CS 3310 - Design and Analysis of Algorithms
Lecture 1: Introduction

Jonathan Johannsen

Department of Computer Science

Cal Poly Pomona

Outline of Lecture

- **Course Information**

- Tentative Course Schedule

- Introduction

Course Information

- Time: Tu/Th 5 - 6:50 PM
- Location: Room 8-302
- Instructor: Jonathan Johannsen
- Email: jdjohannsen@cpp.edu
- Office Phone: (909) 869-5519
- Office Location: 8-45
- Office Hours: Tu 1:15 - 2:15pm

                      Th 4:00pm - 5:00pm

Course Information (Cont'd)

- Topics to be Covered
  - Algorithm design techniques including divide-and-conquer, the greedy method, dynamic programming, backtracking, and branch-and-bound. Tractability. Complexity analysis using basic asymptotic notation.

- Prerequisites
  - CS 2400 and MAT 2250 with grades of C or better, or consent of instructor.
 - Ability to program in Java or C++ is required for programming projects.

Course Information (Cont'd)

Textbook (Mandatory)

- Foundations of Algorithms, by Neapolitan, R. E., 5th Edition, Jones and Bartlett Learning, 2015

Objectives

Upon completion of this course, students should be familiar with analyzing algorithm performance, choosing between various techniques to solve different problems, and how to implement and customize many key algorithms
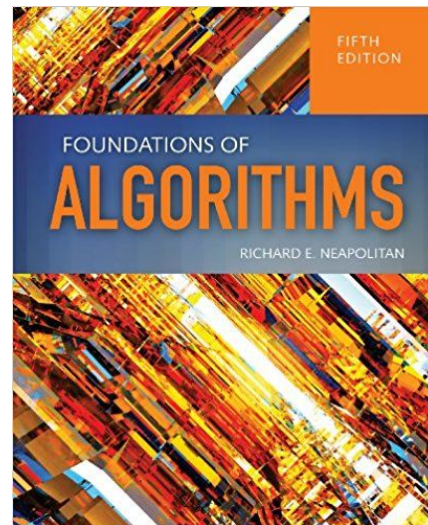
Blackboard

The following items will be posted on Blackboard:

1. Course Syllabus
2. Class Notes
   - Posted before class (Try to skim before class)
3. Assignments
   - Please pay attention to due dates
4. Grades
5. Class announcements and updates

Grading Policy

- In-Class Exercises: 10%
- Homework / Programming Projects: 30%
- Exam 1: 15%
- Exam 2: 15%
- Final Exam: 30%

Notes

➢ Bring paper to class for in-class exercises. These will consist of questions to be answered in teams of 2 to 4 (your choice).

➢ You may miss up to 2 in-class exercises without affecting your grade.

Course Information (Cont'd)

Final letter grades will be based on your overall score as follows:

A >= 93,

93 > A- >= 90,

90 > B+ >= 87,

86 > B >= 83,

83 > B- >= 80,

80 > C+ >= 77,

76 > C >= 73,

73 > C- >= 70,

70 > D+ >= 67,

66 > D >= 60,

F < 60.

Note: there will be no curving of grades

Course Information (Cont'd)

- Late Assignment Policy
  - All assignments should be submitted at the beginning of class on the due date, either via email or hard copy (each assignment will specify). Late assignments will receive -25% **per day**.

- Academic Integrity
  - All assignments, unless explicitly stated, are to be completed on your own. This is university policy.
  - Evidence of cheating, plagiarism, or unauthorized collaboration will result in a 0 grade for the assignment / exam.

How to get help

- Ask questions during class or after class.

- Attend office hours.

- Email me

  - Make sure that you put "CS3310" in the subject line.

  - Send it from your .cpp account (so it doesn't go to spam)

  - State clearly what you need in your email.

Outline of Lecture

- Course Information

- **Tentative Course Schedule**

- Introduction

Tentative Course Schedule

Date	Topic
Aug 22	Course Introduction, Pseudocode and Basic Algorithms
Aug 27	Chapter 1: Efficiency, Analysis, and Order
Aug 29	Chapter 1: Efficiency, Analysis, and Order
Sep 3	Appendix A: Induction
Sep 5	Appendix B: Recurrence Relations
Sep 10	Chapter 2: Divide-and-Conquer
Sep 12	Chapter 2: Divide-and-Conquer
Sep 17	Chapter 2: Divide-and-Conquer
Sep 19	Exam 1
Sep 24	Chapter 4: The Greedy Approach

Tentative Course Schedule

Date	Topic
Sep 26	Chapter 4: The Greedy Approach
Oct 1	Chapter 4: The Greedy Approach
Oct 3	Chapter 4: The Greedy Approach
Oct 8	Chapter 3: Dynamic Programming
Oct 10	Chapter 3: Dynamic Programming
Oct 15	Chapter 3: Dynamic Programming
Oct 17	Chapter 3: Dynamic Programming
Oct 22	Exam 2 Review
Oct 24	Exam 2
Oct 29	Chapter 5: Backtracking

Tentative Course Schedule

Date	Topic
Oct 31	Chapter 5: Backtracking
Nov 5	Chapter 5: Backtracking
Nov 7	Chapter 6: Branch and Bound
Nov 12	Chapter 6: Branch and Bound
Nov 14	Chapter 7: Intro to Computational Complexity
Nov 19	Chapter 7: Intro to Computational Complexity
Nov 21	Chapter 7: Intro to Computational Complexity
Nov 26	Chapter 9: The Theory of NP
Nov 28	No Class- Thanksgiving
Dec 3	Chapter 9: The Theory of NP

Tentative Course Schedule

Date	Topic
Dec 5	Final Review
Dec 10	Final Exam 5:00pm - 6:50pm

Outline of Lecture

- Course Information

- Tentative Course Schedule

- **Introduction**

About Me

Education

- Bachelor's in Computer Science from Biola University in 2004
- Masters in Computer Science from Cal Poly Pomona 2016
- PhD...?

Work

- Several years designing video games.
- Backend web design and app creation for multiple clients.
- Currently working for a company that creates scheduling software for various clients, designing both mobile apps and desktop applications.

Joined Cal Poly Pomona staff in Fall 2017