DRONACHARYA
College of Engineering

Khentawas, Farrukh Nagar, Gurugram, Haryana
Approved by: All India Council for Technical Education (AICTE), New Delhi
Affiliated to: Gurugram University, Gurugram

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (Internet of Things and Cybersecurity Including BlockchainTechnology)

ACADEMIC YEAR 2023-24

SEMESTER IV

OPERATING SYSTEM

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 technologies.
(CO6)	Evaluate the concept of the operating system with respect to UNIX, Linux, Time, and mobile OS.

Introduction to Internet of Thing

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Demonstrate basic concepts, principles and challenges in IoT.
(CO2)	Illustrate functioning of hardware devices and sensors used for IoT.
(CO3)	Analyze network communication aspects and protocols used in IoT.
(CO4)	Apply IoT for developing real life applications using Ardunio programming.
(CO5)	To develop IoT infrastructure for popular applications.

PROGRAMMING IN JAVA

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.
(CO6)	Apply appropriate problem-solving strategies for the implementation of small/medium scale Java applications.

MICROPROCESSOR AND MICRO-CONTROLLER

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.
(CO6)	Apply problem solving techniques to resolve hardware and software related problems.

DISCRETE MATHEMATICS

Course Outcome (CO)	Details of Course Outcomes
(CO1)	To solve mathematical problems based on concepts of set theory, relations, functions andlattices.
(CO2)	To express logical sentences in terms of quantifiers and logical connectives.
(CO3)	To apply basic counting techniques to solve permutation and combination problems.
(CO4)	To solve recurrence relations.
(CO5)	To classify the algebraic structure of any given mathematical problem.
(CO6)	To evaluate Boolean functions and simplify expressions using the properties of Booleanalgebra.

COMPUTER ORGANIZATION & ARCHITECTURE

Course Outcome (CO)	Details of Course Outcomes
(CO1)	outline the general concepts of digital electronics and computer organization andarchitecture.
(CO2)	discuss the basic components and their interfacing
(CO3)	discuss the basic components and their interfacing
(CO4)	analyse the effect of addressing modes on the execution time of a program
(CO5)	analyse the effect of addressing modes on the execution time of a program.
(CO6)	Design of simple computer with different instruction sets.

OPERATING SYSTEM LAB

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, memorymanagement and file management.
(CO5)	create lab record for assignments that includes problem definitions, design of solutions andconclusions.
(CO6)	demonstrate use of ethical practices, self-learning and team spirit.

PROGRAMMING IN JAVA LAB

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
(CO6)	Able to build dynamic user interfaces using applets and Event handling in java.

INTERNET OF THINGS LAB

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Understand the concept of Internet of Things.
(CO2)	Implement interfacing of various sensors with Arduino/Raspberry Pi.
(CO3)	Demonstrate the ability to transmit data wirelessly between different devices.
(CO4)	Show an ability to upload/download sensor data on cloud and server.
(CO5)	Examine various SQL queries from MySQL database

MICROPROCESSOR AND MICRO-CONTROLLER LAB

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Ability to analyze and understand the architecture, instruction set, and functioning ofmicroprocessors and microcontrollers.
(CO2)	Proficiency in programming microprocessors and microcontrollers using assembly languageand high level languages.
(CO3)	Skill in designing and implementing simple embedded systems by interfacing peripheralsand devices with microprocessors and microcontrollers.
(CO4)	Competence in troubleshooting and debugging microprocessor and microcontroller basedsystems.
(CO5)	Understanding of the memory organization, input/output operations, and interrupt handlingmechanisms in microprocessors and microcontrollers.
(CO6)	Familiarity with real-time operating systems and their applications in microcontroller, basedsystems.