JYOTI NIVAS COLLEGE AUTONOMOUS
SYLLABUS FOR 2018 BATCH AND THEREAFTER

Programme: B.Sc.   **Semester: I**

COMPUTER SCIENCE - I

COMPUTER FUNDAMENTALS AND PROGRAMMING IN C

Course Code: 18ICS1   **No. of Hours: 60**

COURSE OBJECTIVES:

- To acquire knowledge of computer and its hardware, software components
- This subject aims to provide exposure to problem-solving through programming.
- It aims to train the student to the basic concepts of the C-programming language.
- This subject involves a lab component which is designed to give the student hands-on experience with the concepts

LEARNING OUTCOMES:

- To understand the components and working principle of a computer.
- To understand concepts of Boolean algebra, number system and gates.
- To develop the reasoning, logical thinking and problem solving ability.
- To learn coding standards for writing programs practically.

UNIT I   **(16 HRS)**

Introduction: Definition of Computers - History of Computers - Generation of Computers - Block diagram of Computer - Classification of Computers.
Input and Output Devices: Introduction - Input Devices : Keyboard – Mouse – OMR – OCR - MICR - Output Devices: VDU - Printers.
Number Systems: Different number systems and their conversions (Decimal, Binary, Octal and Hexadecimal) - 1's Complement and 2's Complement - Coding: BCD – Gray - ASCII and EBCDIC.

UNIT II   **(10 HRS)**

Boolean algebra and Gate networks: Fundamental concepts of Boolean algebra: AND - OR- NAND – NOR - X-OR gates - Universal property of NAND and NOR gate
Memory: Primary: ROM and RAM - Secondary Storage devices: Magnetic Disks - Floppy Disk - Hard Disk - Optical Disks: CD-ROM – DVD

UNIT III   **(14 HRS)**
Introduction to Software: System software - Application software - Basics of Programming: Problem analysis – Algorithm and flowchart.
Introduction to C: Development of C - Structure of a C Program – Constants - Variables and Keywords - Data types - Operators and Expressions.

Console I/O Functions: Formatted and Unformatted console I/O – printf - scanf – getchar – putchar – gets – puts - getch.

Control Structure: Decision Control Structures - Loop Control Structures - Case Control Structures.

UNIT IV   **(9 HRS)**

Functions: Definition - Passing values between Functions - Function Declaration and Prototypes - Call by Value and Call by Reference - Category of Functions - Recursion.
Arrays and Strings: One Dimensional and Two Dimensional Arrays - Declaring and Initializing String Variables - Library Functions: strlen – strcpy – strcat - strcmp.

UNIT V   **(11 HRS)**

Pointers: Pointer Notation - Pointers and arrays - pointers and strings
Structure and Union: Definition – Declaring - Accessing Structure members - Pointer to a structure - union.
Files: Definition - Opening a file - Closing a file - Command line arguments.

REFERENCE BOOKS:

1. Rajaraman.V .Fundamentals of Computers . Prentice Hall India Ltd.2014.Sixth Edition.
2. Thomas C. Bartee. Digital computer Fundamentals. Mc Graw-Hill. 1985. Sixth Edition.
3. M. Morris Mano. Computer System Architecture. Prentice Hall India Ltd. 2001. Third Edition.
4. E. Balaguruswamy. Programming in ANSI C. Tata Mc-Graw Hill Publishing Co.Ltd.-New Delhi. 2017. 7th edition.
5. Yashavant Kanetkar. Let Us C. BPB Publications. 2012. 15th Edition.
6. Byron Gottfried. Programming with C. Schaum's Outline Publications. 1996. 2nd edition.
7. V Rajaraman. Computer Programming in C. PHI. 1994.

COMPUTER SCIENCE I

PROGRAMMING IN C LAB

No. of Hours: 45

PART - A

1.Write a C program to demonstrate the usage of operators and data types to convert temperature in Fahrenheit to Celsius and vice versa.

2.Write a C program to implement the concept of operators and loops to find the sum of the digits of given number.

3.Write a C program to implement the concept of loops to check whether a number is prime or not.

4.Write a C program to implement if else statement to print Armstrong numbers between any 2 limits.

5.Write a C program to implement string functions, to check whether the given string is palindrome or not.

6.Write a C program to implement switch case, write a C program to accept a string and find the number of vowels in the string.

7.Write a C program to count the number of numerals, upper case, lower case and special characters in a given string using character handling functions.

8.Write a C program to implement recursion, to compute factorial of a number.

PART - B

9.Write a C program to accept a student's name and 5 marks, calculate the average and display if the student has passed or failed.

10. Write a C program to implement arrays to arrange numbers in ascending order.

11. Write a C program to implement multidimensional arrays to perform addition and subtraction of two given matrices.

12. Write a C program to implement pointers to access array elements.

13. Write a C program to show the difference between call by value and call by reference to swap two numbers.

14. Write a C program to demonstrate the difference between structure and union using employee details.

15. Write a C program to demonstrate use of files to read and write data to a file.