

SEMESTER 1

BCA 101 ENGLISH (Common Course)

(Syllabus as approved by Board of Studies of English (UG)

BCA102 MATHEMATICS (Complementary)

(Syllabus as approved by Board of Studies of Mathematics (UG)

BCA 103 : BASIC STATISTICS (Complementary)

(Syllabus as approved by Board of Studies of Statistics (UG)

BCA104 : Introduction to Computers (Core)

Unit-1:

Introduction: Parts of Computer System- Hardware, Software, Data, Users, Different types of computers, Characteristics of computers, Computer Languages - Machine , Assembly Language and Higher Level languages - 3GL, 4GL, 5GL

Unit-2:

Interacting with Computers:-Input Devices - Key Board, Mouse, Variants of Mouse, Hand held devices, Optical Input devices. **Output Devices:** Monitors, Sound Systems, and Printers.

Unit-3:

Data Processing: Representation of data, processing of data - The CPU, Memory- different types of RAM and ROM, Factors affecting speed

Unit-4: Storing Information in a Computer: Types of Storage Devices - Magnetic Storage Devices Data storage and organization on a Magnetic Disk, Finding data on a disk -Diskettes - Hard Disks- Tape drives- Optical Storage devices ,Solid state storage devices

Unit-5:

Operating Systems and Networking: Definition of an Operating System - Different types of PC Operating Systems. Computer Networks uses - categories of networks - LAN, WAN, The Internet - Working of Internet - Major Features of Internet. Brief idea of multimedia.

Book of study :

Peter Nortons Introduction to Computers, Sixth Edition, Published by Tata McGraw Hill

References:

Computer Fundamentals By P K Sinha & Priti Sinha Fourth Edition.
Introduction to Computer Science, IITL Education Solutions limited.

BCA105 : Methodology of Programming and Programming in C (Core)

UNIT 1

Program Concept, Characteristics of Programming, Various stages in Program Development
Programming aids Algorithms, Flow Charts - Symbols, Rules for making Flow chart,
Programming Techniques Top down, Bottom up, Modular, Structured - Features, Merits,
Demerits, and their Comparative study. Programming Logic- Simple, Branching, Looping,
Recursion, Cohesion & Coupling, Programming Testing & Debugging & their Tools .

Unit 2:

C language basics: C character set, Identifiers and keywords, Data types, Enumeration
type, constants, variables, declarations, qualifiers long, short and unsigned declarations, expressions,
symbolic constants, input/output functions, compound statements, arithmetic operators, unary
operators, relational and logical operators, assignment operators, increment and decrement operators,
Precedence and order of evaluation, conditional operators, bit operators, type casting, using library
functions in math.

Unit 3:

Control flow: If statement, if.else statement, nested if ..else statement, switch statements, looping
for loop , while loop, do while statements, nested loop structure, break, continue and go to
statements.

Arrays & Strings: Single dimensional arrays, multidimensional arrays, initializing array using static
declaration, Searching and sorting of Arrays, Array of Characters, Character arrays and strings, String
handling Functions.

Unit 4:

User Defined Functions: Function declaration, definition & scope, recursion, Arrays and functions,
call by value, call by reference, Storage Classes: automatic, external (global), static & registers.

Unit 5:

Structures: Definition of Structures, declaration, structure passing to functions, array of structures,
arrays with in structures, unions, typedef statements.

Pointers: Pointer Definition, pointer arithmetic, array & pointer relationship, pointer to array, pointer
to structure, dynamic memory allocation.

Book of study:

Programming in ANSI C4E , E. BalaGuruswamy, TMH
Programming in C, Byron S Gottfried, Shaums Outline series. TMH

References:

Computer Fundamentals By P K Sinha & Priti Sinha Fourth Edition.
B. Kernighan and D. Ritchie, The ANSI C Programming Language, PHI

BCA106 Software Lab I (Core)

[There will be two questions: the first from Exercises 3 to 5 and the second from Exercises 6 to 10. Exercises 1 and 2 will be included in the viva]

1. Familiarization of Computer System and installation: Demonstration of various units of Computer system, handling of devices, demo on hardware units, Login process, Booting Process, software installation, driver installation, printer installation etc. **2. Practicing Operating System Commands:** MS-DOS internal & External commands (dir, copy, del, ren, copy con, date, time, chkdisk, mkdir, cd, rmdir, EDIT etc). MS-WINDOWS using start menu, desk top, task bar, word pad, note pad, file management- creation, copy, delete, moving of files in directories, selecting and executing a program - Demonstration of editing, compiling and executing a C program using a C compiler.

3. Programs using Basic Constructs: Fundamental data types, qualifiers- long, short, unsigned, input/output functions scanf(), printf(), Arithmetic expressions, Evaluation of integer, real and mixed mode arithmetic expressions, truncation effect, type casting, relational and logical expressions, Conditional operators, trigonometric functions- sin(), cos(), tan(), mathematical functions abs(), sqrt(), round() defined in math.h, printing formatted outputs using width specifier.

4. Programs using control structures: if, switch, for, while, dowhile, nested structures, break and continue. Sample programs should include printing of Fibonacci numbers, prime numbers, check for Armstrong numbers, summation series exp(x), sin series etc and verification of result using built in functions, printing pyramid like pattern & other similar patterns using nested loops.

5. Programs using Arrays: Array based programs Creation of array containing prime numbers, matrix addition, matrix multiplication, transpose of a matrix, array sorting, preparing rank lists based on marks, searching of arrays (linear) for finding price of an item. Static initialization of arrays.

6. String manipulation programs reading strings using %s, gets(), getchar(), copying one string into another, counting number of characters, vowels, words etc, using string handling functions.

7. User Defined Functions: Programs using return type functions, void type functions, example program using recursive functions, array sorting program using function with call by reference, function to copy one string into another.

8. Program using structures: array of structures, program using structure containing arrays and array of structures. Rank list preparation **9. Simple program using pointers**