COMPUTER PROGRAMMING
Course Code: CT101

Lecture Hours: 3
Tutorial: 1
Practical: 3

Year: I
Part: I
Course Credit: 3

Teaching schedule Hours/week				Examination scheme			
				Internal		Final	Total Marks
Cr	Theory	Tutorial	Practical	Theory	Practical	Theory	150
	3	1	3	40	50	60	

LEARNING OBJECTIVES:

The educational objectives of this course are

1. To focus the basic architecture and Fundamentals of Computers and Peripherals.
2. To Introduce programming language and aware the students about programming paradigm.
3. Apply programming constructs of C language to solve the real-world problems.
4. To give clear idea of different strategy of basic programming with C like Looping, Decision Making, Array, Structure, Function, Pointer, etc. to solve real life problems.

Unit 1: Introduction to computer and Programming Language (6 hrs)

Introduction, Basic block diagram and functions of various components of computer, Concept of Hardware and Software, Types of software, Compiler and Interpreter, Concepts of Machine level, Assembly level and High level programming, structured programming, Problem analysis (requirement analysis, program design, program coding, program testing, software installation and maintenance), Algorithms and Flowchart.

Unit 2: Basics of C Programming (6 hrs)

Features of C language, structure of C program, Character set, C Tokens, Identifiers and Keywords, comments, header files, data types, symbolic constants, constants and

variables, operators, expressions, evaluation of expressions, type conversion, precedence and associativity, I/O functions.

Unit 3: Input and Output (2 hrs)
Conversion specification, Reading a character, Writing a character, I/O operations, Formatted I/O, Unformatted I/O.

Unit 4: Decision Making – Branching & Looping (6 hrs)
Simple statements, Decision making statements, Looping statements, Nesting of control structures, switch statement, goto statement, Jumps in loops.

Unit 5: Array & String (6 hrs)
Introduction to Array, Types of Array (Single Dimensional and Multidimensional), Declaration and Memory Representation of Array, Initialization of array, Character Array and Strings, Reading and Writing Strings, Null Character, String Library Functions

Unit 6: Functions and pointers (6 hrs)
Top down approach of problem solving, standard library functions, passing values between functions, calling convention, return type of functions, recursive functions, Local and Global Variable, Pointers, Pointer operators, Pointer arithmetic, Arrays and pointers, Array of pointers, call by value and call by reference.

Unit 7: Structure and Union (6 hrs)
Introduction, Array of structure, Passing structure to function, Passing array of structure to function, Structure within structure (Nested Structure), Union, Pointer to structure.

Unit 8: File Management (4 hrs)
Introduction to file management, Simple file management functions for text files, Reading from and writing to files, Creating and Operating file in different Modes.

Unit 9: Graphics (3 hrs)
Initialization, Graphical mode, Simple program using built in graphical function.

Evaluation Scheme:

Chapter	Hours	Mark distribution*
1	6	6
2	6	6
3	2	4
4	6	8
5	6	10
6	7	10
7	5	6
8	4	6
9	3	4
Total	**45**	**60**

There may be minor deviation in marks distribution.

RECOMMENDED STUDY MATERIAL:

Text Books:

1. Programming in ANSI C, Forth Edition, E Balagurusamy, TMH
2. Byron Gottfried: "Programming with C," , Second Edition, McGraw Hill Education.

Reference Books:

1. Let us C, Yashwant Kanitkar
2. Paul Deitel, Harvey Deitel, C: How to Program, Eighth Edition, Pearson Publication.
3. Al Kelley, Ira Pohl: "A Book on C", Fourth Edition, Pearson Education.
4. Brian W. Keringhan, Dennis M. Ritchiem, The C programming Language, Second Edition, PHI Publication.

Laboratory

- Minimum 8 sets of computer programs in C (from Unit 2 to Unit 9) should be done individually. (30 marks out of 50 marks)

- Student (maximum 4 persons in a group) should submit mini project at the end of course. (20 marks out of 50 marks)

S. No.	List of Practicals 3hrs/week
1	Basic Introduction to C program and C setup(Compile/Run program)
2	Simple program using scanf/printf
3	Program using operators
4	Program using if/else
5	Switch case programs
6	Programs of loops(for, while loop)
7	Programs of loops(do…while loop)
8	Program of Nested loops(patterns using for loop)
9	Simple program of one-Dimensional array
10	Programs of two-dimensional array(addition/multiplication of matrix)
11	Programs of multi-dimensional array
12	Programs using go to statements
13	String Programs(using string function)
14	String Programs(without using string function)
15	Program of Functions(no parameter ,no return value)
16	Program of Functions(parameter, no return value)
17	Program of Functions(no parameter, return a value)
18	Program of Functions(parameter, return value)
19	Program for scope of functions(global, local, static ,register)
20	Program of array and function
21	Simple program of structure(read values and display the values)
22	Program of structure using functions
23	Program of structure using pointers
24	Simple program using pointer(display value and its address)
25	Program of pointer and array
26	Program of pointer using function
27	Program of pointer and structure
28	Program of pointer and string
29	Program to read data from file and write into a file
30	Simple program using built in graphical function