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| Semester | 1 |
| Course | Major |
| Paper Code | C1CS230122T & C1CS230122P |
| Paper Title | PROBLEM SOLVING TECHNIQUES USING C |
| No. of Credits | 4 |
| Theory/ Practical / Composite | Composite |
| Minimum No. of preparatory hours per week a student has to devote | 5 |
| Number of Modules | One |
| Syllabus | <ol style="list-style-type: none"> 1. Generations of Programming Languages: Machine Language, Assembly Language, Procedural Language, Object Oriented Language. 2. Introduction to C Programming Language: Features and Structure of a C Program, Character Set, Identifiers and Keywords, Variables and Constants, Brief Idea about C Library. 3. Data Types in C: Primitive, User-Defined, Enumerated, Type Casting, Declaration. 4. Operators in C: Different Types, Precedence and Associativity, Expressions using Operators. 5. Input-Output Operations: Standard Functions with Escape Sequences and Format Specifiers. 6. Decision Making Statement: if-else, switch-case, Ternary Operator. 7. Iterative Statements: for, while and do-while with control statements like break and continue. 8. Functions: Declaration, Calling and Definition, Idea about Recursive Function. 9. Scope of Variables, Storage Classes. 10. Array: Declaration and Use-Both 1-D and 2-D, Idea about String, Passing Array to a Function. 11. Pointer: A Brief Idea about Declaration and Use, Passing Pointer to a Function-Idea of Call-By-Value and Call-By-Address. 12. Structure and Union: Declaration and Use. 13. Macro: Different Types, Declaration and Use. 14. File Handling: Basic input and output operations on a disk file, sequential and random file access. |
| Learning Outcomes | <ol style="list-style-type: none"> 1. Understand the basic concepts of the procedural paradigm. 2. Expected to build interactive and modular programs. |

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| | <p>3. Enable the students to learn the concepts of memory management through pointers.</p> <p>4. Learn library functions.</p> <p>5. Familiarize with the different file handling techniques</p> <p>6. Know the responsibilities of an ethical programmer</p> <p>7. To contribute in the development of ITES-based applications in solving any real life problem</p> | |
| Reading/Reference Lists | <p>1. The C Programming Language, Kernighan and Ritchie, PHI Publications</p> <p>2. Programming with C, Gottfried, TMH Publications</p> <p>3. Programming in C, Dey and Ghosh, Oxford Publications</p> <p>4. Programming in ANSI C, Balaguruswamy, Mc Graw Hill</p> <p>5. NPTEL course on Introduction to Programming in C by Dr. Satyadev Nandakumar, IIT Kanpur; course link: https://youtu.be/XTiIiI-LOY8</p> | |
| Evaluation | <p>Theory</p> <p>CIA: 12</p> <p>Attendance: 3</p> <p>Semester Exam: 45</p> | <p>Practical</p> <p>CA: 38</p> <p>Attendance: 2</p> |
| Paper Structure for Theory Semester Exam | Answer 3 out of 5 of 15 marks each | |