Course No.	Course Name	L-T-P - Credits	Year of Introduction
MT205	COMPUTER PROGRAMMING IN C	3-0-0-3	2016

Prerequisite : Nil

Course Objectives

- To help students to understand the implementation of C language and gain experience about structured programming.

Syllabus

Introduction to C fundamentals - character set -data types- Symbolic constants – operators- Data input and output -Control Statements and Arrays - Programs for matrix processing - Strings, Functions and Macros - Structures, Unions and Pointers - files and Library functions - Command Line arguments in C -Memory and Registry - Dynamic memory allocation, Storage class associated with variables: automatic, static, external and register, User defined data types: enumerated data type, typedef - bitwise operators

Course Expected Outcome.

On completion of the course, students would be able to;

i. Use Common terminologies related to the software development process and learn how these principles are implemented in the C programming language.
ii. Understand general principles of computer languages such as loops (while/for), conditional branching (if/switch), block structure, functions (including parameter passing, prototypes and recursion), input/output, arithmetic rules.
iii. Develop problem-solving skills to translate 'English' described problems into programs written using the C language.
iv. Understand the function and operation of development of software such as the compiler, interpreter, editor, Integrated Development Environment and debugger.
v. Understand how to use and manipulate variables and types to change the program state, including numeric, character, array and pointer types, as well as the use of structures and typedefs.
vi. Understand the purpose of pointers for parameter passing, referencing and dereferencing, and linking data structures and the purpose and use of function libraries

References/Textbooks

1. Byron S. Gottfried., Programming with C, Tata McGraw Hill.
2. Brian W. Kernighan , Dennis M. Ritchie., The C Programming Language, Prentice Hall.
3. Stephen C. Kochan., Programming in C, CBS publishers.
4. Balaguruswamy E.,Programming in C, McGraw Hill
5. Yashwant Kanetkar., Let us C, BPB.
6. Yashwant Kanetkar., Pointers in C,BPB
7. Al Kelley and Ira Pohl., A Book on C, Addison-Wesley
8. Munish Cooper., The Spirit of C, Jaico Books.
9. Stan Kelly Bootle., Mastering Turbo C, BPB Publications.
10. Micheal Schneider., Programming and Problem Solving with PASCAL, Wiley Eastern Ltd.
11. Venugopal K R, Prasad S R., Mastering in C, Tata McGraw Hill Publishing Company Limited

Course Plan

Module	Contents	Hours	Sem. Exam Marks
I	**Introduction to C Programming** 1.1 Introduction to C fundamentals, 1.2 The character set - identifiers and keywords, 1.3 Data types - constants - variables and		15%

	arrays - declarations - expressions – statements, 1.4 Symbolic constants arithmetic operators, Relational and Logical operators - The conditional operator, 1.5 Library functions - Data input and output - getchar – putchar, scanf, printf - gets and puts functions - interactive programming.	7	
II	**Control Statements and Arrays** 2.1 Control statements: if, if-else, nested if – switch – while – do-while – for – break &continue – nested loops, 2.2 Single dimensional arrays: defining an array, array initialisation, accessing array elements, Programs for sequential search, bubble sort, 2.3 Multidimensional arrays: defining a two dimensional array, array initialisation, accessing elements, Programs for matrix processing.	8	15%
FIRST INTERNAL EXAMINATION			
III	**Strings, Functions and Macros** 3.1 Strings: declaring a string variable, reading and displaying strings, string related library functions, Programs for string matching and sorting, 3.2 Functions: Function definition, function call, function prototype, parameter passing, void function, Recursion, Passing array to function, 3.3 Macros: Defining and calling macros, Difference between macro & function.	8	15%
IV	**Structures, Unions and Pointers** 4.1 Structures: defining a structure variable, accessing members, array of structures, passing structure to function, 4.2 Unions: difference with structure, defining union variable, accessing members, 4.3 Pointers: declaration, operations on pointers, passing pointer to a function, accessing array elements using pointers, pointer to pointer, array of pointers, pointer to structure, self referential structure.	8	15%
SECOND INTERNAL EXAMINATION			
V	**Files and Library Functions** 5.1 Different types of files in C: Opening & Closing a file, Writing to and Reading from a file, 5.2 Processing files,5.3 Library functions related to file: fseek(), ftell(),ungetc(), fread(), fwrite(), 5.4 Command Line arguments in C.	6	20%
VI	**Memory and Registry** 6.1 Dynamic memory allocation, 6.2 Storage class associated with variables: automatic, static, external and register, 6.3 User defined data types: enumerated data type, typedef - bitwise operators.	5	20%
END SEMESTER EXAM			

QUESTION PAPER PATTERN:

Maximum marks : 100 Time : 3 hours

PART A: 8 Questions from Module 1&2 (4+4). 6 questions to be answered. 6x5=30 Marks
PART B: 8 Questions from Module 3&4 (4+4). 6 questions to be answered. 6x5= 30 Marks
PART C: 6 Questions from Module 5&6 (3+3). 4 questions to be answered. 4x10=40 Marks