San José State University
School of Science/Department of Computer Science
CS 262-01 Randomized Algorithms, Spring Semester, 2026

Course and Contact Information

Instructor:	Abhishek Roy
Office Location:	DH 282
Telephone:	(669) (246-2375)
Email:	abhishek.roy@sjsu.edu
Office Hours:	Wednesday, 9:30 AM ~ 11:3 AM PST (Days and time) [If the office hours does not suit you, **please email me and I will be happy to set up a zoom meeting with you**]
Class Days/Time:	Monday/Wednesday; 12 noon ~ 01:15 PM
Classroom:	Boccardo Business Center 221
Prerequisites:	CS154 or CS 155 or instructor's consent.
Scholar Support Hours Zoom Link	Email me to schedule the zoom meeting.

Course Description

Design and analysis of algorithms that make random choices to achieve efficiency, simplicity, or robustness, e.g., probabilistic analysis, randomized data structures, bounds, hashing, randomized sorting and selection, Monte Carlo and Las Vegas algorithms, randomized graph algorithms, and applications in different areas/

Course Format

Technology Intensive Course

1. For the quizzes, exams, projects etc. each student is required to have an internet-connected device (e.g. smartphone, tablet, laptop computer) with a webcam to be used exclusively for learning-related activities.
2. This course utilizes the Learning Management System (LMS), Canvas. General information about the LMS can be found at the eCampus website - http://www.sjsu.edu/at/ec (Links to an external site.)
3. Any operating system which can support pdf files, SJSU canvas software, and Microsoft office is needed.

MYSJSU Messaging

1. Course materials such as syllabus, handouts, notes, assignment instructions, announcements etc. can be found on Canvas Learning Management System course login website. All communications relevant to the course will be sent out using the Canvas messaging system (Canvas email and announcement board).
2. Students are responsible for regularly checking with the messaging system through Canvas to learn of any updates.
3. For help with using Canvas see Canvas Student Resources page (http://www.sjsu.edu/ecampus/teaching-tools/canvas/student_resources (Links to an external site.)) or reach out to Technical Support for Canvas: Email: ecampus@sjsu.edu; Phone: (408) 924-2337; https://www.sjsu.edu/ecampus/support/ (Links to an external site.)

Course Learning Outcomes (CLO)

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

1. Understand and apply probabilistic tools such as random variables, expectation, variance, tail bounds, and concentration inequalities in algorithm analysis.
2. Design and analyze randomized algorithms for fundamental problems including sorting, selection, hashing, and load balancing.
3. Differentiate between and evaluate Monte Carlo and Las Vegas algorithms, including correctness guarantees and performance trade-offs.
4. Analyze randomized data structures such as hash tables, skip lists, Bloom filters, and randomized search trees.
5. Apply randomized techniques to graph algorithms, including randomized algorithms for connectivity, matching, cuts, and routing.
6. Use sampling and randomized approximation methods to solve large-scale and high-dimensional problems efficiently.
7. Employ the probabilistic method to prove the existence of efficient algorithms and combinatorial structures.

8. Analyze algorithm robustness and failure probabilities, and quantify expected time, space, and error bounds.
9. Critically evaluate research literature in randomized and probabilistic algorithms and apply these ideas to modern applications such as data streams, distributed systems, and machine learning.

Required Texts/Readings

Textbook: No fixed textbooks. Study materials compiled using different sources will be provided on the Canvas site.

Suggested Reading:

1. Motwani, Rajeev and Raghavan, Prabhakar; Randomized Algorithms, 1st Edition. ISBN 978-0521474658. Cambridge University Press, 1995.

Library Liaison

Megwalu, Anamika
Phone: 408-808-2089
Email: anamika.megwalu@sjsu.edu

Course Requirements and Assignments

1. Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course-related activities.
2. This course requires students to go through the lecture materials in detail.
3. Students are expected to develop their skills and do similar problems and analyses on their own.
4. Attainment of the learning objectives (as listed above) will be assessed via in-class activities quizzes, projects, and final presentations.
5. Weights of these above-mentioned assessment activities are given below. Their tentative schedule could be found in the week-wise schedule of the course.

Assessment Type	Weightage
Pre-requisite Assignment	**N/A**
Quiz 1	**20%**
Quiz 2	**20%**

Quiz 3	**20%**
End Term Presentation	**40%**
Total	**100%**

NOTE that University policy F69-24 (Links to an external site.) 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. Attendance per se shall not be used as a criterion for grading."

Assignments, Examinations, or Evaluation

The course will have quizzes, a coding assignment/project, and a final-term presentation. Their percentage weightage is mentioned above. The syllabus and details of each of these will be posted in Canvas. The dates of the examinations and quizzes are indicated in the Week-wise Schedule.

Make-up exams and quizzes will be granted only for extenuating circumstances. Contact the instructor as soon as possible during the semester if you have such a circumstance. Absence from examinations and quizzes without prior approval will result in a score of 0.

Grading Information

Determination of Grades

- As mentioned in the **Course Requirements and Assignments**, this course will contain quizzes, Coding Assignment/Project, and Final Term. The individual weights of these are mentioned above under Course Requirements and Assignments.
- Students' grades will be determined based on the overall percentage obtained across all of the mentioned above. The benchmarks of the grades are mentioned in the table below.

Grade	***Percentage***
A plus	*95% to 100%*
A	*90% to 94%*
B plus	*85% to 89 %*
B	*80% to 84%*
C plus	*75% to 79%*
C	*70% to 74%*
D plus	*65% to 69%*
D	*60% to 64%*

Grade	*Percentage*
F	*< 60%*

Regrades

If you believe an error was made in the grading of your quiz or exam, you may request a regrade from me, Professor Saxena, either during my zoom office hours or by sending me an email. A request for a regrade must be made no more than a week after the quiz or exam is returned.

Classroom Protocol

Students are not allowed to record without instructor permission.

Students are prohibited from recording class activities (including lectures, office hours, advising sessions, etc.), distributing class recordings, or posting class recordings. Materials created by the instructor for the course (syllabi, lectures and lecture notes, presentations, etc.) are copyrighted by the instructor. This university policy (S12-7) is in place to protect the privacy of the students in the course, as well as to maintain academic integrity through reducing the instances of cheating. Students who record, distribute, or post these materials will be referred to the Student Conduct and Ethical Development office. Unauthorized recording may violate university and state law. It is the responsibility of students that require special accommodations or assistive technology due to a disability to notify the instructor.

Attendance and arrival times

Students are expected to be set up for lecture by the time the class begins for sessions. Attendance in class is not mandatory and shall not be used per se as a criterion for grading. However, class attendance and participation are highly recommended.

Behavior

Students should remain respectful of each other at all times. Interruptive or disruptive attitudes are discouraged. During the sessions, the use of electronic devices (laptops, tablets, and smartphones) should be limited to activities closely related to the learning objectives. All cell phones must be silenced prior to entering the sessions.

Students are expected to respect a diversity of opinions, ethnicities, cultures, and religious backgrounds.

Safety

Students should familiarize themselves with all emergency exits and evacuation plans.

Communication with the instructor

Students are encouraged to approach the instructor, Prof. Navrati Saxena, in case of any doubts or issues. The best way to approach her is to meet her during her office hours or to mail her and request for a zoom meeting. She usually responds within 2 working days. In the subject of the

mail, do specify if the matter is urgent and needs immediate attention. Please start the subject of your email with the course code.

University Policies and Procedures

Per University Policy S16-9 (http://www.sjsu.edu/senate/docs/S16-9.pdf), relevant university policy concerning all courses, such as student responsibilities, academic integrity, accommodations, dropping and adding, consent for recording of class, etc. and available student services (e.g. learning assistance, counseling, and other resources) are listed on Syllabus Information web page (http://www.sjsu.edu/gup/syllabusinfo), which is hosted by the Office of Undergraduate Education. Make sure to visit this page to review and be aware of these university policies and resources

Academic Integrity

For this class, you should obviously not cheat on tests/quizzes/exams. For quizzes and exams, you should not discuss or share code or problem solutions between groups or friends! At a minimum a 0 on the quiz or exam will be given. A student caught using resources like Rent-a-coder will receive an F for the course. Faculty members are required to report all infractions to the Office of Student Conduct and Ethical Development. All quizzes and exams that a student submits will be checked by turn-it-in for plagiarism.

Accommodations

If you need a classroom accommodation for this class and have registered with the Accessible Education Center (https://www.sjsu.edu/aec/ (Links to an external site.)), please come see me earlier rather than later in the semester to give me a heads up on how to be of assistance. Your experience in this class is important to me. If you have already established accommodations with Student Accessibility Services, please communicate your approved accommodations to me at your earliest convenience so we can discuss your needs in this course.

Calendar: We will strictly follow the following SJSU calendar for add/drop/any other related deadlines; holidays; final exam schedule etc.

Follow the Calendar: https://www.sjsu.edu/registrar/calendar/spring-2026.php

Final Exam Schedule: https://www.sjsu.edu/classes/final-exam-schedule/spring-2026.php