

**San José State University**  
**School of Science/Department of Computer Science**  
**CS 258-01 Computer Communication System, Spring Semester, 2022**

**Course and Contact Information**

<b>Instructor:</b>	Navrati Saxena
<b>Office Location:</b>	MH 214 MacQuarrie Hall
<b>Telephone:</b>	(408) (924-5121)
<b>Email:</b>	navrati.saxena@sjsu.edu
<b>Office Hours:</b>	Tuesday, 10 AM ~ 12 PM PST (Days and time) [If the office hours does not suit you, <b>please email me and I will be happy to set up a zoom meeting with you</b> ]
<b>Class Days/Time:</b>	Monday/Wednesday; 9 AM ~ 10:15 AM
<b>Classroom:</b>	Online until Feb. 14, 2022 <a href="https://sjsu.zoom.us/j/85955309601?pwd=ZjRtbjgxbjRvU2JxTmJaN0tFSWRNZz09">https://sjsu.zoom.us/j/85955309601?pwd=ZjRtbjgxbjRvU2JxTmJaN0tFSWRNZz09</a> Password: 433316 MacQuarrie Hall 222
<b>Prerequisites:</b>	CS158 or instructor's consent.
<b>Scholar Support Hours/Office Hours Zoom Link</b>	<a href="https://sjsu.zoom.us/j/83278080890?pwd=RnloQ3UrWFVMeWluV2Z6OE10OVR0Zz09">https://sjsu.zoom.us/j/83278080890?pwd=RnloQ3UrWFVMeWluV2Z6OE10OVR0Zz09</a> (Links to an external site.)

**Course Description**

Design, analysis, and survey of the advancements in network and Internet technologies, such as supporting TCP/IP over various network media, optical networks, software-defined networks, networks supporting cloud computing, peer-to-peer networking, and quality of services.

## 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) to be used exclusively for learning-related activities. In addition, a microphone and webcam will be needed if they are not inbuilt in the internet-connected device.
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.
4. Java compiler (version 7 or later)

### 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](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](mailto: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. Revise and use major network applications, and transport protocols, like TCP and UDP
2. Understand and analyze network layer functions and protocols, including switching, routing, and the Internet
3. Study and understand basics of optical networking
4. Learn the building blocks of optical networking, e.g. fibers, transmitter/receiver
5. Understand optical switching and its components
6. Design of Passive Optical Networking (PON) and associated problems
7. Study and analyze Software Defined Networking (SDN)
8. Understand concepts of Network Function Virtualization (NFV)
9. Analyze the use-cases of SDN and NFV in Data Center Networks

## Required Texts/Readings

### Textbook

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

### Suggested Reading:

1. Mukherjee, Biswanath; Optical WDM Networks, 3rd Edition. ISBN 978-0-387-29188-8. Springer Publications, 2006.
2. Stallings, William; Foundations of Modern Networking: SDN, NFV, QoE, IoT, and Cloud, 1st edition, ISBN-13: 9780134175393, 2015.

### Library Liaison

Megwalu, Anamika

Phone: 408-808-2089

Email: [anamika.megwalu@sjsu.edu](mailto:anamika.megwalu@sjsu.edu)

### Important

- **Course materials such as syllabus, handouts, notes, assignment instructions, announcements etc. can be found here on the Canvas Learning Management System course login website.**
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### 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.

<b>Assessment Type</b>	<b>Weightage</b>
<b>Pre-requisite Assignment</b>	<b>N/A</b>
<b>Quizzes 1 ~ 3 (@ 20% each)</b>	<b>60%</b>
<b>Coding Assignment/Project</b>	<b>20%</b>
<b>End Term Presentation</b>	<b>20%</b>
<b>Total</b>	<b>100%</b>

<b>Assessment Type</b>	<b>Weightage</b>
<b>Pre-requisite Assignment</b>	<b>N/A</b>
<b>Quiz 1</b>	<b>20%</b>
<b>Quiz 2</b>	<b>20%</b>
<b>Quiz 3</b>	<b>20%</b>
<b>Coding Assignment/Project</b>	<b>20%</b>
<b>End Term Presentation</b>	<b>20%</b>
<b>Total</b>	<b>100%</b>

### **Class Participation/In-class Activities**

1. You will be presented with in-class exercises/activities in synchronous class sessions to be completed individually or in groups.
2. These in-class exercises will be due at the end of class
3. These exercises are intended to serve as a review to help you and the instructor assess learning in the class.

**NOTE** that [University policy F69-24 \(Links to an external site.\)](http://www.sjsu.edu/senate/docs/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. 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.

<i>Grade</i>	<i>Percentage</i>
<i>A plus</i>	<i>95% to 100%</i>
<i>A</i>	<i>90% to 94%</i>
<i>B plus</i>	<i>85% to 89 %</i>
<i>B</i>	<i>80% to 84%</i>
<i>C plus</i>	<i>75% to 79%</i>
<i>C</i>	<i>70% to 74%</i>
<i>D plus</i>	<i>65% to 69%</i>
<i>D</i>	<i>60% to 64%</i>
<i>F</i>	<i>&lt; 60%</i>

#### **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.

## Course Week-wise Schedule

**San José State University**  
**School of Science/Department of Computer Science**  
**CS 258-01, Data Communication System, Spring Semester, 2022**

**\*Follow the Calendar:** <https://www.sjsu.edu/registrar/calendar/spring-2022.php>

### Course Week-wise Schedule

Week	Day/Date	Contents
1	1 Wednesday, January 26, 2022	Welcome and course introduction Network Applications <b>Pre-requisite Assignment due Friday, Jan. 29, 2022</b> <b>Introductory Discussion Assignment</b>
2	2 Monday, January 31, 2022	Network Applications Contd. Transport Layer Protocols - I
	3 Wednesday, February 02, 2022	Transport Layer Protocols – II Network, Routing & The Internet - I
3	4 Monday, February 07, 2022	Network, Routing & The Internet – II Wrap-Up Module 1 <i>*Last Day to Drop Courses Without a “W” grade. Refer to the Academic Calendar (<a href="https://www.sjsu.edu/registrar/calendar/spring-2022.php">https://www.sjsu.edu/registrar/calendar/spring-2022.php</a>)</i>
	5 Wednesday, February 9, 2022	<b>Quiz 1 20%</b>
<b>END OF MODULE 1</b>		
4	6 Monday, February 14, 2022	Introduction to Optical Networks – I <i>*Last Day to Add Courses via MySJSU. Rrefer to the Academic Calendar (<a href="https://www.sjsu.edu/registrar/calendar/spring-2022.php">https://www.sjsu.edu/registrar/calendar/spring-2022.php</a>)</i>
	7 Wednesday, February 16, 2022	Introduction to Optical Networks – II <b>Coding Assignment/Project Discussion</b>
5	8 Monday, February 21, 2022	Building Blocks of Optical Networking - I
	9 Wednesday, February 23, 2022	Building Blocks of Optical Networking – II
6	10 Monday, February 28, 2022	Optical Packet Switching - I
	11 Wednesday, March 02, 2022	Optical Packet Switching – II

7	12	Monday, March 07, 2022	Optical Access Networks - I
	13	Wednesday, March 9, 2022	Optical Access Networks – II <b>Coding Assignment/Project Updates</b>
8	14	Monday, March 14, 2022	Optical Access Networks – III
	15	Wednesday, March 16, 2022	<b>Quiz 2 20%</b>
<b>END OF MODULE 2</b>			
9	16	Monday, March 21, 2022	<b>End-Term Presentations Discussions</b> Introduction to Software Defined Networking
	17	Wednesday, March 23, 2022	Software Defined Networking Details
10	18	Monday, March 28, 2022	Spring Recess (*SPRING RECESS*)
	19	Wednesday, March 30, 2022	Spring Recess (*SPRING RECESS*)
11	20	Monday, April 04, 2022	Network Function Virtualization – I <b>Coding Assignment/Project Submission 20%</b>
	21	Wednesday, April 06, 2022	Network Function Virtualization – II <b>End-Term Presentations Topics Due – 5%</b>
12	22	Monday, April 11, 2022	Networks supporting Cloud Computing – I
	23	Wednesday, April 13, 2022	Networks supporting Cloud Computing – II
13	24	Monday, April 18, 2022	Data Center Networking
	25	Wednesday, April 20, 2022	Peer-to-peer Networking – I
14	26	Monday, April 25, 2022	Peer-to-peer Networking – II
	27	Wednesday, April 27, 2022	<b>Quiz 3 20%</b>
15	28	Monday, May 02, 2022	<b>End Term Presentations – 10%</b>
	29	Wednesday, May 04, 2022	
16	30	Monday, May 9, 2022	
	31	Wednesday, May 11, 2022	<b>Guest/Invited Speaker</b>
17	32	Monday, May 16, 2022	<b>Wrap-Up &amp; Concluding Remarks</b> Last Day of Instruction – Last Day of Classes
		<b>Friday, May 20 0715-0930 AM for 9 AM class</b>	<b>Final Examination – End Term Presentation File Upload – 5%</b> <a href="https://www.sjsu.edu/classes/final-exam-schedule/spring-2022.php">https://www.sjsu.edu/classes/final-exam-schedule/spring-2022.php</a>