COMPUTER PROGRAMMING

I B. Tech. - I Semester	L	T	P	C
Course Code: A3CS01	4	1	-	4

COURSE OVERVIEW:

The course covers the basics of programming and demonstrates fundamental programming techniques, customs and terms including the most common library functions and the usage of the pre processor. This course helps the students in gaining the knowledge to write simple C language applications, mathematical and engineering problems. This course helps to undertake future courses that assume this programming language as a background in computer programming. Topics include variables, data types, functions, control structures, pointers, strings, arrays and dynamic allocation principles. This course in reached to student by power point presentations, lecture notes, and lab involve the problem solving in mathematical and engineering areas.

COURSE OBJECTIVES:

1. To express algorithms and draw flowcharts in a language independent manner.
2. To teach how to write modular, efficient and readable C programs
3. To impart knowledge in creating and using Arrays of the C data types.
4. To describe the techniques for creating program modules in C using functions and recursive functions.
5. To demonstrate creation of derived data types and perform operations on files.
6. To familiarize pointers and dynamic memory allocation functions to efficiently solve problems

COURSE OUTCOMES:

Upon completion of the course, the students will be able to:

1. Write, compile and debug programs in C language.
2. Use different data types in a computer program.
3. Design programs involving decision structures, loops, arrays and functions.
4. Identify the difference between call by value and call by reference
5. Use pointers to understand the dynamics of memory
6. Create and perform different file operations.

SYLLABUS

UNIT- I

Introduction to the C Language – Algorithm, Pseudo code, Flow chart, Background, C Programs, Identifiers, Data Types, Variables, Constants, Input / Output, Operators(Arithmetic, relational, logical, bitwise etc.), Expressions, Precedence and Associatively, Expression Evaluation, Type conversions.

UNIT- II

Statements- Selection Statements(making decisions) – if and switch statements, Repetition statements (loops)-while, for, do-while statements, Loop examples, other statements related to looping – break, continue, go to, Simple C Program examples.

UNIT- III

Functions- Introduction to Structured Programming, Functions- basics, user defined functions, inter function communication(call by value, call by reference), Standard functions.
Storage classes-auto, register, static, extern, scope rules, arrays to functions, recursive functions, example C programs.

UNIT – IV

Arrays– Basic concepts, one-dimensional arrays, two – dimensional arrays, multidimensional arrays, C programming examples
Pointers – Introduction (Basic Concepts), pointers to pointers, compatibility, Pointer Applications, Arrays and Pointers, Pointer Arithmetic, memory allocation functions, array of pointers, pointers to void, pointers to functions, command –line arguments, Introduction to structures and unions.

UNIT-V

Strings – Concepts, C Strings, String Input / Output functions, string manipulation functions, string /data conversion.

Input and Output – Concept of a file, streams, text files and binary files, Differences between text and binary files, State of a file, Opening and Closing files, file input / output functions (standard library input / output functions for files), file status functions (error handling),Positioning functions.

TEXT BOOKS:

1. Computer Science: A Structured Programming Approach Using C, B.A.Forouzan and R.F. Gilberg, Third Edition, Cengage Learning.
2. The C Programming Language by Brian Kernighan and Dennis Ritchie 2nd edition

REFERENCE BOOKS:

1. Let Us C Yashavant kanetkar BPB.
2. Absolute beginner's guide to C, Greg M. Perry, Edition 2, Publisher: Sams Pub., 1994.
3. Computer Programming and Data Structures by E Balagurusamy, Tata McGraw Hill.