

Introduction to Algorithms and Programming
Syllabus
2021-2022 Spring

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Course Description

In this course, key foundations and fundamentals of algorithms and programming will be introduced. An overview of algorithms and programming topics will be given.

Recommended Readings

Introduction to Algorithms, 3rd Ed, Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, The MIT Press
Problem Solving in Data Structures & Algorithms Using C++, Hermant Jain
Data Structures and Algorithm Analysis in C++, 4th Edition Weiss, Mark A., Pearson
Big Java: Late Objects, Big Java Late Objects, Enhanced eText, 2nd Edition, Wiley
Algorithm Design: Foundations, Analysis, and Internet Examples, Michael T. Goodrich
And Roberto Tamassia, Wiley
C++ How to Program, 10th Edition, Paul J. Deitel, Pearson

Lecture Contents

Week 1	Introduction Overview of Algorithms and programming
Week 2	The Role of Algorithms in Computing Algorithms and Programming Foundations
Week 3	Programming and How to Program Growth of Functions
Week 4	Divide-and-Conquer Algorithms
Week 5	Probabilistic Analysis and Randomized Algorithms
Week 6	Sorting and Order Statistics
Week 7	Heapsort, Quicksort, Sorting in Linear Time, Medians and Order Statistics
Week 8	Midterm Exam
Week 9	Midterm Exam
Week 10	Data Structures, Elementary Data Structures, Hash Tables, Binary Search Trees, Red-Black Trees, Augmenting Data Structures
Week 11	Advanced Design and Analysis Techniques
Week 12	Graph Algorithms
Week 13	Programming Topics
Week 14	Programming Topics

	How to Advanced Program Using Programming Languages and SDEs
Week 15	Review of the topics before final exam
Week 16	Break
Week 17	Final Exam
Week 18	Final Exam

Grading Policy

Midterm:	%40
Final:	% 60

Wish all of you a successful, happy and healthy academic year.

Please send your questions and suggestions to my e-mail.