I Year-I Semester		**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**

PROGRAMMING FOR PROBLEM SOLVING USING C (ES1101)

Prerequisite Course:

Basic Knowledge on Computers

Course Description and Objectives:

Formulating algorithmic solutions to problems and implementing algorithms in C

Course Outcomes:

Upon completion of the course, the student will be able to achieve the following outcomes.

Cos	Course Outcomes	POs
1	Acquires skills to write, compile and debug programs in C language.	2,3
2	Be able to use different operators, data types and write programs that use two-way/ multi-way selection.	2,3,12
3	Acquire knowledge to select the best loop construct for a given problem.	1,2
4	Design and implements programs to analyze the different pointer applications	2,3
5	Design and implements C programs with functions, File I/O operations	2,3

Syllabus:

UNIT-I:
Objective: To learn about the computer systems, computing environments, developing of a computer program and Structure of a C Program

Introduction to Computers: Computer Systems, Computing Environments, Computer languages, Creating and running Programs, Computer Numbering System, Storing Integers, Storing Real Numbers

Introduction to the C Language: Background, C Programs, Identifiers, data Types, Variable, Constants, Input/output, Programming Examples, Scope, Storage Classes and Type Qualifiers, Tips and Common Programming Errors Key Terms, Summary, Practice Seat.

Structure of a C Program: Expressions Precedence and Associativity, Side Effects, Evaluating Expressions, Type Conversion Statements, Simple Programs, Command Line Arguments Tips and Common Errors, Key Terms, Summary, Practice Sets.

UNIT-II:

Objective: To gain knowledge of the operators, selection, control statements and repetition in C

Bitwise Operators: Exact Size Integer Types, Logical Bitwise Operators, Shift Operators, Tips and Common Programming Errors, Key Terms, Summary, Practice Set.
Selection & Making Decisions: Logical Data and Operators, Two Way Selection, Multiway Selection, More Standard Functions, Tips and Common Programming Errors, Key Terms, Summary, Practice Set.
Repetition: Concept of Loop, Pretest and Post-test Loops, Initialization and Updating, Event and Counter Controlled Loops, Loops in C, Other Statements Related to Looping, Looping Applications,

Programming Example The Calculator Program, Tips and Common Programming Errors, Key Terms, Summary, Practice Set.

UNIT -III:

Objective: To learn about the design concepts of arrays, strings, enumerated structure and union types. To learn about their usage.

Arrays: Concepts, Using Array in C, Array Application, Two Dimensional Arrays, Multidimensional Arrays, Programming Example – Calculate Averages, Tips and Common Programming Errors, Key Terms, Summary, Practice Set.
Strings: String Concepts, C String, String Input / Output Functions, Arrays of Strings, String Manipulation Functions String/ Data Conversion, A Programming Example – Morse Code, Tips and Common Programming Errors, Key Terms, Summary, Practice Set.
Enumerated, Structure, and Union: The Type Definition (Type def), Enumerated Types, Structure, Unions, Programming Application, Tips and Common Programming Errors, Key Terms, Summary, Practice Set.

UNIT-IV:

Objective: To assimilate about pointers, dynamic memory allocation and know the significance of Preprocessor.
Pointers: Interdiction, Pointers to pointers, Compatibility, L value and R value, Tips and Common Programming Errors, Key Terms, Summary, Practice Set.
Pointer Applications: Arrays, and Pointers, Pointer Arithmetic and Arrays, Memory Allocation Function, Array of Pointers, Programming Application, Tips and Common Programming Errors, Key Terms, Summary, Practice Set.
Processor Commands: Processor Commands, Tips and Common Programming Errors, Key Terms, Summary, Practice Set.

UNIT-V:

Objective: To assimilate about File I/O and significance of functions

Text Input / Output: Files, Streams, Standard Library Input / Output Functions, Formatting Input / Output Functions, Character Input / Output Functions, Tips and Common Programming Errors, Key Terms, Summary, Practice Set.
Binary Input / Output: Text versus Binary Streams, Standard Library, Functions for Files, Converting File Type, Tips and Common Programming Errors, Key Terms, Summary, Practice Set.
Functions: Designing, Structured Programs, Function in C, User Defined Functions, Inter-Function Communication, Standard Functions, Passing Array to Functions, Passing Pointers to Functions, Recursion, Passing an Array to Function, Tips and Common Programming Errors, Key Terms, Summary, Practice Set.

TEXT BOOKS:
1. Programming for Problem Solving, Behrouz A. Forouzan, Richard F.Gilberg, CENGAGE
2. The C Programming Language, Brian W. Kernighan, Dennis M. Ritchie, 2e, Pearson
3. Programming in C, Reema Thareja, OXFORD

REFERENCE:
1. Computer Fundamentals and Programming, Sumithabha Das, Mc Graw Hill
2. Programming in C, Ashok N. Kamthane, Amit Kamthane, Pearson
3. Computer Fundamentals and Programming in C, Pradip Dey, Manas Ghosh, OXFORD