Course Code: CSE-1121
Course Title: Computer Programming I
Credit Hours: 3
Contact Hours: 3 lecture hours per week
Type: Core, Engineering
Prerequisite: None
Co-requisite: CSE-1122 (Computer Programming I Lab)

The purpose of this course is to introduce the students to computer programming using structured language. The students will be able to enhance their analyzing and problem-solving skills and use
the same for writing programs using C language. Knowledge of this course will be needed as prerequisite knowledge for future courses such as CSE-1221 Computer Programming 2, CSE-1230
Competitive Programming 1, CSE-2321 Data Structures, CSE -2421 Computer Algorithms and many others.

Course Outcomes (COs):

Upon successful completion of this course, students will be able to:

#	CO Description	Weightage (%)
1.	**Understand** the fundamentals of programming and basic structure of C programming language	10%
2.	**Identify** and **apply** the appropriate **c**ontrol statements to solve different problems.	20%
3.	**Use** functions, arrays, strings, pointers, structures, unions, file manipulation etc. to solve different problems.	70%

Mapping of CO-PO:

Sl. No.	**COs**	**POs**	**Bloom's taxonon domain/level**
CO1	**Understand** the fundamentals of programming and basic structure of C programming language	PO1	Cognitive/Unders
CO2	**Identify** and **apply** the appropriate **c**ontrol statements to solve different problems.	PO2	Cognitive/Apply

CO3	**Use** functions, arrays, strings, pointers, structures, unions, file manipulation etc. to solve different problems.	PO2	Cognitive/Apply

Course Content:

Section-A (Mid-term: 30 Marks)

1. Basic organization of computer, definition of software, its classification; Problem solving steps;

Flow charts; Introduction of C: history and Characteristics of C, Identifiers and keywords, data types, constants, variables, statements, symbolic constant.

2. Operators: arithmetic, unary, relational, logical, assignment, conditional operators; precedence of

operators, expressions, type conversions, library functions.

Input and Output: Managing data input (scanf, getchar, gets etc), Managing data output (printf, putchar, puts etc), formatted input and output.

3. Control statements: Branching- if and if… else statements, nested if, switch statement; Loopingwhile, do…while and for looping statements.

Section-B (Final Exam: 50 Marks)

Group-A (20 Marks)

4. Nested Looping, break and continue statement, goto statement.

5. Function: defining a function, accessing a function, function prototypes, passing arguments to a function, Recursions, Storage class.

Group-B (30 Marks)

6. Array: defining an array, processing an array, passing arrays to functions, Multidimensional array, String: string basics, string library functions, string copy, string concatenation, string comparison, Array of Strings.

7. Pointers: pointer declarations, operations on pointers, Pointers and arrays, Pointers and functions,

Dynamic memory allocation. Structure: defining a structure, processing a structure, structure and pointers, passing structures to functions, self-referential structure; Union.

8. File: opening and closing a file, creating a file, processing a file, Low level programming – bitwise operations, bit fields; Some additional features of C (Enumerations , Command line parameters, Header files, Preprocessors, Macros etc.).

Text Books:

1. Byron S. Gottfried Theory and Problems of Programming with C 3rd Edition McGraw-Hill 2011 0-07-014590-3

Reference Books:

1. Herbert Schildt, Teach Yourself C, 3rd Edition, Osborne McGraw-Hill, 1997
2. Stephen G. Kochan, Programming in C , 4th Edition, Sams Publishing, 2014
3. Balagurusamy, Programming in ANSI C, 7th Edition, Tata McGraw-Hill Publishing Company Limited, 2016
4. C Kernighan & D.M. Ritchie, The C Programming Language, 2nd Edition Prantice-Hall of India 1994
5. Yashavant Kanetkar, Let us C, 16th Edition BPB Publications 2017
6. "Paul Deitel Harvey Deitel", C How to Program 7th Edition "Pearson Education Inc" 2013
7. "J Hanly and E Koffman 8/e Pearson 2016", Problem Solving and Program Design in C 8th Edition "Pearson Education Inc" 2016
8. Herbert Schildt: C The Complete Referenc, 4th Edition Osborne McGraw-Hill 200