Course Name: Computer Fundamentals & Principle of Computer Programming

Course Code: CS(EE)201

Course Credit: 3

Contact Hour: 3L-1T

Prerequisite: Basic math and Science

Course Objective:

The objectives of this course are

1. This course introduces the concepts of computer basics & programming with particular attention to Engineering examples.
2. The C programming language is used but the course will stress on fundamental parts of programming language, so that the students will have a basic concept for understanding and using other programming language.

Course Outcome:

On completion of the course students will be able to

1. Understanding the concept of input and output devices of Computers and how it works and recognize the basic terminology used in computer programming
2. Write, compile and debug programs in C language and use different data types for writing the programs.
3. Design programs connecting decision structures, loops and functions.
4. Explain the difference between call by value and call by address.
5. Understand the dynamic behavior of memory by the use of pointers.
6. Use different data structures and create / manipulate basic data files and developing applications for real world problems.

CO Mapping with departmental POs

H: High, M: Medium, L: Low

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	H	H										
CO 2		M										
CO 3	H	H										
CO 4												
CO 5	H		H	H	H							
CO 6	H	H		H			M		M			H

Course Content:

Module I: Fundamentals of Computer **10L**

Fundamentals of Computer : History of Computer, Generation of Computer, Classification of Computers, Basic Anatomy of Computer System, Primary & Secondary Memory, Processing Unit, Input & Output devices, Representation of Character- ASCII, BCD, Binary, Binary & Allied number systems, Conversion between number system, Representation of signed number-Signed Magnitude, Representation of signed Number-Signed 1's Complement, Representation of signed Number-Signed 2's Complement, Arithmetic & logic gates, Basic Concept of Assembly language, high level language, compiler and assembler, Basic concepts of operating systems like MS DOS, MS WINDOW, UNIX, Algorithm and flow chart

Module II: Variable and Data Types **3L**

C Fundamentals : The C character set identifiers and keywords, data type & sizes, variable names, declaration, statements

Module III: C Operators & Expressions **5L**

Operators & Expressions: Arithmetic operators, relational and logical operators, type, conversion, increment and decrement operators, bit wise operators, Assignment operators and expressions, precedence and order of evaluation. Input and Output : Standard input and output, Formatted output printf, Formatted input scanf

Module IV: Branching and Loop Statements **3L**

Flow of Control : Statement and blocks, if - else, switch, Loops - while, for do while, break and continue, go to and labels

Module V: Fundamentals and Program Structures **6L**

Fundamentals and Program Structures : Basic of functions, Function prototypes, function types, functions returning values, functions not returning values, Call by value and call by address, recursion, Storage Class: auto, external, static and register variables, scope rules, C preprocessor, command line arguments.

Module VI: Arrays, Strings and Pointers **6L**

One dimensional arrays, Pointers and functions, Character array and string, array of strings, Passing a string to a function, String related functions, Arrays and Pointers :Multidimensional arrays cont. Dynamic Memory Allocation

Module VII: Files handling with C **4L**

Formatted and unformatted files, Command line arguments, Examples with fopen, fclose, fgetc, fputc, fprintf, fscanf function.

Module VII: Structures and Unions **3L**

Basic of structures, structures and functions, Arrays of structures, bit fields, structures and pointers, Structures and functions

Text Books:

1. The C Programming Language- Kerninghan B.W. & Ritchie D.M.
2. Programming with C- Gottfried

Reference Books:

1. Mastering C- K R Venugopal
2. Fundamental of Computers - Rajaraman V.
3. Computer Fundamentals- Ram B.