

CSC-321 Design and Analysis of Algorithms Summer II 2019

Instructor: Iyad Kanj

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Office Hours: Monday & Wednesday 4:00 - 5:30

Course Website: <https://d2l.depaul.edu/>

1 Course Description

This course is an introductory course to the design and analysis of algorithms. Fundamental topics such as running-time analysis, searching and sorting, graph algorithms, divide-and-conquer, greedy methods, and dynamic programming will be covered. Applications of these topics to various areas, including computational geometry and bioinformatics, will be discussed.

2 Prerequisites

Math-140 and CSC-301.

3 Required Textbook

Sanjoy Dasgupta, Christos Papadimitriou, and Umesh Vazirani, *Algorithms*, 1st edition, McGraw Hill, 2008. ISBN 978-0-07-352340-8.

You may get an electronic/soft copy of the textbook (if available), but note that the final exam for this course is open book, and electronic devices and internet access are not allowed in the exam (so if you get an electronic copy, you will need to print out the relevant material and bring it to the exam).

Moreover, homework and reading material may/will be assigned from the textbook. If you obtain a version of the textbook in which the pages do not match those of the required version above, then you are responsible for any issues that may result from this discrepancy (e.g., read the wrong material or answered the wrong question, etc.).

4 Attendance

Attendance is mandatory for students in the in-class section. Class participation constitutes 15% of the course grade (refer to the “Grading” section below), and missing a lecture can significantly harm your participation grade. Online students will be given extra weekly activities to complete, which will substitute for the class participation grade.

5 Grading

- *Class Participation— 15%*

In-class students are required to attend all lectures, actively participate in the class discussions (e.g., answer questions), and work on the assigned class activities. Except for extenuating circumstances (e.g., medical emergencies), missing a lecture will result in a 5% reduction in your class participation grade, for a maximum of 15% reduction in the class participation grade (i.e., the overall reduction over all absences does not exceed the 15% class participation grade).

Online students will be given extra weekly activities that total 15% of the course grade, which will substitute for the class participation grade.

- *Homework Assignments — 35%*

There will be 4 homework assignments, one each week, except for the last week of the class. All assignments carry the same weight. Assignments are due on the specified due date and time. Late submissions are not accepted. Please double check your homework submission after uploading it on D2L. It is your responsibility to submit the correct and complete file.

- *Final Exam — 50%*

The final exam is on Wednesday, August 21st, from 5:45-8:45 PM. The exam is cumulative. Online students should check D2L for when they can take the exam, and for registering for the exam. No make-up exams will be given. The exam is open book. Electronic devices and internet access are not allowed.

6 Topics

1. Introduction; growth of functions and algorithm analysis; and basic examples of searching and sorting. (Review material and Chapters 0.)
2. Divide and conquer. (Chapter 2.)
3. Graph algorithms & their applications. (Chapters 3 & 4.)
4. Greedy algorithms. (Chapter 5.)
5. Dynamic programming. (Chapter 6.)

7 Learning Outcomes

- Students will be able to use basic algorithmic structures for modeling problems in computer science.
- Students will learn basic techniques for designing and analyzing computer algorithms.
- Students will be exposed to a set of fundamental problems that have applications in several areas of computer science.

8 Plagiarism

All assignments must be done on **YOUR OWN**. You are strictly prohibited from using any source other than the text and the lecture notes when working on the homework problems. In particular, you are strictly forbidden from acquiring hints and/or solutions from the internet or from any other external resource or person (besides the instructor). Copying is strictly forbidden. Scholastic dishonesty includes acquiring answers from any unauthorized source, working with another person except when permitted by the

instructor, observing the work of other students during any exam, providing answers when not specifically authorized to do so, and informing any person of the contents of an exam prior to the exam. Disciplinary actions range from grade penalty to expulsion. Please refer to the school policy on plagiarism for more specific details.

9 Students with Disabilities

Students who feel they may need an accommodation based on the impact of a disability should contact the instructor privately to discuss their specific needs. All discussions will remain confidential. To ensure that you receive the most appropriate accommodation based on your needs, contact the instructor as early as possible in the quarter (preferably within the first week of class), and make sure that you have contacted the Center for Students with Disabilities (CSD) at: csd@depaul.edu

Lewis Center 1420, 25 East Jackson Blvd.
Phone number: (312)362-8002
Fax: (312)362-6544

10 Course Evaluation: School Policy

Course and instructor evaluations are critical for maintaining and improving course quality. Please complete the evaluations at the end of the quarter.