.

Relational Algebra, Tuple relational Calculus, Domain relational calculus.

UNIT-III

SQL: QUERIES, CONSTRAINTS, TRIGGERS: form of basic SQL query, UNION, INTERSECT, and EXCEPT, Nested Queries, aggregation operators, NULL values, complex integrity constraints in SQL, triggers and active databases.

Schema Refinement: Problems caused by redundancy, decompositions, problems related to decomposition, reasoning about functional dependencies, FIRST, SECOND, THIRD normal forms, BCNF, lossless join decomposition, multivalued dependencies, FOURTH normal form, FIFTH normal form.

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Nagathani
5. Dr. M. Rama Bai	6. Dr. Kalyan Chirupalli	7. Ms. G. Srida	8. Dr. A. Obulesh
9. Dr. K. S. Sarmu	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. Ch. Ramesh
13. Dr. K. K. Kannan	14. Dr. B. Anjan		B. Tech (CSE – R25)

UNIT-IV

Transaction Concept, Transaction State, Implementation of Atomicity and Durability, Concurrent Executions, Serializability, Recoverability, Implementation of Isolation, Testing for serializability, Lock Based Protocols, Timestamp Based Protocols, Validation- Based Protocols.

UNIT-V

Hashing: Hash Based Indexing, Tree based Indexing, Comparison of File Organizations, Indexes- Intuitions for tree Indexes, Indexed Sequential Access Methods (ISAM)

B+ Trees: A Dynamic Index Structure.

TEXT BOOKS:

1. Database System Concepts, Silberschatz, Korth, McGraw hill, V edition.3rd Edition
2. Database Management Systems, Raghurama Krishnan, Johannes Gehrke, Tata Mc Graw Hill

REFERENCE BOOKS:

1. Database Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.
2. Fundamentals of Database Systems, Elmasri Navrate, Pearson Education
3. Introduction to Database Systems, C. J. Date, Pearson Education
4. Oracle for Professionals, The X Team, S.Shah and V. Shah, SPD.
5. Database Systems Using Oracle: A Simplified guide to SQL and PL/SQL, Shah, PHI.
6. Fundamentals of Database Management Systems, M. L. Gillenson, Wiley Student Edition.

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Nagamani
5. Dr. M. Rama Eli	6. Dr. Kalyan Survepalli	7. Ms. G. Srija	8. Dr. A. Obudha
9. Dr. K. R. Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathrey	12. Dr. C. Ramesh
13. Dr. K. Rajesh Kannan	14. Dr. B. Sathya		B. Tech (CSE – R25)

OBJECT ORIENTED PROGRAMMING THROUGH JAVA LAB**B.Tech II Year I Semester****Course Code:**

L	T	P	C
0	0	2	1

Course Outcomes:

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

1. Apply object-oriented programming concepts to develop Java Programs for solving real-world problems.
2. Implement Java programs using abstract classes and related OOP principles.
3. Develop multithreaded Java applications to handle concurrent execution
4. Utilize the Java Collections Framework to efficiently manage and process data.
5. Create basic web applications using Java Servlets and JDBC for database connectivity.

List of Experiments:

1. Implement a Java Program to accept Student Name and Roll Number as command Line Arguments and Display the output.
2. Implement a Java Program that prompts the user for an integer and then prints out all prime numbers up to that integer.
3. Implement a Java Program that uses both recursive and non recursive functions to print the nth value in the Fibonacci sequence.
4. Implement a Java Program to create an Employee class to read and display the data (emp_id, emp_name, Department, salary, experience) using constructor and method.
5. Implement a Java Program to illustrate method and constructor overloading.
6. Implement a Java Program to multiply two given matrices by passing objects as parameters.
7. Implement a Java Program to illustrate different types of inheritances.
8. Implement a java Program to illustrate Method Overriding.
9. Implement a Java Program to create an abstract class named Shape that contains two integers and an empty method named print Area (). Provide three classes named Rectangle, Triangle, and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method print Area () that prints the area of the given shape.
10. Implement a Java Program to illustrate the use of Creating and Importing Packages.

1. Dr. U. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Nagamani
5. Dr. M. Ramu Bai	6. Dr. Kalyan Barvepalli	7. Ms. G. Srinu	8. Dr. A. Obilca
9. Dr. K. Srinu Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. Ch. Ramesh
13. Dr. K. Rajesh Kannan	14. Dr. B. Sailaja		B. Tech (CSE – R25)

11. Implement a Java Program to handle Multiple Exceptions.
12. Implement a Java Program to create User Defined Exceptions.
13. Implement a Java Program that implements a multi-thread application that has three threads. The first thread generates a random integer every 1 second and if the value is even, the second thread computes the square of the number and prints. If the value is odd, the third thread will print the value of the cube of the number.
14. Implement a Java Program that implements the Producer – Consumer Problem using the concept of Inter Thread Communication.
15. Write a Java Program to list all the files in a directory including the files present in all its subdirectories.
16. Implement a Java Program that loads names and phone numbers from a text file where the data is organized as one line per record and each field in a record is separated by a tab (\t). It takes a name or phone number as input and prints the corresponding other value from the hash table (hint: use hash tables).
17. Implement a Java Program that reads a line of integers, and then displays each integer, and the sum of all the integers
18. Implement a Java Program to make frequency count of words in a given text
19. Implement a Java Program to establish Database connection and execute queries using JDBC.
20. Installation and Configuration of Tomcat and deploy a simple "Hello World" Servlet.

TEXTBOOKS:

1. Java for Programmers, P. J. Deitel and H. M. Deitel, 10th Edition Pearson education.
2. Thinking in Java, Bruce Eckel, Pearson Education.

REFERENCE BOOKS:

1. Java Programming, D. S. Malik and P. S. Nair, Cengage Learning.
2. Core Java, Volume 1, 9th edition, Cay S. Horstmann and G Cornell, Pearson.

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Suganthani
5. Dr. M. Rama Bai	6. Dr. Kalyan Chavapalli	7. Ms. G. Sri	8. Dr. A. Chulesh
9. Dr. K. S. Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. Ch. Ramesh
13. Dr. K. Rajesh Kumar	14. Dr. B. Sathya		B. Tech (CSE – R25)

OPERATING SYSTEMS LAB**B.Tech II Year I Semester****Course Code:**

L	T	P	C
0	0	2	1

Course Outcomes:

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

1. Simulate and analyze CPU scheduling algorithms and evaluate their performance based on scheduling criteria.
2. Apply UNIX/Linux system calls to implement file handling, process creation, and inter-process control.
3. Implement synchronization solutions such as Producer–Consumer using semaphores to handle concurrency issues.
4. Simulate memory management techniques and page replacement policies to understand efficient memory utilization.
5. Implement C program Banker's Algorithm for deadlock avoidance method

LIST OF EXPERIMENTS:

1. Implement C programs to simulate the following CPU Scheduling algorithms
 - a) FCFS
 - b) SJF
 - c) Round Robin
 - d) priority
2. Implement programs using the I/O system calls of UNIX/LINUX operating system (open, read, write, close, lseek, stat, fork, exit)
3. Implement a C program to implement the Producer – Consumer problem using semaphores using UNIX/LINUX system calls.
4. Implement C programs to simulate the following memory management techniques
 - a) Paging
 - b) Segmentation
5. Implement C programs to simulate Page replacement policies
 - a) FCFS
 - b) LRU
 - c) Optimal
6. Implement C programs to illustrate the following IPC mechanisms
 - a) Pipes
 - b) FIFOs
 - c) Message Queues
 - d) Shared Memory
7. Implement a C program to simulate Bankers Algorithm for Deadlock Avoidance.

TEXT BOOKS:

1. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne. 7th Edition, John Wiley.

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Nagantani
5. Dr. M. Ratna Bai	6. Dr. Saiyan Sarvepalli	7. Ms. G. Srija	8. Dr. A. Obulresh
9. Dr. KSR Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. Ch. Ramesh
13. Dr. K. Ramesh Kannan	14. Dr. B. Sakshi		B. Tech (CSE – R25)

2. Advanced programming in the Unix environment, W. R. Stevens, Pearson education.

REFERENCE BOOKS:

1. Operating Systems – Internals and Design Principles, William Stallings, Fifth Edition–2005, Pearson Education/PHI.
2. Operating System - A Design Approach-Crowley, TMH.
3. Modern Operating Systems, Andrew S Tanenbaum, 2nd edition, Pearson/PHI.
4. UNIX Programming Environment, Kernighan and Pike, PHI/Pearson Education.
5. UNIX Internals: The New Frontiers, U. Vahalla, Pearson Education.

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Vagamani
5. Dr. M. Rama Bai	6. Dr. Kalyan Sarvepalli	7. Ms. G. Raja	8. Dr. A. Othulaksh
9. Dr. P. K. Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. R. Ramesh
13. Dr. K. Ramesh Kannan	14. Dr. B. S. Sridhar		B. Tech (CSE – R25)

DATABASE MANAGEMENT SYSTEMS LAB**B.Tech II Year I Semester****Course Code:**

L	T	P	C
0	0	2	1

Course Outcomes:

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

1. **apply** conceptual database design principles using the **E-R model**.
2. **Apply DDL commands** to create and modify database schemas and **use DML commands** to manipulate data in relational databases.
3. **execute SQL queries** using **joins, constraints, set operations** and **nested and correlated subqueries**.
4. **Develop and use database programming components** using **triggers**
5. **Develop solutions for database applications** using **procedures, cursors**.

List of Experiments:

1. Concept design with E-R Model
2. Relational Model
3. Normalization
4. Practicing DDL commands
5. Practicing DML commands
6. A) Querying (using ANY, ALL, UNION, INTERSECT, JOIN, Constraints etc.)
B) Nested, Correlated subqueries
7. Queries using Aggregate functions, GROUP BY, HAVING and Creation and dropping of Views.
8. Triggers (Creation of insert trigger, delete trigger, update trigger)
9. Procedures
10. Usage of Cursors

TEXTBOOKS:

1. Database Management Systems, Raghurama Krishnan, Johannes Gehrke, Tata Mc Graw Hill, 3rd Edition
2. Database System Concepts, Silberschatz, Korth, McGraw Hill, V edition.

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5. Dr. M. Rama Bai	6. Dr. Kalyan Sarvepalli	7. Ms. G. Sri	8. Dr. A. Obulesu
9. Dr. K. R. K. Sarma	10. Dr. K. Anusha	11. Dr. Ravi Mathey	12. Dr. Ch. Ramesh
13. Dr. K. Rajesh Kannan	14. Dr. B. Sailaja		B. Tech (CSE – R25)

REFERENCE BOOKS:

1. Database Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.
2. Fundamentals of Database Systems, Elmasri Navrate, Pearson Education
3. Introduction to Database Systems, C.J. Date, Pearson Education
4. Oracle for Professionals, The X Team, S. Shah and V. Shah, SPD.
5. Database Systems Using Oracle: A Simplified guide to SQL and PL/SQL, Shah, PHI.
6. Fundamentals of Database Management Systems, M. L. Gillenson, Wiley Student Edition.

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vinay Kumar	4. Dr. M. Vagaman
5. Dr. M. Rama Bai	6. Dr. Kalyan Sarvepalli	7. Ms. G. Saja	8. Dr. A. Obulesh
9. Dr. K. K. Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. R. Ramesh
13. Dr. K. Rajesh Kannan	14. Dr. B. Saritha		B. Tech (CSE – R25)

DJANGO LAB**B.Tech II Year I Semester****Course Code:**

L	T	P	C
0	0	2	1

Course Outcomes:

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

1. Design and Develop a responsive Web Application using HTML & CSS.
2. Build a responsive Web Application using Java Script, CSS, Flex & Grid.
3. Demonstrate understanding of the Django Framework
4. Implement Mailing, Cache and Session Management in Django Framework
5. Analyze, Design, Develop and Implement complete Web Applications using Django Framework

LIST OF EXPERIMENTS:

1. Build a Responsive Web Application for Registration Form, which contains User Name, Password, Date of Birth, Gender, Mail-id, Contact Number, Address and Submit Button.
2. Implement a JavaScript Program to Validate Registration Page using Regular Expression.
3. Build a Responsive Web Application for Shopping Cart with Registration, Login, Catalog and Cart Pages using CSS3 features, Flex and Grid.
4. Basics of Django Framework & Installation of required Software's.
5. Create a shopping cart web application and add a customized admin page for product catalog management for Experiment 3
6. Demonstrate Cache, Session Management for Student Login Application.
7. Create a Quiz Application using Django Framework along with SQLite3.
8. Create a Django application using generic views and forms
9. Create an Application for Working with Mails using Django Framework

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9. Dr. R. R. Sarma	10. Dr. N. Anusba	11. Dr. Ravi Mathey	12. Dr. G. Ramesh
13. Dr. K. Rishabh Kannan	14. Dr. B. Sathya		B. Tech (CSE – R25)

10. Create an application that fetches the weather information from openweathermap.org and the display the current and historical weather information using graphical representation using chart.js implement using Django
11. **Case Study:** Django Application for VJIT Student Portal and deploy it into GitHub.

REFERENCE BOOKS:

1. "Web Technologies: HTML, CSS, JavaScript" Uttam K. Roy
2. "Django for Beginners: Build Websites with Python and Django" William S. Vincent
3. "Python Web Development with Django" Jeff Forcier, Paul Bissex, Wesley Chun

Web URLs:

1. W3Schools Web Development Tutorials
<https://www.w3schools.com>
2. JavaScript Regular Expressions Guide – MDN
https://developer.mozilla.org/en-US/docs/Web/JavaScript/Guide/Regular_Expressions
3. Python Official Documentation
<https://www.python.org/doc/>
4. Python Tutorial (W3Schools)
<https://www.w3schools.com/python/>
5. Django Official Documentation
<https://docs.djangoproject.com>
6. Django Tutorials
<https://djangoproject.com/start/>

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Nigamani
5. Dr. M. Rama Bai	6. Dr. Kalyan Varvappalli	7. Ms. G. Sri	8. Dr. A. Obulesh
9. Dr. K. S. Sarmu	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. G. Ramesh
13. Dr. K. Rajesh Kannan	14. Dr. B. Sathya		B. Tech (CSE – R25)

FULL STACK DEVELOPMENT**B.Tech II Year II Semester****Course Code:**

L	T	P	C
3	0	0	3

Course Outcomes:

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

1. Design aesthetically appealing and responsive web pages using HTML and CSS.
2. Develop real-world React web applications and utilize related development tools.
3. Apply agile methodologies for rapid and efficient project development.
4. Build complete end-to-end applications from scratch using Node.js.
5. Understand and implement logical relationships between documents using MongoDB.

UNIT-I

Introduction to Full Stack: MVC pattern, Web Fundamentals. **HTML 5.0:** Basic tags, HTML DOM, Images, Tables, Lists, Forms, Layout, Graphics, span and div tags. **Cascading Style Sheets (CSS):** Types of CSS, CSS Selectors, CSS BOX Model, Text and Font, Color, CSS Positioning and CSS floating, CSS Grid layout Module, CSS Media Queries.

UNIT-II

JavaScript: Data Types & Type Conversion, JSON, Events, String and Date Functions, Local Storage, Object Oriented Programming (OOP) in JS, Arrow Functions, Async/Await, JavaScript Regular Expressions. **Bootstrap:** Introduction of Bootstrap, Container and Container-fluid, Bootstrap Carousel. **Bootstrap Components:** Button, Grid, Table, Form, Alert, Image, Tabs/Pill, Navbar, Modals.

UNIT-III

React JS: Introduction to React, React with JSX, Actual DOM vs React VDOM, Components, Lifecycle, State, Props, Fragments, Events, Router, Forms, Pagination, Tables, Portals, Hook, Signals, React 18 New Features.

Integration of Google MAP API and GPS Location Tracking: Incorporating Google MAP API and GPS Location Tracking for location-based services.

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Naganani
5. Dr. M. Rama Bai	6. Dr. Kalvani Sureshpalli	7. Ms. G. Sija	8. Dr. A. Obudosh
9. Dr. R. K. Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. S. Ramesh
13. Dr. K. Ramesh Kannan	14. Dr. B. Sathya		B. Tech (CSE – R25)

UNIT-IV

Node JS: Modules, Node Package Manager (npm), Creating Web Server, Sending Requests and Handling HTTP requests, Handling User Authentication with NodeJS, File System, Writing a file asynchronously and Other I/O Operations. **Events:** Event Emitter class, Inheriting Events and Returning event emitter. **Express JS:** Introduction to the Express framework – Server-side rendering with Templating Engines, Routing, Middleware, Custom Middleware, JWT Authentication.

UNIT-V

Mongo DB: Introduction, Importance of NoSQL databases, JSON Vs BSON, Data types and examples. CRUD Operations, Data Modelling & Schema Design, Indexing and Aggregation, MongoDB Replication and Sharding.

TEXT BOOKS:

1. Vasan Subramanian, "Pro MERN Stack: Full Stack Web App Development with Mongo, Express, React, and Node", Second Edition, Apress Publications, 2019.
2. David Hows, Peter Membrey, Eelco Plugge – "MongoDB Basics", Apress, 2014.

SUGGESTED READING:

1. Ethan Brown, "Web Development with Node and Express", O'Reilly Publishers, First Edition, 2014.

WEB RESOURCES:

1. <https://web.stanford.edu/class/cs142/index.html>
2. <https://nodejs.org/en/docs/>
3. <https://www.mongodb.com/>
4. <https://reactjs.org/>
5. <https://getbootstrap.com/docs/5.0/utilities/api/>
6. <https://edu.anarcho-copy.org/Programming%20languages/Node/>

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5. Dr. M. Rama Bai	6. Dr. R. Ravi Varma	7. Ms. C. S. Siva	8. Dr. A. Obalesh
9. Dr. KSRK Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. Ch. Ramesh
13. Dr. K. Rajesh Kannan	14. Dr. B. Saranya		B. Tech (CSE – R25)

ALGORITHMS DESIGN AND ANALYSIS**B.Tech II Year II Semester****Course Code:**

L	T	P	C
3	0	0	3

Course Outcomes:

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

1. Apply space and time complexity analysis using asymptotic notations.
2. Design divide-and-conquer algorithms and critically assess their runtime and space trade-offs.
3. Device backtracking and dynamic programming solutions.
4. Apply greedy methods and graph traversal algorithms
5. Analyse and Design branch-and-bound algorithms for NP-hard problems

UNIT-I

Introduction: Algorithm, Performance Analysis-Space complexity, Time complexity, Asymptotic Notations- Big oh notation, Omega notation, Theta notation, and Little oh notation.

Divide and conquer: General method, applications-Binary search, Quick sort, Merge sort, Strassen's matrix multiplication.

UNIT-II

Disjoint Sets: Disjoint set operations, union and find algorithms, Priority Queue- Heaps, Heapsort

Backtracking: General method, applications, n-queens problem, sum of subsets problem, graph coloring, Hamiltonian cycles.

UNIT-III

Dynamic Programming: General method, applications- Optimal binary search tree, 0/1 knapsack problem, All pairs shortest path problem, Traveling salesperson problem, Reliability design.

UNIT-IV

Greedy method: General method, applications- Job sequencing with deadlines, knapsack problem, Minimum cost spanning trees, Single source shortest path problem.

Basic Traversal and Search Techniques: Techniques for Binary Trees, Techniques for Graphs, Connected components, Biconnected components.

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5. Dr. M. Rama Bai	6. Dr. Kalpana Sureshbabu	7. Ms. G. Srija	8. Dr. A. Obulesh
9. Dr. K. R. S. Srinivas	10. Dr. N. Anusha	11. Dr. Ravi Mathay	12. Dr. C. Ramesh
13. Dr. K. R. S. Srinivas	14. Dr. B. Srinivas		B. Tech (CSE – R25)

UNIT-V

Branch and Bound: General method, applications - Travelling salesperson problem, 0/1 knapsack problem - LC Branch and Bound solution, FIFO Branch and Bound solution.

NP-Hard and NP-Complete problems: Basic concepts, non-deterministic algorithms, NP - Hard and NP-Complete classes, Cook's theorem.

TEXT BOOKS:

1. Fundamentals of Computer Algorithms, Ellis Horowitz, Satraj Sahni, and Rajasekaran, University Press.

REFERENCE BOOKS:

1. Design and Analysis of algorithms, Aho, Ullman, and Hopcroft, Pearson education.
2. Introduction to Algorithms, second edition, T. H. Cormen, C.E. Leiserson, R. L. Rivest, and C. Stein, PHI Pvt. Ltd./ Pearson Education,
3. Algorithm Design: Foundations, Analysis and Internet Examples, M.T. Goodrich and R. Tamassia, John Wiley and Sons.

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vinu Kumar	4. Dr. W. Nagarajan
5. Dr. M. Rama Bai	6. Dr. Kalyan Sarvepalli	7. Ms. G. Jyoti	8. Dr. A. Ghulesb
9. Dr. K. Sargma	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. R. Ramesh
13. Dr. K. Ramesh Kannan	14. Dr. B. Sridhar		B. Tech (CSE – R25)

COMPUTER NETWORKS**B.Tech II Year II Semester****Course Code:**

L	T	P	C
3	0	0	3

Course Outcomes:

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

1. Gain the knowledge of the basic computer network technology.
2. Gain the knowledge of the functions of each layer in the ISO-OSI and TCP/IP reference model.
3. Obtain the skills of subnetting and routing mechanisms.
4. Familiarity with the essential protocols of computer networks, and how they can be applied in network design and implementation.
5. Understanding working of the protocols through traces captured by a packet sniffer

UNIT-I

Introduction: The Internet, Protocol, Network Edge, Access Networks, Network Core, Packet Switching, Circuit Switching, Delay, Loss, and Throughput in Packet-Switched Networks, Protocol reference models: ISO-OSI, TCP/IP, Types of Network attacks, History of Computer Networking and the Internet.

UNIT-II

Application Layer: Principles of Network Applications, Network Application Architectures, Processes Communicating, Transport Services Available to Applications, Transport Services Provided by the Internet, Application-Layer Protocols, The Web and HTTP, File Transfer: FTP, Electronic Mail in the Internet, SMTP, DNS, Peer-to-Peer Applications, Socket Programming: Creating Network Applications.

UNIT-III

Transport Layer: Transport-Layer Services, Multiplexing and Demultiplexing, Connectionless Transport: UDP, Principles of Reliable Data Transfer, Building a Reliable Data Transfer Protocol, Pipelined Reliable Data Transfer Protocols, Go-Back-N (GBN), Selective Repeat (SR), Connection-Oriented Transport: TCP, The TCP Connection, Segment Structure, Round-Trip Time Estimation and Timeout, Reliable Data Transfer, Flow Control, TCP Connection Management, Principles of Congestion Control, TCP Congestion Control, Fairness.

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Nagamani
5. Dr. M. Rama Bai	6. Dr. Kalyan Chirupalli	7. Ms. G. Srida	8. Dr. A. Obulesh
9. Dr. K. S. Sargam	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. B. Ramesh
13. Dr. K. Rajesh Kannan	14. Dr. B. Saranya		B. Tech (CSE – R25)

UNIT-IV

Network Layer: Data and Control plane, Forwarding and Routing, Network Service Models, Virtual Circuit and Datagram Networks, Router working, The Internet Protocol (IP): Forwarding and Addressing in the Internet, Datagram Format, IPv4 Addressing, Internet Control Message Protocol (ICMP), IPv6, IP Security, Routing Algorithms- The Link-State (LS) Routing Algorithm, The Distance Vector (DV) Routing Algorithm, Hierarchical Routing, Routing in the Internet-Intra-AS Routing in the Internet: RIP, Intra-AS Routing in the Internet: OSPF, Inter-AS Routing: BGP, Broadcast and Multicast Routing, Broadcast Routing Algorithms, Multicasting.

UNIT-V

The Link Layer: The Services Provided by the Link Layer, Error-Detection and Correction Techniques- Parity Checks, Checksum Methods, Cyclic Redundancy Check (CRC), Hamming code, Multiple Access Links and Protocols, Channel Partitioning Protocols, Random Access Protocols, and ARP, Ethernet, Link-Layer Switches, Virtual Local Area Networks (VLANs), Data Center Networking, Wireless LAN.

TEXT BOOKS:

1. Computer Networking: A Top-Down Approach – James F.Kurose, Keith W. Ross, Pearson
2. Computer Networks -- Andrew S Tanenbaum, David J. Wetherall, 5th Edition, Pearson/PHI

REFERENCE BOOKS:

1. Data Communications and Networking – Behrouz A. Forouzan, Third Edition TMH.

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vinay Kumar	4. Dr. M. Nagamani
5. Dr. M. Rama Bai	6. Dr. Nityan Narvehalli	7. Ms. G. Arifa	8. Dr. A. Guleesh
9. Dr. K. R. Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. G. Ramesh
13. Dr. K. Ramesh Kannan	14. Dr. B. Raju		B. Tech (CSE – R25)

MACHINE LEARNING**B.Tech II Year II Semester****Course Code:**

L	T	P	C
3	0	0	3

Course Outcomes:

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

1. Understand the basic concepts of Machine Learning.
2. Apply Different Dimensionality Reduction techniques on datasets by learning feature selection process.
3. Analyze the concepts of regression and classification models used on datasets.
4. Design an ensemble model to increase the classification accuracy
5. Understand the principles of RL evolutionary computing algorithms

UNIT-I

Introduction to Machine Learning: Types of Human learning, machine learning process, Well-posed learning problem, Types of machine learning and comparison, applications of machine learning.

Model Preparation, Evaluation and feature engineering: Machine learning activities, Types of data in machine learning, dataset understanding, plotting and exploration, checking data quality, remediation, data pre-processing, selecting a model, predictive and descriptive models, supervised learning model training, cross-validation and boot strapping, lazy vs eager learner, interpreting the model- underfitting, overfitting, bias-variance trade-off.

UNIT-II

Feature Engineering: Feature transformation - feature construction, feature extraction by PCA, SVD, LDA. Feature subset selection - feature relevancy and redundancy measures. Feature selection process and approaches.

Review of Probability concepts: joint probability, conditional probability, bayes rule, Common discrete and continuous distributions, dealing with multiple random variables, Bayesian belief network.

UNIT-III

Supervised Learning: Introduction to supervised learning,

Regression: Introduction of regression, Regression algorithms: Simple linear regression, Multiple linear regression, Polynomial regression model, Logistic regression, Maximum likelihood estimation.

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5. Dr. M. Rama Bai	6. Dr. Kalyan Sureshpulli	7. Ma. G. Saja	8. Dr. A. Ghulash
9. Dr. R. R. Sarma	10. Dr. N. Anusha	11. Dr. Ravi Marhey	12. Dr. Ch. Karnesh
13. Dr. K. Rajesh Kannan	14. Dr. B. Saranya		B. Tech (CSE – R25)

Classification: Classification model and learning steps, Classification algorithms: Naïve Bayes classifier, Distance measures, k-Nearest Neighbor (kNN), Decision tree, Support vector machines, Kernel trick, Random Forest.

UNIT-IV

Unsupervised Learning: Introduction to unsupervised learning, Unsupervised vs supervised learning, Application of unsupervised learning, Clustering and its types, Partitioning method: k-Means and KMedoids, Hierarchical clustering, Density-based methods – DBSCAN.

Parameter for evaluating performance of classification, regression, and clustering model. Improving performance of a model.

UNIT-V

Artificial Neural Network: Biological neuron, Artificial neuron, Weights, Bias, Activation functions – linear, sigmoid, tanh, softmax, ReLU, LeakyReLU, Swish, Neural network architecture, Perceptron – Single layer and Multilayer Perceptron, Learning process in ANN- Feedforward Learning Process, Back Propagation algorithm.

TEXT BOOKS:

1. Saikat Dutt, S. Chandra Mouli, Das – Machine Learning, First Edition, Pearson
2. M N Murty, Anathanarayana V S – Machine Learning, First Edition, University Press
3. Tom M Mitchell, —Machine Learning, First Edition, McGraw Hill Education, 2013.

REFERENCE BOOKS:

1. Stephen Marsland, —Machine Learning – An Algorithmic Perspective, Second Edition,
2. Chapman and Hall/CRC Machine Learning and Pattern Recognition Series, 2014.
3. Artificial Neural Networks, B. Yegnanarayana, PHI Learning Pvt. Ltd., 2009

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13. Dr. K. Raghav Kannan	14. Dr. H. Sathya		B. Tech (CSE – R25)

FULL STACK DEVELOPMENT LAB**B.Tech II Year II Semester****Course Code:**

L	T	P	C
0	0	2	1

Course Outcomes:

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

1. Apply HTML5 and CSS effectively to design and develop dynamic web pages.
2. Explain and utilize JavaScript concepts in real-world applications.
3. Develop single-page applications using the React framework.
4. Implement server-side application development using Node.js.
5. Design and develop real-time database applications based on system requirements.

List of Experiments:

1. Design a responsive Login Page using HTML, CSS (Media Query), and JavaScript with client-side validation and password toggle.
2. Design a chessboard pattern using HTML and CSS.
3. Design a calculator application using JavaScript.
4. Create a responsive web page of your class timetable using the Bootstrap Grid System.
5. Create a timer component to start, pause, and reset using ReactJS.
6. Create a React component that checks the strength of a password and displays the result to the user.
7. Design authorized endpoints using JWT (JSON Web Token).
8. Develop a backend application with REST API to perform CRUD operations on student data (use Postman tool).
9. Design a replica set of the student database, insert records in the primary node, and display the records in secondary nodes.
10. Implement MongoDB Sharding to distribute and access student records across multiple shards for improved scalability.

TEXTBOOKS:

1. Vasan Subramanian, "Pro MERN Stack: Full Stack Web App Development with Mongo, Express, React, and Node", Second Edition, Apress Publications, 2019.
2. David Hows, Peter Membrey, Eelco Plugge – "MongoDB Basics", Apress, 2014.

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9. Dr. K. K. Sarma	10. Dr. N. Anusha	11. Dr. Ravi Marhey	12. Dr. Ch. Ramesh
13. Dr. K. Ramesh Kannan	14. Dr. B. Saritha		B. Tech (CSE – R25)

SUGGESTED READING:

1. Ethan Brown, "Web Development with Node and Express", O'Reilly Publishers, First Edition, 2014.

WEB RESOURCES:

1. <https://web.stanford.edu/class/cs142/index.html>
2. <https://nodejs.org/en/docs/>
3. <https://www.mongodb.com/>
4. <https://reactjs.org/>

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Megamani
5. Dr. M. Rama Bai	6. Dr. Kalyan Sarvepalli	7. Ms. G. Sita	8. Dr. A. Chandra
9. Dr. K. K. Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. M. Ramesh
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COMPUTER NETWORKS LAB**B.Tech II Year II Semester****Course Code:**

L	T	P	C
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Course Outcomes:

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

1. Implement data link layer framing methods
2. Analyze error detection and error correction codes.
3. Implement and analyze routing and congestion issues in network design.
4. Implement Encoding and Decoding techniques used in presentation layer
5. To be able to work with different network tools

LIST OF EXPERIMENTS:**1. Wireshark**

- i. Packet Capture Using Wire shark
 - ii. Starting Wire shark
 - iii. Viewing Captured Traffic
 - iv. Analysis and Statistics & Filters.
 1. How to run Nmap scan
 2. Operating System Detection using Nmap
2. Implement Dijkstra's algorithm to compute the shortest path through a network
 3. Take an example subnet of hosts and obtain a broadcast tree for the subnet.
 4. Implement distance vector routing algorithm for obtaining routing tables at each node
 5. Implement a program for congestion control using Leaky bucket algorithm.
 6. Implement a program for frame sorting techniques used in buffers.
 7. Implement the data link layer framing methods such as character stuffing and bit stuffing
 8. Implement a program to compute CRC code for the polynomials CRC-12, CRC-16 and CRC CCI
 9. Develop a simple data link layer that performs the flow control using the sliding window protocol, and loss recovery using the Go-Back-N mechanism

TEXT BOOKS:

1. Computer Networks, Andrew S Tanenbaum, David. J. Wetherall, 5th Edition. Pearson Education/PHI

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Nagamani
5. Dr. M. Ratna Bai	6. Dr. Kalpana Sarvepalli	7. Ms. G. Srija	8. Dr. A. Dhanesh
9. Dr. R. K. Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. Ch. Ramesh
13. Dr. K. Rajesh Kannan	14. Dr. B. Sathya		B. Tech (CSE – R25)

REFERENCE BOOKS:

1. An Engineering Approach to Computer Networks, S.Keshav, 2nd Edition, Pearson Education
2. Data Communications and Networking – Behrouz A. Forouzan. 3rd Edition, TMH.

1. Dr. D. Arundh Kumar	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. S. Suresh Kumar
5. Dr. M. Rama Reddy	6. Dr. Kalyan Srinivas	7. Ms. G. Srija	8. Dr. A. Obudresh
9. Dr. N. S. Srinivas	10. Dr. N. Anisha	11. Dr. Ravi Mathay	12. Dr. G. Ramesh
13. Dr. K. Rajesh Kannan	14. Dr. B. Sridhar		B. Tech (CSE – R25)

MACHINE LEARNING LAB**B.Tech II Year II Semester****Course Code:**

L	T	P	C
0	0	2	1

Course Outcomes:

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

1. Understand modern notions in predictive data analysis
2. Select data, model selection, model complexity and identify the trends
3. Apply different Python standard libraries for ML Applications
4. Understand a range of machine learning algorithms along with their strengths and weaknesses
5. Build predictive models from data and analyze their performance

LIST OF EXPERIMENTS:

1. Implement a python program to compute Central Tendency Measures: Mean, Median, Mode, Measure of Dispersion: Variance, Standard Deviation
2. Study of Python Basic Libraries such as Statistics, Math, Numpy and Scipy
3. Study of Python Libraries for ML application such as Pandas and Matplotlib
4. Implement a Python program to implement Simple Linear Regression
5. Implementation of Multiple Linear Regression for House Price Prediction using sklearn
6. Implementation of Decision tree using sklearn and its parameter tuning
7. Implementation of KNN using sklearn
8. Implementation of Logistic Regression using sklearn
9. Implementation of K-Means Clustering
10. Performance analysis of Classification Algorithms on a specific dataset (Mini Project)

TEXT BOOKS:

1. Machine Learning – Tom M. Mitchell, - MGH.

REFERENCE BOOKS:

1. Machine Learning: An Algorithmic Perspective, Stephen Marshland, Taylor & Francis.

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Nagamanni
5. Dr. M. Rama Bai	6. Dr. Kalyan Chetipalli	7. Ms. G. Sujja	8. Dr. A. Obaleshi
9. Dr. K. Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. Ch. Ramesh
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DATA VISUALIZATION – POWER BI LAB**B.Tech II Year II Semester****Course Code:**

L	T	P	C
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Course Outcomes:

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

1. Understand How to import data into Tableau.
2. Understand Tableau concepts of Dimensions and Measures.
3. Develop Programs and understand how to map Visual Layouts and Graphical Properties.
4. Create a Dashboard that links multiple visualizations.
5. Use graphical user interfaces to create Frames for providing solutions to real world problems.

LAB PROBLEMS:

1. Understanding Data, What is data, where to find data, Foundations for building Data Visualizations, Creating Your First visualization?
2. Getting started with Tableau Software using Data file formats, connecting your Data to Tableau, creating basic charts(line, bar charts, Tree maps),Using the Show me panel.
3. Tableau Calculations, Overview of SUM, AVR, and Aggregate features, Creating custom calculations and fields.
4. Applying new data calculations to your visualizations, Formatting Visualizations, Formatting Tools and Menus, Formatting specific parts of the view.
5. Editing and Formatting Axes, Manipulating Data in Tableau data, Pivoting Tableau data.
6. Structuring your data, Sorting and filtering Tableau data, Pivoting Tableau data.
7. Advanced Visualization Tools: Using Filters, Using the Detail panel, using the Size panels, customizing filters, Using and Customizing tooltips, Formatting your data with colors.
8. Creating Dashboards & Storytelling, creating your first dashboard and Story, Design for different displays, adding interactivity to your Dashboard, Distributing & Publishing your Visualization.
9. Tableau file types, publishing to Tableau Online, Sharing your visualizations, printing, and Exporting.
10. Creating custom charts, cyclical data and circular area charts, Dual Axis charts

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Nagashan
5. Dr. M. Rama Bai	6. Dr. Kalyan Sarvapalli	7. Ms. G. Srija	8. Dr. A. Obulesh
9. Dr. ARK Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. Ch. Ramosh
13. Dr. K Rajesh Kannan	14. Dr. B. Saija		B. Tech (CSE – R25)

REFERENCE BOOKS:

1. Microsoft Power BI cookbook, Brett Powell, 2nd edition.
2. R Programming for Data Science by Roger D. Peng (References)
3. The Art of R Programming by Norman Matloff Cengage Learning

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. R. Jagannathan
5. Dr. M. Rama Bai	6. Dr. Kalyan Subbepalli	7. Ms. C. Anja	8. Dr. A. Omresh
9. Dr. K. S. Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. G. Ramesh
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LINUX AND SHELL SCRIPTING

B.Tech. II Year I Sem.

L T P C
0 0 2 1

Course Outcomes:

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

1. Understand Linux system structure, OS architecture, and command-line environment.
2. Perform Linux installation and basic administration including file, user, and permission management.
3. Develop shell scripts to automate tasks such as backups, monitoring, and data processing.
4. Use Linux tools for software management, networking, and service configuration.
5. Implement backup, recovery, and basic troubleshooting techniques through practical labs.

List of Experiments:

Week 1: Introduction to OS Concepts

Lab Activity: Linux History, Opensource software basics & Licenses, Why Linux vs windows Identify system and application software on your PC. Differentiate their roles and explain basic OS functions.

Week 2: Linux Architecture & Kernel Types

Lab Activity: Compare Monolithic and Microkernel architectures using diagrams. Discuss how Linux's structure supports device-level control.

Week 3: Installing Linux (Ubuntu/CentOS)

Lab Activity: Install Linux using VirtualBox or WSL. Document each installation step and troubleshoot any permission or hardware issues.

Week 4: Linux Filesystem & Navigation

Lab Activity: Navigate key directories like /home, /etc, and /var. Create folder structures for a team project.

Week 5: File Permissions & Ownership

Lab Activity: Set permissions on project folders so only group members can access/edit them. Verify permissions using multiple users.

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5. Dr. M. Rama Bai	6. Dr. Kalyan Sarvepalli	7. Ms. S. S. S.	8. Dr. A. Ohureth
9. Dr. K. S. S.	10. Dr. N. Anusha	11. Dr. Ravi Marhey	12. Dr. Ch. Ramesh
13. Dr. K. Rajesh Kannan	14. Dr. B. S. S.		B. Tech (CSE – R25)

Week 6: User and Group Management

Lab Activity: Create users and groups for a coding team. Set up shared access using group permissions and configure hidden config files.

Week 7: Process Management Lab Activity: Identify and terminate frozen or unresponsive processes during compilation using commands like ps and top.

Week 8: Process Priorities & Memory Tools

Lab Activity: Adjust priority of background jobs using nice and monitor system memory usage with vmstat and free. Display information about the processes using top and kill the applications/processes with the task id

Week 9: Shell Scripting Basics

Use Case: System Info Script for Lab Login

Lab Activity: Create a shell script that automatically displays system uptime, current date/time, available disk space, and active users each time a lab user logs in. Use variables and echo statements to present the information in a readable format.

Week 10: Loops, Functions, and Cron Jobs

Use Case: Automated Backup Scheduler for Project Folders

Lab Activity: Write a shell script that loops through all user folders in /home and backs them up to a predefined backup location. Add functions for logging success/failure. Schedule it to run daily at 2 AM using cron. Handle missing folders gracefully.

Week 11: Text Processing & Networking Utilities

Use Case: Security Log Analysis & Network Check After Intrusion Alert

Lab Activity: Analyze /var/log/auth.log or /var/log/secure to detect failed login attempts using grep, awk, cut, and sort. Use ping, trace route, net stat, nbt stat, arp and scp to check remote system connectivity and transfer reports securely.

Concepts of Linux clusters, Virtual machines (virtual box in chapter 3), creating VMs, allocating resources, interconnection between VMs, Containers concepts

Week 12: Service Management & Disk Mounting

Use Case: Adding Extra Storage Without Reboot

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5. Dr. M. Rama Bai	6. Dr. Kavyan Sarvepalli	7. Ms. G. Srija	8. Dr. A. Oshimesh
9. Dr. K. R. Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. Ch. Ramesh
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Lab Activity: Create a new virtual disk in Virtual Box. Partition and format it. Mount it to /mnt/data and ensure it auto-mounts on reboot. Enable a required service (like ssh or apache2) using systemctl and check its status.

Week 13: Backup & Recovery

Use Case: Disaster Recovery After Accidental Deletion

Lab Activity: Use a backup script to create a backup of critical folders. Simulate file deletion and restore them using your backup. Analyze /var/log/syslog or equivalent to trace user activity that led to the issue.

Week 14: Mini Project – Tool Development

Use Case: Custom Shell Tool for New Employee On boarding or Admin Task

Lab Activity: Develop a complete shell-based tool. Examples:

A user account creation wizard for new employees

A disk usage monitoring alert system

A log cleaner tool that archives and clears logs weekly

Include user prompts, help menu, error checks, and logging features

Final Demo & Viva

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vinod Kumar	4. Dr. W. Nagamani
5. Dr. M. Rama Bai	6. Dr. Kalyan Sarvepalli	7. Ms. G. Srija	8. Dr. A. Obulhan
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WEB AND MOBILE APPLICATIONS**B.Tech. II Year II Sem.****L T P C**
0 0 2 1**Course Outcomes:**

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

1. Understand and apply core web technologies (HTML, CSS, JavaScript) for structured, styled, and interactive webpages.
2. Build responsive websites using frameworks like Bootstrap and manage code using Git/GitHub.
3. Create simple server-side functionality using Node.js and store/retrieve data from basic databases.
4. Design and develop mobile applications using Flutter for Android and iOS.
5. Integrate web and mobile development into a functional mini-project with deployment.

List of Experiments:**Week 1: Introduction to the Web**

Understand web architecture, clients, servers, and workflows. Explore an existing website's structure and elements using browser DevTools.

Week 2: HTML Basics

Learn about different markup languages and their significance. Create a homepage for a static site using paragraphs, headings, lists, links, and images.

Week 3: CSS – Layout & Design Foundations

Apply colors, spacing, and layouts using CSS. Practice Flexbox and Grid techniques by cloning a simple website layout.

Week 4: Introduction to JavaScript

Understand the Document Object Model (DOM) and basic JavaScript constructs. Add interactivity to a webpage with a 'Contact Us' form that dynamically displays/hides details.

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5. Dr. M. Rama Bai	6. Dr. Kalyan Sarvepalli	7. Ms. G. Sona	8. Dr. A. Obulesh
9. Dr. K. Srinivas Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. J. Ramesh
13. Dr. K. Rajesh Kannan	14. Dr. P. Sathya		B. Tech (CSE – R25)

Week 5: Combining HTML, CSS, and JavaScript

Integrate skills from previous weeks to start building a personal portfolio website.

Week 6: Responsive Design using Bootstrap

Make your site adapt to different screen sizes (mobile, tablet, desktop) using Bootstrap's grid system and components.

Week 7: Basic Server Concepts & Node.js

Set up a basic Node.js server to serve web content. Understand server-side fundamentals and simple routing.

Week 8: Introduction to Databases

Learn to store and retrieve data in SQLite or MongoDB. Save contact form submissions from your portfolio into a database.

Week 9: Introduction to Flutter

Understand Flutter's widget structure and framework basics. Design a simple login and landing page for a mobile app.

Week 10: Deployment using GitHub

Learn version control basics with Git and GitHub. Publish your portfolio online via GitHub Pages and collaborate with classmates for code reviews.

Week 11: Project Work

Apply all learned skills to build a real-world project such as a club/college event management application integrating both web and mobile interfaces.

Week 12: Final Presentations

Present your completed project to classmates, highlighting key features, responsive design, and integration. Gather peer feedback for improvement.

Mini-Project Example Themes

- Event registration & tracking for college clubs
- Simple inventory tracking system
- Student feedback & announcement portal
- IoT project dashboards (linking to electronics projects)

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Jagamani
5. Dr. M. Rama Bai	6. Dr. Kalyani Satyepalli	7. Ms. G. Saja	8. Dr. A. Obdresh
9. Dr. R. S. K. Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. P. Ramesh
13. Dr. K. Rajesh Kannan	14. Dr. B. Satish		B. Tech (CSE – R25)

Reference Books:

1. "Web Technologies: HTML, CSS, JavaScript" – Uttam K. Roy (Oxford University Press)
2. "Web Technology: Theory and Practice" – M.N. Rao & P.S. Rao (Pearson)
3. "Web Technologies: TCP/IP, Web/HTTP, Web Servers, Web Applications, and Cloud Computing" – Achyut S. Godbole & Atul Kahate (McGraw-Hill Education)
4. "Mobile Application Development" – Debasis Samanta & Goutam Kumar Panda (Prentice Hall India)
5. "Full Stack Web Development" – V. Srinivasa Rao (Notion Press)

1. Dr. D. Aruna Kumari	2. Dr. S. Suresh Kumar	3. Dr. V. Vijay Kumar	4. Dr. M. Suganburd
5. Dr. M. Rama Bai	6. Dr. Kalyan Sarvepalli	7. Ms. G. Srija	8. Dr. A. Obulraj
9. Dr. K. R. Sarma	10. Dr. N. Anusha	11. Dr. Ravi Mathey	12. Dr. Ch. Ramesh
13. Dr. K. Rajesh Kannan	14. Dr. B. Balaji		B. Tech (CSE – R25)