

CSE111:ORIENTATION TO COMPUTING

L:3 T:0 P:0 Credits:3

Course Outcomes: Through this course students should be able to

CO1 :: explain the fundamentals of computer systems, including computer organization, hardware components, memory hierarchy, storage devices, computer languages, and number systems.

CO2 :: describe the concepts of operating systems, Linux fundamentals, computer networking, virtualization, cloud computing, and open-source software used in modern computing environments.

CO3 :: discuss various technology cohorts, career pathways, skill development resources, MOOCs, and hackathons for continuous learning and professional growth.

CO4 :: apply basic computational thinking techniques to understand problems and represent simple solutions using algorithms, pseudocode, and flowcharts.

CO5 :: execute basic version control operations using Git and GitHub, create and maintain professional digital profiles on technical platforms, and demonstrate awareness of fundamental digital security concepts and safe computing practices.

CO6 :: understand the fundamentals and applications of emerging technologies including Artificial Intelligence, Machine Learning, Generative AI, Agentic AI, Internet of Things (IoT), Blockchain, and Web3.

Unit I

Computer Languages : Machine, Assembly, and High-Level Languages, Compiler, Interpreter, and Assembler, Program Development Cycle, Compilation and Execution Process

Computer Fundamentals : Evolution and Characteristics of Computers, Functional Units of a Computer, Hardware and Software, Types of Computers

Computer Hardware : CPU and GPU, Input Devices and Output Devices, Memory devices

Number Systems : Binary, Decimal, Octal, and Hexadecimal, Number System Conversions

Unit VI

Version Control : Overview of Git and GitHub, install git and create a GitHub account, create a local git repository, add a new file to the repository, Creating a commit, Creation of a new Branch Profile.

Modern AI Trends and Tools : Introduction to AI, Real life application of AI, Introduction to Generative AI and its types, Generative AI tools– Text Generation Tools: ChatGPT, Gemini AI, Image Generation Tools, Video and animation tools, Research Tools: Perplexity AI, NotebookLM, JenniAI, Prompt Engineering – Good vs poor prompt, Ethical use of AI and AI tools.

Profile Creation : Figma, GitHub, Stack overflow, HackerRank, HackerEarth, GeeksforGeeks, Leetcode.

References:

1. DATA COMMUNICATIONS AND NETWORKING WITH TCP IP PROTOCOL SUITE by BEHROUZ A. FOROUZAN, MC GRAW HILL
2. OPERATING SYSTEM CONCEPTS by ABRAHAM SILBERSCHATZ, PETER B. GALVIN, GERG GAGNE, WILEY
3. COMPUTER FUNDAMENTALS by PRADEEP K. SINHA AND PRITI SINHA, BPB Publication, New Delhi

