Course code	Course Name	L-T-P - Credits	Year of Introduction
AU208	**COMPUTER PROGRAMMING**	**3-0-0-3**	**2016**

Prerequisite : Nil

Course Objectives
- To impart knowledge in programming using C language
- To give an overview of the use of C program in Automotive industry

Syllabus

Microcontroller modules in Automobile- C in Automotive industry; Introduction to C programming- Data types – keywords – operators; Arrays- Matrix operation – Structure; Functions – Recursion – Macros; Pointers – Memory allocation – storage class; Files– transfer of data in blocks; Introduction to MATLAB; Steps for software development; MISRA C standard.

Expected outcome.

After this course students will be able to do simple programs in C language and familiar with the interface.

Text Book:

1. Bryon S.Gottfried, *Programming with C Language*.

References:

1. Balaguruswamy, *Programming in ANSI C*
2. B.W. Kernigham & Dennis M Ritchie, *C programming language*.
3. Deitel, *How to Program C*

	Course Plan		
Module	**Contents**	**Hours**	**Sem.ExamMarks**
I	Microcontroller modules in Automobile; Microcontroller programming – high level language, assembly language and machine language; Compiler, assembler and interpreter; Integrated development environment; Chip burning; Use of C in Automotive industry.	7	15%
II	Introduction to C programming - Data types; Keywords, Constants and Variables; Escape Sequences; Various I/O functions; Header files; Type casting; Various operators; Precedence of operators; Branching statements; Looping statements; Nested loops; break and continue instructions.	7	15%
FIRST INTERNAL EXAMINATION			
III	Arrays; One dimensional arrays; Selection sorting; Binary searching; Various string handling functions; Multidimensional Arrays; Matrix Operations (Addition, Transpose and Multiplication) Sorting of Strings; Structure and Union; Array of Structures.	7	15%
IV	Functions; Call by value and call by reference method; Passing One Dimensional and Multidimensional Arrays to a Function; Matrix operations using functions; Recursion; Factorial and Fibonacci series using recursive calls; Macros; Pre-processor directives; Scope of variables.	7	15%
SECOND INTERNAL EXAMINATION			
V	Pointers; Pointer to an array; Pointer to a structure; Array of pointers; Pointer to a pointer; Dynamic memory allocation; Reallocation of memory; Self Referential	7	20%

	structure; Stack and heap; Storage class.		
VI	Files; Reading, Writing, Appending and rewriting of text and binary files; Transfer of data in blocks, Moving of file pointer in a file; Introduction to MATLAB; Steps for software development; MISRA C standard.	7	20%
END SEMESTER EXAM			

Question Paper Pattern

Total marks: 100,   Time: 3 hours
The question paper shall consist of three parts

Part A
4 questions uniformly covering modules I and II. Each question carries 10 marks
Students will have to answer any three questions out of 4 (3X10 marks =30 marks)

Part B
4 questions uniformly covering modules III and IV. Each question carries 10 marks
Students will have to answer any three questions out of 4 (3X10 marks =30 marks)

Part C
6 questions uniformly covering modules V and VI. Each question carries 10 marks
Students will have to answer any four questions out of 6 (4X10 marks =40 marks)

Note: In all parts, each question can have a maximum of four sub questions, if needed.