FUNDAMENTALS OF PROGRAMMING
BE 1st SEMESTER (ME/IT/EE/AE) /BE 2nd SEMESTER (EC/CE/CIVIL)
SUB CODE: CC109
Teaching Scheme (Credits and Hours)

Teaching scheme				Total Credit	Evaluation Scheme					
L	T	P	Total		Theory		Mid Sem Exam	CIA	Pract.	Total
Hrs	Hrs	Hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	Marks
02	00	04	06	04	3	70	30	20	30	150

LEARNING OBJECTIVES:

The educational objectives of this course are
- To Focus Fundamentals of Computers and Peripherals
- To Introduce programming language and aware the students about programming paradigm
- To Focus Concept and Methodology of Programming
- Brief the students regarding Object Oriented Programming Features
- 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.

OUTL INE OF THE COURSE:

Sr. No	Title of the Unit
1	**Introduction to Computer and Programming**
2	**Introduction to Programming**
3	**Fundamentals of 'C'**
4	**Control Structures in 'C'**
5	**Array & String**
6	**Functions**
7	**Recursion**
8	**Pointers**
9	**Structure and Union**
10	**File Management**
11	**The Preprocessor**
12	**Basics of Object Oriented Programming**

Total Hours (Theory): 30, Total Hours (Lab): 60, Total Hours: 90

DETAIL SYLLABUS

Unit No	Topics	Lecture (Hours)	Weightage (%)
1.	**Introduction to computer:** Introduction, Basic block diagram and functions of various components of computer, Concept of Hardware and Software, Types of software, Compiler and Interpreter	02	5
2.	**Introduction to Programming:** Basic Difference between Procedure Oriented Language and Object Oriented Language, Concepts of Machine level, Assembly level and High level programming, Flow charts and Algorithms	02	5
3.	**Fundamentals of 'C':** Features of C language, structure of C program, comments, header files, data types, constants and variables, operators, expressions, evaluation of expressions, type conversion, precedence and associativity, I/O functions.	04	10
4.	**Control Structures in 'C':** Simple statements, Decision making statements, Looping statements, Nesting of control structures, break and continue statement, goto statement	04	20
5.	**Array & String:** Concept of array, One and Two dimensional arrays, declaration and initialization of arrays, String, String storage, Built-in string functions	03	15
6.	**Functions:** Concept of user defined functions, prototype, definition of function, parameters, parameter passing, calling a function, Macros, Preprocessing	02	5

7.	**Recursion:** Definitions, recursive function, Examples, Applications		02	5
8.	**Pointers:**Basics of pointers, pointer to pointer, pointer and array, pointer to array, array of pointers, function returning a pointer		02	10
9.	**Structure and Union:**Basics of structure, structure members, accessing structure members, nested structures, array of structures, structure and functions, structures and pointers,unions, bit-fields		03	10
10.	**File Management:**Introduction to file management, Simple file management functions for text files, Reading from and writing to files.		02	5
11.	**The Preprocessor:**Introduction, Macro substitution, File Inclusion, Compiler Control Directives		02	5
12.	**Concepts of Object Oriented Programming:**Fundamentals, Features like class, object, polymorphism, inheritance, data encapsulation and abstraction.		02	5
	Total		**30**	**100**

INSTRUCTIONAL METHOD AND PEDAGOGY (Continuous Internal Assessment (CIA) Scheme)
- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed
- Lecture may be conducted with the aid of multi-media projector, black board, OHP etc.
- Attendance is compulsory in lectures, Practicals and Tutorials which carries 05 Marks.
- At regular intervals assignments is given. In all, a student should submit all assignments of 05 marks each.
- Classroom participation and involvement in solving the problems in Tutorial rooms carries 05 Marks.
- Viva Voce will be conducted at the end of the semester of 05 Marks.
- One internal exam of 30 marks is conducted as a part of Mid semester evaluation.
- Experiments shall be performed in the laboratory related to course contents.
- The course includes a laboratory, where students have an opportunity to build an appreciation for the concept being taught in lectures.

STUDENTS LEARNING OUTCOME:
- On successful completion of the course, the student will be having the basic knowledge of programming paradigm,fundamentals of computer and peripherals and thus being prepared with the programming spectrum in depth as desired.
- Student will be able to effectively solve any real life problem and lead the exploration of new application and techniques for their use.

RECOMMENDED STUDY MATERIAL:
Text Books:
- Programming in ANSI C, Forth Edition, E Balagurusamy, TMH
- Object-oriented programming with C++ By E Balagurusamy, 2nd Edition, TMH.

Reference Books:
- Let us C, Yashwant Kanitkar
- C: The Complete Reference, Herbert Schildt, McGrawHill
- Computer fundamentals and Programming in C, Pradip dey and Manas Ghosh, Oxford

Web Material:
- http://www.programmingsimplified.com/c-program-examples
- http://en.wikipedia.org/wiki/C_%28programming_language%29

LIST OF PRACTICALS:
Tool to be used : Dev-cpp

Sr No.	List of Practicals
1	Basic Introduction to C program and turbo C setup(Compile/Run program)
2	Simple program using scanf/printf
3	Program using if/else
4	Program using operators(++,--,%,&,|,etc)
5	Switch case programs
6	Programs of loops(while loop)
7	Programs of loops(do…while loop)

8	Program of Nested loops(patterns using for loop)
9	Simple program of one-Dimentional array
10	Programs of two-dimentional array(addition/multiplication of matrix)
11	Programs of multidimentional array
12	Programs using goto 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	Simple Program to create a file
30	Program to read data from file and write into a file