Data Structures and Algorithms (CS F211 / MAC F242)

Jan–May 2026

January 7, 2026

When and Where

Lectures
- ▶ Time: Mon Wed Fri 11:00 AM – 11:50 AM
- ▶ Place: LT1

Labs
- ▶ Time: Fri 1:00 PM – 3:00 PM
- ▶ Place: CC 219 (additional venue TBA)

Exams
- ▶ Midsem: 10 March (Tuesday), 11:30 AM – 1:00 PM
- ▶ Endsem: 06 May (Wednesday), 2:00 PM – 5:00 PM

Google Calendar

Scan the QR code to add the course Google Calendar

People

- Students
  - CS Single degree 2nd year 2nd semester
  - CS + X, Dual degree 3rd year 2nd semester
  - Math and Computing, 2nd year 2nd semester
- Staff
  - Aniket Basu Roy (Instructor-in-Charge)
  - Girija Deepak Limaye (Instructor)
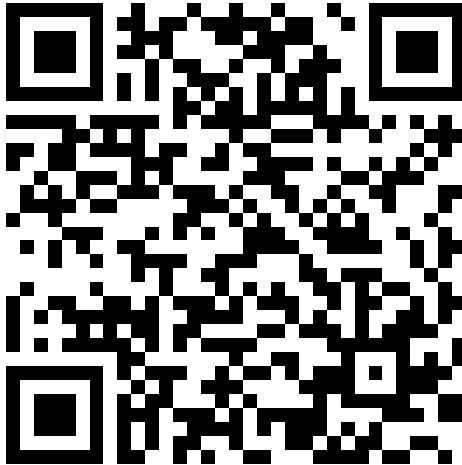 - Siddharth Gupta (Lab Instructor)
  - Teaching assistants (TBA)

Zulip Chat

Scan the QR code below to join the course Zulip Chat.

Course Webpage

Scan the QR code below to visit the course webpage.

Introduction

> "THE PROCESS of preparing programs for a digital computer is especially attractive, not only because it can be economically and scientifically rewarding, but also because it can be an aesthetic experience much like composing poetry or music."

— *The Art of Computer Programming, Donald E. Knuth*

A Tentative List of Topics

1. Foundations
   - What and Why
   - Growth of Functions. Asymptotic Notations
   - Recurrences
   - Probabilistic Analysis and Randomized Algorithms
2. Sorting and Order Statistics
   - Heapsort
   - Quicksort
   - Lower Bounds for comparision-based sorting; linear time sorting
   - Medians and Order Statistics

A Tentative List of Topics

3. Data Structures
   - Stacks, Queues, Deques, Linked Lists
   - Hash Tables
   - Binary Search Trees
   - Height-Balanced Trees
4. Graph Algorithms
   - Representation of Graphs
   - Graph Traversals
   - Minimum Spanning Trees
   - Single-Source Shortest Paths
   - All-Pairs Shortest Paths
   - Maximum Flow

Evaluation and Grading Policy

Endsem	40%
Midsem	35%
Labs	25%

References

1. Cormen, T. H., Leiserson, C. E., Rivest, R. L., & Stein, C. (2022). Introduction to algorithms (4th ed.). MIT Press.
2. Dasgupta, S., Papadimitriou, C. H., & Vazirani, U. V. (2006). Algorithms. McGraw-Hill.
3. Kleinberg, J., & Tardos, E. (2006). Algorithm design. Pearson/Addison-Wesley.
4. Knuth, D. E. (1997). The Art of Computer Programming, Vol. 1: Fundamental Algorithms (3rd ed.). Addison-Wesley.

Handout

- To be uploaded after the approval of the DCA.

Lecture Schedule

Lecture 1 (07/01)

- Administrivia

Right to Disconnect

All correspondence (email or otherwise) should preferably be sent Monday to Friday (excluding institute holidays), between 9:00 AM and 5:00 PM.