

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 simple 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). $P = n!/(n-r)!$ (without proof). Combinations of 'r' objects taken from 'n' objects. $C = n!/(r!(n-r)!)$ (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}