

Course – object oriented programming using c++

UNIT-I

Introduction

Introducing Object – Oriented Approach, Relating to other paradigms

{Functional, Data decomposition}.

Basic terms and ideas

Abstraction, Encapsulation, Inheritance, Polymorphism, Review of C, Difference between C and C++ – cin,

cout, new, delete, operators.

UNIT-II

Classes and Objects

Encapsulation, information hiding, abstract data types, Object & classes, attributes, methods, C++ class

declaration, State identity and behaviour of an object, Constructors and destructors, instantiation of objects,

Default parameter value, object types, C++ garbage collection, dynamic memory allocation, Metaclass / abstract classes.

UNIT-III

Inheritance and Polymorphism

Inheritance, Class hierarchy, derivation – public, private & protected,

Aggregation, composition vs

classification, hierarchies, Polymorphism, Categorization of polymorphism techniques, Method polymorphism,

Polymorphism by parameter, Operator overloading, Parametric Polymorphism

UNIT-IV

Generic function

**Template function, function name overloading, overriding inheritance methods,
Run time polymorphism,
Multiple Inheritance.**

UNIT-V

Files and Exception Handling

Streams and files, Namespaces, Exception handling, Generic Classes

Course – data structure using c and c++

UNIT-I

Introduction to Data Structure and its Characteristics

Array

**Representation of single and multidimensional arrays; Sparse arrays – lower and
upper triangular matrices and
Tridiagonal matrices with Vector Representation also.**

UNIT-II

Stacks and Queues

**Introduction and primitive operations on stack; Stack application; Infix, postfix,
prefix expressions; Evaluation
of postfix expression; Conversion between prefix, infix and postfix, introduction
and primitive operation on
queues, D- queues and priority queue**

UNIT-III

Lists

Introduction to linked lists; Sequential and linked lists, operations such as traversal, insertion, deletion searching, two way lists and Use of headers

Unit -4

Trees

Introduction and terminology; Traversal of binary trees; Recursive algorithms for tree operations such as traversal, insertion, deletion; Binary Search Tree

UNIT-V

B-Trees

Introduction, The invention of B-Tree; Statement of the problem; Indexing with binary search trees; a better approach to tree indexes; B-Trees; working up from the bottom; Example for creating a B-Tree

UNIT-VI

Sorting Techniques; Insertion sort, selection sort, merge sort, heap sort, searching Techniques: linear search, binary search and hashing

Course – computer architecture and assembly language (CAAL)

UNIT-I

Basic computer organization and design, Instructions and instruction codes, Timing and control/ instruction

cycle, Register/ Types of register/ general purpose & special purpose registers/ index registers, Register transfer and micro operations/ register transfer instructions, Memory and memory function, Bus/ Data transfer instructions, Arithmetic logic micro-operations/ shift micro-operations, Input/ Output and interrupts, Memory reference instructions, Memory interfacing , Cache memory.

UNIT-II

Central Processing Unit

General Register Organization/ stacks organizations, instruction formats, addressing modes, Data transfer and manipulation. Program control, reduced computer, pipeline/ RISC/ CISC pipeline vector processing/ array processing.

Arithmetic Algorithms: Integer multiplication using shift and add, Booth's algorithm,

Integer division, Floating-point representations.

UNIT-III

Computer Arithmetic

Addition, subtraction and multiplication algorithms, divisor algorithms. Floating point, arithmetic operations, decimal arithmetic operations.

UNIT-IV

Input – Output Organization

Peripheral devices, Input/output interface, ALU Asynchronous Data transfer, mode of transfer, priority

interrupts, Direct memory Address (DMA), Input/ Output processor (IOP), serial communication.

UNIT-V

Evaluation of Microprocessor

Overview of Intel 8085 to Intel Pentium processors, Basic microprocessors, architecture and interface, internal architecture, external architecture memory and input/ output interface.

UNIT-VI

Assembly language, Assembler, Assembly level instructions, macro, use of macros in I/C instructions, program loops, programming arithmetic and logic subroutines, Input-Output programming.

Course – Business economics

UNIT-I

The Scope and Method of Economics, the Economic Problem: Scarcity & Choice, The Price Mechanism, Demand & Supply Equilibrium: The Concept of Elasticity and it's Applications. The Production Process: output decisions – Revenues Costs and Profit Maximisation Laws of returns & Returns to Scale: Economics and Diseconomies of scale.

UNIT-II

Market Structure: Equilibrium of a firm and Price, Output Determination under Perfect Competition Monopoly, Monopolistic Competition & Oligopoly

UNIT-III

Macro Economic Concerns

Inflation, Unemployment, Trade-Cycles, Circular Flow up to Four Sector

Economy, Government in the Macro

Economy: Fiscal Policy, Monetary Policy, Measuring national Income and Output

UNIT-IV

The World Economy – WTO, Globalisation, MNC's, Outsourcing, Foreign Capital in India, Trips, Groups of

Twenty (G-20), Issues of dumping, Export-Import Policy 2004-2009

Reference Books:

Elements of statistics

UNIT-I

Population, Sample and Data Condensation

Definition and scope of statistics, concept of population and sample with Illustration, Raw data, attributes and variables, classification, frequency distribution, Cumulative frequency distribution.

UNIT-II

Measures of Central Tendency

Concept of central Tendency, requirements of good measures of central tendency, Arithmetic mean, Median, Mode, Harmonic Mean, Geometric mean for grouped and ungrouped data.

UNIT-III

Measures of Dispersion:

Concept of dispersion, Absolute and relative measure of dispersion, range variance, Standard deviation, Coefficient of variation.

UNIT-IV

Permutations and Combinations

n

Permutations of 'n' dissimilar objects taken 'r' at a time (with or without repetitions). $P = \frac{n!}{(n-r)!}$ (without proof). Combinations of 'r' objects taken from 'n' objects. $C = \frac{n!}{r!(n-r)!}$ (Without proof) . Simple examples, r Applications.

UNIT-V

Sample space, Events and Probability

Experiments and random experiments, Ideas of deterministic and non-deterministic experiments; Definition of sample space, discrete sample space, events; Types of events, Union and intersections of two or more events, mutually exclusive events, Complementary event, Exhaustive event; Simple examples.

Classical definition of probability, Addition theorem of probability without Proof (up to three events are expected). Definition of conditional probability Definition of independence of two events, simple numerical problems.

UNIT-VI

Statistical Quality Control

Introduction, control limits, specification limits, tolerance limits, process and product control; Control charts for X and R; Control charts for number of defective {n-p chart} ,control charts for number of defects {c – chart}