B.TECH. 4th SEM

OPERATING SYSTEM
Category: Professional Core Courses

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Explain the basic concepts of operating system.
(CO2)	Describe mechanisms of OS to handle processes, threads, and their communication
(CO3)	Analyze the memory management and its allocation policies.
(CO4)	Illustrate different conditions for deadlock and their possible solutions.
(CO5)	Discuss the storage management policies with respect to different storage management technologie and Evaluate the concept of the operating system with respect to UNIX, Linux, Time, and mobile OS.

R - PROGRAMMING
Category: Professional Core Courses

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Outline concepts related to R programming and data analysis.
(CO2)	Explain the basic concepts and tools that are used to solve problems in data analytics.
(CO3)	Apply R programming for reading, cleaning, visualizing and analyzing data.
(CO4)	Analyze the trends in data through exploratory data analysis.
(CO5)	Understands the loading, retrieval techniques of data and Minimize and maximize functions simulation and visualization and statistical analysis using R.

PROGRAMMING IN JAVA
Category: Professional Core Courses

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Identify classes, objects, members of a class and relationships among them for a specific problem.
(CO2)	Understand and demonstrate the concepts of garbage collection, polymorphism, inheritance etc.

(CO3)	Do numeric (algebraic) and string-based computation.
(CO4)	Understand and implement modularity as well as basic error-handling techniques.
(CO5)	Develop, design and implement small multithreaded programs using Java language and Apply appropriate problem-solving strategies for the implementation of small/medium scale Java applications.

MICROPROCESSOR AND MICRO-CONTROLLER
Category: Basic Science courses

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Understand the operation and architecture of Intel 8085 microprocessor including Instruction Set Architecture, assembly language programming, timing and speed of operation.
(CO2)	Learn the operation of circuits for user interaction through switches, keyboard and display devices.
(CO3)	Understand the operation and architecture of Intel 8086 microprocessor including Instruction Set Architecture, assembly language programming, timing and speed of operation
(CO4)	Understand the motivation and need for peripheral operations circuits for digital data exchange, timer, serial communication, merits of direct memory access, interrupt controller and other circuits.
(CO5)	Identify & diagnose common issues & errors that may arise during microprocessor & microcontroller programming and apply problem solving techniques to resolve hardware and software related problems.

COMPUTER ORGANIZATION & ARCHITECTURE
Category: Professional Core Courses

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Outline the general concepts of digital electronics and computer organization and architecture..
(CO2)	Discuss the basic components and their interfacing.
(CO3)	Discuss the basic components and their interfacing.
(CO4)	Analyze the effect of addressing modes on the execution time of a program.

Course Outcome (CO)	Details of Course Outcomes
(CO5)	Analyze the effect of addressing modes on the execution time of a program and Design of simple computer with different instruction sets.

Operating System Lab
Category: Laboratory course

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Apply commands related to vi and Emacs editors, general utilities and file systems
(CO2)	Write basic shell scripts and use sed commands as well as awk programming.
(CO3)	Analyse the results of memory management and disk management commands.
(CO4)	Evaluate solutions for different operating system problems such as scheduling, memory management and file management.
(CO5)	Create lab record for assignments that includes problem definitions, design of solutions and conclusions and demonstrate use of ethical practices, self-learning and team spirit.

PROGRAMMING IN JAVA LAB
Category: Laboratory course

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Implement Java programs using object-oriented concepts for problem solving
(CO2)	Detect syntax and logical errors in java programs.
(CO3)	Apply exception handling for making robust JAVA code
(CO4)	Design java applications using File I/O and GUI..
(CO5)	Create lab record for assignments that includes problem definitions, design of solutions and conclusions and Able to build dynamic user interfaces using applets and Event handling in java.

Microprocessor and Micro-Controller Lab
Category: Laboratory course

Course Outcome (CO)	Details of Course Outcomes

(CO1)	Ability to analyze and understand the architecture, instruction set, and functioning of microprocessors and microcontrollers.
(CO2)	Proficiency in programming microprocessors and microcontrollers using assembly language and high level languages.
(CO3)	Skill in designing and implementing simple embedded systems by interfacing peripherals and devices with microprocessors and microcontrollers.
(CO4)	Competence in troubleshooting and debugging microprocessor and microcontroller based systems.
(CO5)	Understanding of the memory organization, input/output operations, and interrupt handling mechanisms in microprocessors and microcontrollers and Familiarity with real-time operating systems and their applications in microcontroller, based systems.

R – PROGRAMMING LAB
Category: Laboratory course

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Show the installation of R Programming Environment.
(CO2)	Utilize and R Data types for developing programs.
(CO3)	Make use of different R Data Structures.
(CO4)	Develop programming logic using R Packages
(CO5)	Analyze the datasets using R programming capabilities and apply R programming for reading, cleaning, visualizing and analyzing data.