Maulana Abul Kalam Azad University of Technology, West Bengal
(Formerly West Bengal University of Technology)
1st Year Curriculum Structure for B.Tech courses in Engineering & Technology
(Applicable from the academic session 2018-2019)

Course Code : ES-CS291	**Category :** Engineering Science Courses
Course Title : Programming for Problem Solving	**Semester** : Second
L-T-P : 0-0-4	**Credit:2**
Pre-Requisites:	

The laboratory should be preceded or followed by a tutorial to explain the approach or algorithm to be implemented for the problem given.

Tutorial 1: Problem solving using computers:

    Lab1: Familiarization with programming environment

Tutorial 2: Variable types and type conversions:

    Lab 2: Simple computational problems using arithmetic expressions

Tutorial 3: Branching and logical expressions:

    Lab 3: Problems involving if-then-else structures

Tutorial 4: Loops, while and for loops:

    Lab 4: Iterative problems e.g., sum of series

Tutorial 5: 1D Arrays: searching, sorting:

    Lab 5: 1D Array manipulation

Tutorial 6: 2D arrays and Strings

    Lab 6: Matrix problems, String operations

Tutorial 7: Functions, call by value:

    Lab 7: Simple functions

Tutorial 8 &9: Numerical methods (Root finding, numerical differentiation, numerical integration):

    Lab 8 and 9: Programming for solving Numerical methods problems

Tutorial 10: Recursion, structure of recursive calls

    Lab 10: Recursive functions

Tutorial 11: Pointers, structures and dynamic memory allocation

    Lab 11: Pointers and structures

Tutorial 12: File handling:

    Lab 12: File operations

Laboratory Outcomes

- To formulate the algorithms for simple problems
- To translate given algorithms to a working and correct program
- To be able to correct syntax errors as reported by the compilers
- To be able to identify and correct logical errors encountered at run time
- To be able to write iterative as well as recursive programs
- To be able to represent data in arrays, strings and structures and manipulate them through a program
- To be able to declare pointers of different types and use them in defining self-referential structures.
- To be able to create, read and write to and from simple text files.