

**San José State University**  
**School of Science/Department of Computer Science**  
**CS 258-01 Computer Communication System, Spring Semester, 2021**

**Course and Contact Information**

<b>Instructor:</b>	Navrati Saxena
<b>Office Location:</b>	MH 214 MacQuarrie Hall <b>Online Via Zoom during CoVID</b>
<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 course. Zoom meetings
<b>Prerequisites:</b>	CS158 or instructor's consent.
<b>Class Zoom Link</b>	<a href="https://sjsu.zoom.us/j/83950275712?pwd=eU5tOFVwOFhGUzJ4MmhUSnVuZUtOUT09">https://sjsu.zoom.us/j/83950275712?pwd=eU5tOFVwOFhGUzJ4MmhUSnVuZUtOUT09</a> (Links to an external site.)
<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, Online Course

1. Online synchronous class. In class, 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.
4. In order to keep the class interactive and interesting – a simple question or a riddle or a motivational quote will be shared during the synchronous zoom meeting via the zoom polling

feature. Students' participation is highly appreciated. iClicker and Zoom Breakout Rooms will be used in the class too.

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

#### **Recording Zoom Classes**

This course or portions of this course (i.e., lectures, discussions, and student presentations) will be recorded for instructional or educational purposes. The recordings will only be shared with students enrolled in the course through Canvas. The recordings will be deleted at the end of the semester. If, however, you would prefer to remain anonymous during these recordings, then please speak with the instructor about possible accommodations (e.g., temporarily turning off identifying information from the Zoom session, including student name and picture, prior to recording).

#### **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.

## **Zoom Classroom Etiquette**

- **Mute Your Microphone:** To help keep background noise to a minimum, make sure you mute your microphone when you are not speaking.
- **Be Mindful of Background Noise and Distractions:** Find a quiet place to “attend” class, to the greatest extent possible.
  - Avoid video setups where people may be walking behind you, people talking/making noise, etc.
  - Avoid activities that could create additional noise, such as shuffling papers, listening to music in the background, etc.
- **Position Your Camera Properly:** Be sure your webcam is in a stable position and focused at eye level.
- **Limit Your Distractions/Avoid Multitasking:** You can make it easier to focus on the meeting by turning off notifications, closing or minimizing running apps, and putting your smartphone away(unless you are using it to access Zoom).
- **Use Appropriate Virtual Backgrounds:** If using a virtual background, it should be appropriate and professional and should NOT suggest or include content that is objectively offensive or demeaning.

## **Attendance and arrival times**

Students are expected to be set up for lecture by the time the class begins for synchronous 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 online synchronous 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 synchronous sessions. Students are encouraged to keep their webcams “ON” as much as possible. To avoid disturbances, please keep yourself in mute mode, unless you would like to speak something or ask a question. You can also use the “Raise Hand” tool of zoom if you have any questions.

Students are expected to respect a diversity of opinions, ethnicities, cultures, and religious backgrounds. Students will treat online discussions with their peers as if they were in-class, face-to-face interactions.

## **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**

Week		Day/Date	Contents
1	1	Wednesday, January 27, 2021	Welcome and course introduction Network Applications <b>Pre-requisite Assignment due Friday, Jan. 29, 2021</b> <b>Introductory Discussion Assignment</b>
2	2	Monday, February 01, 2021	Network Applications Contd. Transport Layer Protocols - I
	3	Wednesday, February 03, 2021	Transport Layer Protocols – II Network, Routing & The Internet - I
3	4	Monday, February 08, 2021	Network, Routing & The Internet – II Wrap-Up Module 1 <i>*Last Day to Drop Courses Without an Entry on Student's Permanent Record (D) refer to the Academic Calendar (<a href="https://www.sjsu.edu/provost/docs/Academic_Calendar-AY2020-21.pdf">https://www.sjsu.edu/provost/docs/Academic_Calendar-AY2020-21.pdf</a>)</i>
	5	Wednesday, February 10, 2021	<b>Quiz 1 20%</b>
<b>END OF MODULE 1</b>			
4	6	Monday, February 15, 2021	Introduction to Optical Networks – I <i>*Last Day to Add Courses &amp; Register Late (A) refer to the Academic Calendar (<a href="https://www.sjsu.edu/provost/docs/Academic_Calendar-AY2020-21.pdf">https://www.sjsu.edu/provost/docs/Academic_Calendar-AY2020-21.pdf</a>)</i>
	7	Wednesday, February 17, 2021	Introduction to Optical Networks – II <b>Coding Assignment/Project Discussion</b>
5	8	Monday, February 22, 2021	Building Blocks of Optical Networking - I
	9	Wednesday, February 24, 2021	Building Blocks of Optical Networking – II
6	10	Monday, March 01, 2021	Optical Packet Switching - I
	11	Wednesday, March 03, 2021	Optical Packet Switching – II
7	12	Monday, March 08, 2021	Optical Access Networks - I
	13	Wednesday, March 10, 2021	Optical Access Networks – II <b>Coding Assignment/Project Updates</b>
8	14	Monday, March 15, 2021	Optical Access Networks – III
	15	Wednesday, March 17, 2021	<b>Quiz 2 20%</b>
<b>END OF MODULE 2</b>			
9	16	Monday, March 22, 2021	<b>End-Term Presentations Discussions</b> Introduction to Software Defined Networking
	17	Wednesday, March 24, 2021	Software Defined Networking Details
10	18	Monday, March 29, 2021	Spring Recess (*SPRING RECESS*)
	19	Wednesday, March 31, 2021	Spring Recess (*SPRING RECESS*)
11	20	Monday, April 05, 2021	Network Function Virtualization – I <b>Coding Assignment/Project Submission 20%</b>
	21	Wednesday, April 07, 2021	Network Function Virtualization – II <b>End-Term Presentations Topics Due – 5%</b>
12	22	Monday, April 12, 2021	Networks supporting Cloud Computing – I
	23	Wednesday, April 14, 2021	Networks supporting Cloud Computing – II
13	24	Monday, April 19, 2021	Data Center Networking
	25	Wednesday, April 21, 2021	Peer-to-peer Networking – I
14	26	Monday, April 26, 2021	Peer-to-peer Networking – II
	27	Wednesday, April 28, 2021	<b>Quiz 3 20%</b>
15	28	Monday, May 03, 2021	<b>End Term Presentations – 10%</b>
	29	Wednesday, May 05, 2021	
16	30	Monday, May 10, 2021	<b>Guest/Invited Speaker</b>
	31	Wednesday, May 12, 2021	
17	32	Monday, May 17, 2021	<b>Wrap-Up &amp; Concluding Remarks</b> Last Day of Instruction – Last Day of Classes
		<b>Wednesday, May 19 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-2021.php">https://www.sjsu.edu/classes/final-exam-schedule/spring-2021.php</a>