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| Course Code | 150120101 | | | |
| Category | Core Subject | | | |
| Course Title | Problem Solving using C Language(PS-C) | | | |
| Scheme and Credits | Theory | Tutorial | Lab | Credits |
| | 4 | 0 | 4 | 6 |
| Pre-requisites (if any) | This course is based on the course “Introduction to Programming”. So the students must have basic knowledge of mathematical and algorithmic logics, to understand major control structures such as branching, loops and expressions, to be able to use functions and to create arrays of elementary objects in their simple C programs. The course teaching languages English, so students have to have communication, reading and apprehension skills of English. | | | |

1. Course Objectives:

| Sr. | Course Outcome (Learner will be able to) |
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| 1. | To be able to develop logic, flowcharts, pseudo code and algorithm to solve problem through programming. |
| 2. | To learn about the data types, operators and functions in C programming language. |
| 3. | To be able to write code in C programming language for a variety of problems. |
| 4. | Understanding a functional hierarchical code organization. |
| 5. | Ability to define and manage data structures based on problem subject domain. |
| 6. | Ability to work with textual information, characters and strings. |
| 7. | Ability to work with arrays of complex objects. |
| 8. | Understanding a concept of object thinking within the frame work of functional model. |
| 9. | Understanding a defensive programming concept. Ability to handle possible errors during program execution. |

2. Course Contents:

| Unit | Course Content | Weightage |
|---------------|---|------------|
| Unit I | <p>Introduction to programming:</p> <p>Programs & programming, programming languages, compiler, interpreter, loader</p> <p>& linker, C program execution, Classification of Programming Languages, Concept of Structured Programming and Algorithms; Good programming practices: Comments, Meaningful identifiers name. Simple program in C, Structure of C Program, Tokens, Concept of Identifier, Variable, Constant and Keywords , Data types in C.</p> | 10% |

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|-----------------|--|------------|
| Unit II | <p>C Programming Basics: Program statements, declarations, How the computer stores data in memory, Operators and Expressions, L-values and R-values. Type casting & type conversion.</p> <p>Input Output: Basic Screen and Keyboard I/O in C, Escape sequence , Unformatted Input and Output, Formatted Input, Output Functions and format specified.</p> <p>Concepts of Function, Working with user define function Writing first program with the help of flow chart and user define function.</p> | 20% |
| Unit III | <p>Control Statements: Specifying Test Condition for Selection and Iteration, Writing Test Expression, Conditional execution and selection, Iteration and repetitive Execution: go to statement for while and do-while loops; variations off or loop, break & continue statement, nested loops.</p> | 15% |
| Unit IV | <p>Arrays & strings: One-dimensional Array, Strings, String: One dimensional Array, Multi- dimensional array, Array of string.</p> | 25% |
| Unit V | <p>Functions: Passing array to Function, Scope and Extent, Storage class Recursion Concept of recursion, Types of recursion, comparison of iteration and recursion</p> | 30% |

3. Text Books:

1. Pradip Dey – Manas Ghosh, Programming in C Second Edition (Oxford Publication).
2. Reema Thareja, "Programming in C", 2nd Edition, Oxford University Press.
3. Balagurusamy, Programming in ANSI C, Tata McGraw Hill.
4. Ashok N Kamthane, Programming with ANSI and Turbo C, Pearson Education.
5. Brian W. Kernighan, Dennis Ritchie, "The C Programming Language", Pearson
6. Yeshvant Kanetkar, "Let Us C", BPB Publication

4. Webilography:

1. <https://www.javatpoint.com>
2. <https://www.tutorialspoint.com>

5. Accomplishment of the student after completing the course:

After completion of the course students should become capable of solving problems using computers through C programming language