

Introduction to Computer Science and Engineering

Course Outcomes (COs):

1. Understand hardware components of computer system such as memory system organization, input/output devices, be aware of software components of computer system. (Understand)
2. Understand Operating systems and be able to develop basic shell scripts. (Understand, Apply)
3. Develop basic understanding of programming and get a concept of algorithmic thinking. (Apply, Analyze)
4. Understand Databases, Use SQL to write queries. (Understand, Apply)
5. Explain how Internet works and be able to make basic static webpage (Understand, Apply)

Course Content
Unit - 1
Fundamentals of Computers: Introduction to Computers - Computer Definition, Characteristics of Computers, Evolution and History of Computers, Types of Computers, Basic Organization of a Digital Computer; Classification of Digital Computer Systems: Microcomputers, Minicomputers, Mainframes, Super computers. Number Systems, Computer Codes - BCD, Gray Code, ASCII and Unicode; Boolean Algebra - Boolean Operators with Truth Tables; Types of Software - System Software and Utility Software; Computer Languages - Machine Level, Assembly Level & High Level Languages, Translator Programs - Assembler, Interpreter and Compiler; Planning a Computer Program – Data Structures, Algorithm, Flowchart and Pseudo code with Examples.

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Unit-2

Operating System Fundamentals: Operating Systems: Introduction, Functions of an operating System, Classification of Operating Systems, System programs, Application programs, Utilities, The Unix Operating System, Basic Unix commands, Microkernel Based Operating System, Booting.

Unit-3

Fundamentals of C Programming Language: Introduction to C Programming Languages, Structure of C programs, compilation and execution of C programs, Debugging Techniques, Data Types and Sizes, Declaration of variables, Modifiers, Identifiers and keywords, Symbolic constants, Storage classes (automatic, external, register and static), Enumerations, command line parameters, Macros, The C Preprocessor.

Operators: Unary operators, Arithmetic & logical operators, Bit wise operators, Assignment operators and expressions, Conditional expressions, Precedence and order of evaluation.

Control statements: if-else, switch, break, and continue, the comma operator, goto statement. **Loops:** for, while, do-while. **Functions:** built-in and user-defined, function declaration, definition and function call, and parameter passing: call by value, call by reference, recursive functions. **Arrays:** linear arrays, multidimensional arrays, passing arrays to functions, Arrays and strings.


Unit-4

Introduction to Database Management Systems: Database, DBMS, Why Database - File system vs DBMS, Database applications, Database users, Introduction to SQL, Data types, Classification of SQL-DDL with constraints, DML, DCL, TCL


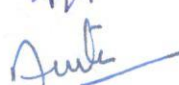
Unit-5



Internet Basics: Introduction, Features of Internet, Internet application, Services of Internet, Logical and physical addresses, Internet Service Providers, Domain Name System.

Web Basics: Introduction to web, web browsers, http/https, URL, HTML5, CSS


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Text Books:

1. Kernighan, Ritchie, "The C Programming Language", PHI
2. V. Rajaraman, "Fundamentals of Computers", PHI
3. Peter Norton's, "Introduction to Computers", TMH
4. David Riley and Kenny Hunt, Computational thinking for modern solver, Chapman & Hall/CRC,

Reference:

1. J. Glenn Brook shear," Computer Science: An Overview", Addison-Wesley, Twelfth Edition,
2. R.G. Dromey, "How to solve it by Computer", PHI

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