INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI
भारतीय प्रौद्योगिकी संस्थान तिरुपति

Yerpedu-Venkatagiri Road, Yerpedu Post, Tirupati District, Andhra Pradesh - 517 619

1.	Title of the course	Basic Programming Laboratory
2.	Course number	MA517M
3.	Structure of credits (L-T-P-C)	1-0-2-2
4.	New course/modification to	New
5.	To be offered by	Mathematics and Statistics
6.	Prerequisite	None
7.	**Course Objective(s):** To practice the basics of programming using C++. To design sorting algorithms. To design and build object-oriented software. To develop programming skills to solve linear systems.	
8.	**Course Content:** Basics: C++ environment, variables, arrays, selection and repetition structure, functions, pointers, file handling, OOPS: class, memory allocation, operator overloading, inheritance, templates, Algorithm: singular value decomposition, sorting, searching, Euler project problems, Matlab: introduction, algebra of matrices, linear solvers, singular value decomposition, tensor classes, tensor toolbox.	
9.	**Textbook(s):** 1. Weiss M A, Data Structures and Algorithm Analysis in C++, 4th Edition, Pearson (2014).	
10.	**Reference(s):** 1. Stroustrup B, Programming: Principles and Practice Using C++, 2nd Edition, Addison Wesley (2014). 2. Arnos G, MATLAB: An Introduction with Applications, 4th Edition, Wiley (2012). 3. Daniel T V and Brian D H, Essential MATLAB for Engineers and Scientists, 8th Edition, Academic Press (2022). 4. Adam D, Data Structures and Algorithms in C++, 4th Edition, Cengage Learning (2013).	