



राष्ट्रीय प्रौद्योगिकी संस्थान सिलचर / National Institute of Technology Silchar
गणित विभाग / Department of Mathematics

Date: 13/07/2026

Subject Code : MA-5105

Subject Name : Computer Programming & Data Structures

Name of Course Coordinator: Dr. Praveen Kumar Gupta

Total Credit: 04 Credits

Name of Course Instructor(s): Dr. Praveen Kumar Gupta

First Day of Instruction	11 th August, 2026 (Tentative)
Mid-Semester Examination	28 th September - 06 th October, 2026
Minor Test	Second Week of November, 2026
Last Day of Instruction	27 th November, 2026
End-Semester Examination	30 th November - 09 th December, 2026

Lecture Plan for August-December 2026

Sl. No.	Description	Lectures
1.	Computer Programming in C: Introduction and basic statements.	L1-L3
2.	Control statement and Loops	L4-L6
3.	Functions	L7-L8
4.	Arrays, Subroutines, Character Strings	L9-L12
5.	Structures, Pointer data type and its applications	L13-L15
6.	Shorting Algorithms: Bubble sort, Selection sort, Insertion sort, Shell sort, Quick sort, Heapsort, Radix sort	L16-L17
7.	Searching Algorithms: Linear Search, Binary Search	L18-L19
8.	Data Structure: Introduction to data types, Data structures, linear and Multi-dimensional Arrays, Pointers	L20-L23
9.	Linked Lists, Stacks, Queues, Complexity algorithms, Singly linked lists, Doubled linked lists, Circular linked lists, Application of Linked Lists	L24-L27
10.	Introduction to complexity of algorithm, Non-linear data Structure, Graphs, Various representation of graphs	L28-L31
11.	Trees: binary trees, red-black trees, AVL tree, B tree, B+ tree, Spanning tree	L32-L36

Text /Reference Books:

- Balagurusamy, E.: Programming In ANSI C, McGraw Hill Education, 7th Edition, 2016.
- Kanetkar, Y., Let us C, BPB Publication, 3rd Edition, 2007.
- Kernighan, B. W. and Ritchie, D.M.: The C Programming Language, Pearson, 2nd Edition, 2015.
- Kanetkar, Y.: Understanding Pointers in C & C++, BPB Publications, 5th Edition, 2018.
- Tremblay, J.P. and Sorenson, P.: An Introduction to Data Structures with Applications, McGraw Hill, 1985.
- Lipschutz, S.: Data Structures with C, Schaum's Outlines, McGraw Hill Education, 2017.

Evaluation Plan for August-December 2026

Sessional Assessment: 10 Marks*

Minor Test: 10 Marks

Mid Semester Exam: 30 Marks

End Semester Exam: 50 Marks

***The sessional assessment is based on the performance in class test/quiz/viva/assignment/class impression/attendance etc.**

(Dr. P.K. Gupta)
Course Coordinator