

4-1-101 R to 4-1-104 R

B.C.A. SEMESTER - I

Sno	Course	Total Marks	Mid Sem Exam*	Sem End Exam	Teaching Hours	Credits
1.	First Language English	100	25	75	4	4
2.	<i>Foundation Course - 1</i> HVPE (Human Values & Professional Ethics)	50	0	50	2	2
3.	<i>Foundation course -2</i> Environmental Studies	50	0	50	2	2
4.	Elementary Mathematics	100	25	75	4	4
5.	Elementary Mathematics LAB	50	0	50	4	2
6.	Computer Fundamentals	100	25	75	4	4
7.	PC Hardware Lab	50	0	50	4	2
8.	Principles of Management	100	25	75	4	4
9.	Programming Using "C"	100	25	75	4	4
10.	Programming Using "C" Lab	50	0	50	4	2
Total		750	125	625	36	30

ELEMENTARY MATHEMATICS

Unit – I : Matrix Algebra:

Matrix Algebra: Types of Matrices – Matrix addition and subtraction - Matrix multiplication - Transpose of a matrix, row matrix, column matrix, Symmetric and skew symmetric matrices

UNIT – II –Linear Equations:

Ad joint of a square matrix - Inverse of square matrix by using $\text{Adj } A$ 3 order only.

Solution of Linear Equations.

- (i) Cramer's Rule
- (ii) Matrix Inverse method

UNIT – III - Maxima and Minima:

Maxima and Minima: Introduction - Increasing and decreasing functions – Maxima and Minima Values of a Function in one variable only.

Numerical Integration:

- 1. Trapezoidal rule
- 2. Simpson's 1/3 rule
- 3. Simpson's 3/8 rule.

Unit – IV : NUMERICAL METHODS:

INTRODUCTION

Solution of algebraic and transcendental equations:

Bisection method - Method of false position - Newton – Raphson method.

Unit – V: FINITE DIFFERENCES AND INTERPOLATION:

Finite Differences - Forward differences - Backward differences.

Newton's forward interpolation formula – Newton's backward interpolation formula

Note: 1. Proofs of theorems and derivations of Expressions are omitted.

Text Books:

1. Mathematical Methods By Dr. T.K.V. Ivengar, Dr. B.Krishna Gandhi, Dr. S. Ranganatham, Dr. M.V.S.S.N. Prasad by S. Chand publications 6th revised edition 2011.
2. Quantitative Techniques by C. Satyadevi by S. Chand Company

Reference Books:

1. Numerical Methods by P. Kandaswamy, K. Thilagavathy, K. Gunavathy by S.Chand
2. Higher Engineering Mathematics By Dr. B.S. Grewal by Karna publishers 34th edition.

COMPUTER FUNDAMENTALS

Course Objectives

The objective of the course is to introduce the concepts of computer fundamental & their applications for the efficient use of office technology in a business environment.

Course Outcomes

1. Demonstrate the basic technicalities of creating Word documents for office use.
2. Create and design a spreadsheet for general office
3. Demonstrate the basic technicalities of creating a PowerPoint presentation.
4. Demonstrate the practices in data & files management

UNIT I

Introduction to computers

What is Computer, Characteristics of Computers, Generations of Computers, Classification of Computers, Basic Computer Organization, Applications of Computers.

Input and Output Devices:

Input Devices, Output Devices, Soft Copy Devices, Hard Copy Devices

UNIT II

Computer Memory and Processors:

Introduction, Memory Hierarchy, Processor Registers, Cache Memory, Primary Memory, Secondary Storage Devices, Magnetic Tapes, Floppy Disks, Hard Disks, Optical Disks, USB Flash Devices, Memory Cards, Mass Storage Devices.

UNIT III

Number Systems and Computer Codes

Binary Numbers, Working With Binary Numbers, Octal Number System, Hexa Decimal Number System

UNIT IV

Computer Software

Introduction to Computer Software, Classification of Computer Software System Software, Application Software

UNIT V

Introduction to Algorithms and Programming Languages

Algorithm, Flowcharts, Pseudo code, Programming Languages, Generations of Programming Languages, Categorization of High-Level Languages, Some Popular High-Level Languages

The Internet

Internet, Internet Services, Types of Internet Connections, Internet Security

TEXT BOOK:

1. "Fundamentals of Computers" by REEMA THAREJA from OXFORD UNIVERSITY PRESS

REFERENCE BOOKS :

1. Peter Norton, Introduction to Computers, 6th Edition , Tata McGraw – Hill , 2008 .
2. Jacob Beckerman, How to Build a Computer 2014-15: Learn, Select Parts, Assemble, and Install: A Step by Step Guide to Your First Homebuilt.
3. Leon A and Leon M, Computers for Everyone, Leon Vikas , 2001 .
4. Turban E, Rainer R K , and Potter R E , Introduction to Information Technology , John Wiley & Sons , 2000.

COMPUTER FUNDAMENTALS (PC Hardware LAB)

Any 8 from the following and rest are optional exercises

Experiment (Motherboard)

To make the comparative study of various motherboards.

(Intel 80386, Intel 80486, Pentium Processor, Pentium Pro, Pentium II, Celeron, Pentium III)

Experiment 2 (Cables)

To study various cables used in computer communication.

(Patch Cables, Ethernet Crossover Cables, USB cable, Unshielded Twisted Pair (UTP) Cable, Shielded Twisted Pair (STP) , Coaxial Cable , Fibre Optic Cable)

Experiment 3 (Connections and Ports)

To study various connections and ports used in computer communication.

(PS/2 port and its specification, VGA Port and its specification, Serial port and its specification and applications, Parallel Ports and its specification, USB Port and its specification, RJ45 connector, Ethernet port, DVI Monitor port, Most DVI connector types, Modem RJ-11 port, DB-9 connector, DB-25 connector.)

Experiment 4 (Cards)

To study various cards used in a Computer System.

(Ethernet Card, Sound Card, Video/Graphics Card, Network Interface card ,TV Tuner Card, Accelerator card)

Experiment 5 (Drives)

To study rotational and loading mechanisms of the following drives:

(Floppy disk drive, Hard disk, CD ROM, CD-R/RW, DVD-ROM, DVD recordable drives, DUAL LAYER DVD+/-RW)

Experiment 6 (Monitor and Circuitry)

To study monitor and its circuitry

(CRT (Cathode Ray Tube), LCD (Liquid Crystal Display), LED (Light-Emitting Diodes), Plasma OLED)

Experiment 7 (To Study Printer Assembly)

Experiment 8 (To Study parts of Keyboard)

Experiment 9 (To Study parts of Mouse)

Experiment 10 (To check and measure various supply voltages of pc)

Experiment 11: Working with antivirus software

Experiment 12: To study various cards used in a system viz. display card, LAN card etc

Experiment 13: To remove, study and replace floppy disk drive

Experiment 14: To remove, study and replace hard disk

Experiment 15: To remove, study and replace CD ROM drive

Experiment 16: Identify the components on the motherboard

Experiment 17: Processor and Heat sink fan installation on motherboard

Experiment 18: Assembling and Disassembling of PC Components

Experiment 19: Performing hard disk partitioning and formatting

Experiment 20: Installation of windows XP/8 operating system on PC

Experiment 21: Setting the CMOS setup

Experiment 22: Working with Backups and Archival utilities

Experiment 23: Understanding control panel settings

Experiment 24: Identify Different Beep Codes And Error Codes.

Experiment 25: - Preventive Maintenance of The Computer System.

PRINCIPLES OF MANAGEMENT

Unit-I: Introduction to Management

Management - meaning - significance - management vs administration – functions of management – Leadership – Leader Vs Manager - Fayol's principles of management.

Unit-II: Planning

Planning - meaning - significance – Steps in Planning - Decision making – Steps in decision making process.

Unit-III: Organization

Organizing - meaning – Principles of organization- Line and Staff Organisation - Organisation chart.

Unit-IV: Delegation of Authority

Delegation - meaning - elements - principles - difficulties in delegation - guidelines for making delegation effective - Centralization vs decentralization

Unit-V: Staffing and Controlling

Staffing – selection procedure – Coordination - Control – meaning – Qualities of Good Control

Prescribed Books

1. R.K.Sharma and Shashi K Gupata Business Organization and Management - Kalayani Publications.

Reference Books:

1. Dr.C.D.Balaji and G.Prasad, Business Organization and Management - Margham Publications, Chennai-17.
2. C.B.Guptha Industrial Organization and Management, Sulthan Chand.
3. Y.K.Bushan Business organization and Management, Sulthan Chand.
4. Sherlekar Business Organization and Management, Himalaya Publications.

PROGRAMMING USING C

Objectives:

1. Learn how to solve common types of computing problems.
2. Learn data types and control structures of C
3. Learn to map problems to programming features of C.
4. Learn to write good portable C programs.

Outcomes:

Upon successful completion of the course, a student will be able to:

1. Appreciate and understand the working of a digital computer
2. Analyze a given problem and develop an algorithm to solve the problem
3. Improve upon a solution to a problem
4. Use the 'C' language constructs in the right way
5. Design, develop and test programs written in 'C'

UNIT I

Introduction to Algorithms and Programming Languages: Algorithm – Key features of Algorithms – examples of Algorithms – Flow Charts – Pseudo code – Programming Languages – Generation of Programming Languages – Structured Programming Language.

Introduction to C: Introduction – Structure of C Program – Writing the first C Program – File used in C Program – Compiling and Executing C Programs – Using Comments – Keywords – Identifiers – Basic Data Types in C – Variables – Constants – I/O Statements in C- Operators in C- Programming Examples – Type Conversion and Type Casting.

UNIT II

Decision Control and Looping Statements: Introduction to Decision Control Statements – Conditional Branching Statements – Iterative Statements – Nested Loops – Break and Continue Statement – Goto Statement.

Functions: Introduction – using functions – Function declaration/ prototype – Function definition – function call – return statement – Passing parameters – Scope of variables – Storage Classes – Recursive functions – Type of recursion – Towers of Hanoi.

UNIT III

Arrays: Introduction – Declaration of Arrays – Accessing elements of the Array – Storing Values in Array – Calculating the length of the Array – Operations that can be performed on Array – one dimensional array for inter-function communication – Two dimensional Arrays –Operations on Two Dimensional Arrays.

Strings: Introduction - String Operations – String and Character functions.

UNIT IV

Pointers: Understanding Computer Memory – Introduction to Pointers – declaring Pointer Variables – Pointer Expressions and Pointer Arithmetic – Null Pointers - Passing Arguments to Functions using Pointer – Pointer and Arrays – Passing Array to Function– Memory Allocation in C Programs – Memory Usage – Dynamic Memory Allocation – Drawbacks of Pointers

Structure, Union, and Enumerated Data Types: Introduction – Nested Structures – Arrays of Structures– Self referential Structures – Union– Enumerated Data Types.

UNIT V

Files: Introduction to Files – Using Files in C – Reading Data from Files – Writing Data from Files – Detecting the End-of-file – Error Handling during File Operations .

REFERENCE BOOKS

1. Computer Fundamentals and Programming in C by REEMA THAREJA from OXFORD UNIVERSITY PRESS
2. E Balagurusamy: –COMPUTING FUNDAMENTALS & C PROGRAMMINGII – Tata McGraw-Hill, Second Reprint 2008, ISBN 978-0-07-066909-3.
3. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publ, 2002.
4. 2. Henry Mullish & Huubert L.Cooper: The Sprit of C, Jaico Pub. House,1996.
5. Teach your C Skills-Kanithker

Student Activity:

1. Create time table using faculty workload, subjects etc.
2. Prepare a complete note on recursion and its types
3. Prepare a complete note types of files and file formats for different inputdata

PROGRAMMING USING C LAB

1. Write a C program to calculate the expression: $((a*b)/c)+(a+b-c)$
2. Write a C program to calculate $(a+b+c)^3$.
3. Program to convert temperature from
 - a. Celsius to Fahrenheit.
 - b. Fahrenheit to Celsius.
4. Write a C program to calculate the Compound Interest.
5. Program to convert Hours into seconds.
6. Write a C program to Find Biggest of Three numbers.
7. Write a C program to read student marks in five subjects and calculate the Total, Average and Grade according to the following conditions:
 - i. If average ≥ 75 grade is 'A'.
 - ii. If average ≥ 60 and < 75 grade is 'B'.
 - iii. If average ≥ 50 and < 60 grade is 'C'.
 - iv. Otherwise grade is 'D'.
 - v. Check that marks in each subject ≥ 35 .
8. Write a C program to find biggest of two numbers using Switch – Case.
9. Program to display number of days in given month using Switch – -Case.
10. Write a C program to check whether the given number is Prime or Not.
11. Write a program to
 - i. Check whether given number is Palindrome or Not.
 - ii. Find the Reverse of a given number.
12. Program to check whether a given number is
 - i. Strong or Not.
 - ii. Armstrong or Not.
 - iii. Perfect or Not.
13. Write a C program to print Fibonacci Series.

14. Write a C Program to print Prime Numbers up to given range.

15. Write a program to print multiplication tables up to given range.
16. Write a C program to perform
 - i. Matrix Multiplication.
17. Program to display Student Details using Structures.
18. Program to swap two numbers using different parameter passing techniques.
19. Write a C program to
 - i. Write data into a File.
 - ii. Read data from a File.