San José State University
College of Science/Department of Compute Science
CS 255-S1(50725) Design and Analysis of Algorithms
Fall 2020

Instructor(s):	Dr. Chung-Wen (Albert) Tsao
Office Location:	Zoom Meeting: Join URL: https://sjsu.zoom.us/j/98385042912
Telephone:	N/A
Email:	chung-wen.tsao@sjsu.edu (Once the class starts, use Canvas Inbox)
Class Days/Time:	T/Th 9:00 – 10:15 am
Classroom:	Live lectures take place using the Zoom Meeting at https://sjsu.zoom.us/j/98385042912. Lectures will be recorded and be made available on the same day.
Office Hours:	T/Th 10:15 – 10:45 am (right after the live lectures) or by appointments.
Office Location:	Zoom meeting using the same link for the live lectures.
Prerequisites:	CS 046B Introduction to Data Structures Grade C- or better CS 146 Data Structures and Algorithms Grade C- or better
Class Meeting Dates	Aug 19, 2020 – Dec 7, 2020
Units:	3

Course Description:

    Implementations of advanced tree structures, priority queues, heaps, directed and undirected graphs. Advanced searching and sorting (radix sort, heapsort, mergesort, and quicksort). Design and analysis of data structures and algorithms. Divide-and-conquer, greedy, and dynamic programming algorithm design techniques

Faculty Web Page and MYSJSU Messaging

    Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on MySJSU Canvas. You are responsible for regularly checking with the email system through MySJSU at http://my.sjsu.edu to learn of any updates.

Course Learning Outcomes (CLO):

Upon successful completion of this course, students should be able to:

- CLO 1. Code an example of each of the following types of algorithms:
  - Randomized
  - Parallel
  - Approximation
- CLO 2. Conduct an amortized analysis.
- CLO 3. Explain how above techniques are used in several applications and describe what benefits they have within those applications.

Required Text:
- Kleinberg and Tardos, Algorithm Design, First edition, Addison Wesley, 2005.
- Cormen, Leiserson, Rivest and Stein, Introduction to Algorithms, 3rd Edition, MIT Press, 2009.
  - You can find errata (bug reports) for the book http://www.cs.dartmouth.edu/~thc/clrs-bugs/bugs-3e.php.

Optional Text:
- Anany Levitin, The Design & Analysis of Algorithms (3r d edition), 3rd edition, 2003

Assignments:
- **Late assignments will NOT be accepted for any reason.**
- All homework must clearly indicate each student's name, course, and assignment number.
- Students are allowed (and actively encouraged) to form study groups.
- You may discuss solutions but you MUST write up the answers independently.
- If you use a website or reference book, you must cite it.
- If there are multiple similar submissions not exhibiting independent thought, or with words obviously lifted from a book or website, ALL such submissions will receive scores of 0.

LockDown Browser + Webcam Requirement:
This course requires the use of LockDown Browser and a webcam for online quizzes. The webcam can be the type that's built into your computer or one that plugs in with a USB cable. Watch this brief video to get a basic understanding of LockDown browser and the webcam feature. Download and install LockDown browser from here.

Pop Quizzes:
Pop quizzes locked with passcode may be given anytime during class. They are usually explained in class and due on the end of the lecture day. The purpose of pop quizzes is to encourage you to study and review the concepts and materials we discussed in the lecture.

Midterm and Final Examinations:
There will be two midterm examinations, and a cumulative final exam.
- Exams may NOT be taken before or after the scheduled time for any reason. All the students need to attend synchronously.
- No make-up exams for anyone except for the medical emergency with the official medical proof.
- Use of electronic devices during exams is NOT allowed unless stated otherwise.
- All exams include quizzes (closed book) and written test (open book)
- All exams will remain with the instructor.

Grading:
- Pop Quizzes   (15%)
- midterm exam 1   (20%),
- midterm exam 2   (20%),
- homework   (20%),
- final exam   (25%)

The grading scale is as follows:
A+	beyond 97%	A	93%	A-	90%
B+	87%	B	83%	B-	80%

C+	77%	C	73%	C-	70%
D+	67%	D	63%	D-	60%
F	below 60.0%				

Final grades will not be adjusted in any way - so an 89.99% is still a B+. No incomplete grades will be given.

Classroom Protocol and Other Notes
- **Missing the first two lectures and quizzes may be dropped out from the class by the instructor.**
- **No late assignments will be accepted without advanced arrangement with the instructor.**
- Do not ask for special treatment. The rules for this course apply to everyone equally.
- Cheating will not be tolerable; a ZERO will be given to any cheated assignment/exams, and it will be reported to the Department and the University.
- Do NOT share/post online any course materials, PPT slides, or homework solutions.
- Use of electronic devices during exams is NOT allowed unless stated otherwise.
- You are required to check Canvas for reading/assignments.
- The information on this syllabus is subject to change; changes, if any, will be clearly explained in class, and it is your responsibility to become aware of them.
- Once the class starts, use Canvas Inbox to email me for a faster response. I check the Canvas Inbox emails much more often than my school emails.

Attendance

University policy F69-24 at http://www.sjsu.edu/senate/docs/F69-24.pdf states that students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class.

Consent for Recording of Class and Public Sharing of Instructor Material:

University Policy S12-7, http://www.sjsu.edu/senate/docs/S12-7.pdf, requires students to obtain instructor's permission to record the course: Common courtesy and professional behavior dictate that you notify someone when you are recording him/her. **You must obtain the instructor's permission to make audio or video recordings in this class.** Such permission allows the recordings to be used for your private, study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material. Course material cannot be shared publicly without his/her approval. You may not publicly share or upload instructor generated material for this course such as exam questions, lecture notes, or homework solutions without instructor consent.

University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/" Make sure to review these policies and resources.

Tentative Course Schedule (This schedule is subject to change with fair notice.)

Week	Date	Topic	Assignments
1.	8/20	Introduction: Algorithms, Complexity vs Computability	
2.	8/25,8/27	Stable Matching	HW1 assigned

3.	9/1, 9/3	Running time, Growth of functions- Graphs	
4.	9/8, 9/10	Greedy technique	HW2 assigned
5.	9/15, 9/17	Divide and Conquer technique.	HW3 assigned
6.	9/22,9/24	Dynamic Programming technique	
7.	9/29, 10/01	Network Flow, Midterm 1	HW4 assigned
8.	10/6, 10/8	Network Flow, Heaps	
9.	10/13, 10/15	Hashing	HW5 assigned
10.	10/20,10/22	Amortized Analysis	
11.	10/27-10/29	Randomized Algorithms, Intractability	HW6 assigned
12.	11/3, 11/5	Intractability, **Midterm 2**	
13.	11/10, 11/12	Intractability, Approximation Algorithms	HW7 assigned
14.	11/17, 11/19	Approximation Algorithms,	
15.	11/24, 11/26	Distributed Algorithms, Thanksgiving Holiday - Campus Closed	HW8 assigned
16.	12/1,12/3	Review, Additional Topics	
17.	12/09	**Final exam,** 0715-0930am, Wednesday, December 9	

SJSU ACADEMIC YEAR CALENDAR 2020/21