Pondicherry University MCA Syllabus

Mathematical Foundation Of Computer Science Syllabus:

UNIT-I	Mathematical Logic : Connectives Negation, Conjunction, disjunction, Statement Formulas and TT, Conditional and Biconditional, Well formed formulas, tautologies, Equivalence of statement formulae, Duality law, Tautological implications, Functionally complete set of connectives; Normal Forms Disjunctive, Conjunctive, Principal disjunctive and principal conjunctive normal forms.
UNIT-II	The theory of inference for statement calculus, Validity using TT, rules of inference, consistency of premises and indirect method of proof, Automatic Theorem proving- Predicate Calculus, Predicates, the statement function, variables and quantifiers.
UNIT-III	Set Theory : Basic Concepts of Set theory, Notation, Inclusion and equality , Power set, Operations on sets, Set identities, Ordered pairs and n-tuples, Cartesian products - Relations and Ordering , Relations, Properties of binary relation- relation matrix and graph of a relation, partition and covering of a set, equivalence relations, composition of binary relations, partial ordering, partially ordered set - Functions, Definition, composition, Inverse, Binary and n-ary operations, characteristic function of a set, hashing function- Recursions, Functions, sets and predicates.
UNIT-IV	Lattices and Boolean Algebra : Lattices as partially ordered sets, properties of lattices, Lattices as Algebraic systems, Some special lattices - Boolean algebra, functions, representation and minimization.
UNIT-V	Graph theory : Definition, Examples, Paths and Cycles, Planarity, colouring graphs

Computer Organisation And Assembly Language Programming Syllabus:

UNIT I

Digital logic fundamentals: Number systems Boolean algebra gates simplification of Boolean expressions combinational logic:adderssubtractors Decoders encoders multiplexer / demultiplexers Sequential Logic: Flip-flops - Counters.

UNIT II

Introduction to Intel s 8086/88: Register model Bus interface Unit Execution unit Control Unit: hardwired and micro programmed control. Memory organization: Basic memory cell RAM, ROM and DRAM associative, cache and virtual memory organizations.

UNIT III

Assembly Language Programming: Instruction formats addressing modes Intel 8086/88 instruction mnemonics timing data transfer arithmetic and machine control instructions - Introduction to Macro assembler.

UNIT IV

Input/Output organization: Input interface Data transfer techniques : synchronous asynchronous Interrupt driven Intel 8086/88 interrupt organization types DMA I/O processors serial communication.

UNIT V

Processor organization: General register organization stacks organization. IBM PC architecture: Mother board display adapters add on cards power supply. Architectural overview of Pentium, P-II, P-III and P-4

Data Structures Syllabus:

UNIT-I	Introduction, algorithmic notation, Space and Time analysis of an algorithm, information and its storage representation, Representation and its manipulation of strings, Pattern Matching. Searching and sorting techniques.
UNIT-II	• Arrays: Array representation, Array processing single and multi dimension arrays Stacks: Stack Representations, stack operations • Queues: Definitions, Implementations of Queues, Circular queues, Application of Queues. • Linked lists: Singly, Doubly, Circular linked list
UNIT-III	• Trees: nary Trees, Binary Search Trees, Building a Binary Search Tree, Tree Traversal techniques. • Graphs: Definitions, Undirected and Directed Graphs, Traversal, Minimum cost spanning tree, topological sorting.
UNIT-IV	• Hash Table: Hash Functions, Collision Resolution Strategies, Hash Table Implementation. • Binary Search Trees: Binary Search Tree (BST), Insertion and Deletion in BST, Complexity of Search Algorithm, Path Length, AVL Trees, B-trees.
UNIT-V	File Structures: Physical Storage Media File Organization, Organization of records into Blocks, Sequential Files, Indexing, Primary indices, Secondary indices, B+ Tree index Files, B Tree index Files, Indexing and Hashing Comparisons.

Problem Solving And Programming Syllabus:

UNIT I

Introduction to Problem Solving: Problem solving strategies, Problem identification, Problem understanding, Algorithm development, Solution planning (flowcharts, pseudo- code, etc.), Modular programming design. Basic program structure in C, Simple data types, variables, constants, operators, comments, Control Flow; if, while, for, do-while, switch.

UNIT II

Functions: Types, parameters, prototypes, recursion. Arrays & Pointers: Array usage, Pointers, addresses and types, call by reference, Pointer - array duality, Strings , Arrays of pointers, Arguments to main, Pointers to functions.

UNIT III

Structures: Member accessing, pointers to structures, Structures and functions, Arrays of structures, linked lists, trees. Other Data Types: Unions, enumerations and bit fields.

UNIT IV

Bitwise Operators: Usage, device accessing. Type manipulation: Coercion, typedef, initialisation, Static, global, external, register. Dynamic Allocation: Uses, pitfalls. The Pre-processor: Define, include, macro's, ifdef.

UNIT V

Input and Output: Concepts, Character and File I/O, Basic Curses, Simple File I/O, The Standard I/O Routines, ANSI Standard Libraries.

Pondicherry University Syllabus for Information Technology:

UNIT-I	Introduction to IT, Scope for IT, IT Usage, Information System, its functions and applications.
UNIT-II	• Hardware: Architecture (Mainframe, Mini, PC, Workstations), Real time system, Transaction Processing system, Laptop, Palmtop, Client server, N-Tier. • Introduction to Networks: LAN, WAN, MAN, etc. • Peripherals: Information about Input devices (Keyboard, Mouse, Joystick, Track ball, etc.) - Details about Storage devices (Floppy disk, Hard disk, Tapes (Cartridge, DAT), Compact Disk), Information about Monitors, Printers (impact, non-impact) - Various types of plotters.
UNIT-III	• Software: Software Classification (System, Application, and Utilities). • Operating System: Introduction, Basic functions of OS, Classification of OS. Programming Languages: Generation of Languages and their uses. • Packages: Spread sheets, DTP Tools, Presentation tools. Application areas of Software - Commercial, Scientific, Real time application etc.
UNIT-IV	• Multimedia and Internet: Introduction to multimedia - Hardware, Software and applications - Introduction to Internet, Service providers, Internet naming and addressing - Information about electronic mail, Remote login, File Transfer, Usenet-BBS, HTML. • Intranet, Extranet: Introduction to Intranet and Extranet.
UNIT-V	• Object Oriented System: Concepts, Benefits of OOS over conventional system. • Enterprise Computing: About ERP, Activities under ERP.

	• Mobile Computing - An Introduction to Mobile Computing