

# Internetworking Systems and Protocols (CSCI 156)

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**Lecture:** M/W 3:30pm-4:45pm on ZOOM (link available in Canvas).

**Office hours:** T/TH 1PM-2:30PM via ZOOM. Additional office hours may be available with appointment.

**Lab:** No separate lab time assigned. In class instruction will be scheduled for some lab practices.

**Textbook:** J. Kurose and K. Ross, "Computer Networking: A Top-Down Approach Featuring the Internet", Addison-Wesley, 6<sup>th</sup> edition. (3<sup>rd</sup> through 5<sup>th</sup> editions will also be generally acceptable). Textbook is *required* for all students.

**Resource:** [http://wps.aw.com/aw\\_kurose\\_network\\_5](http://wps.aw.com/aw_kurose_network_5)

**Health Screening:** Students who come to campus for face-to-face classes will be required to complete a daily health screening which will include temperature checks. If you have experienced COVID-19 symptoms and/or have tested positive within the past 10 days; or if you have had close contact (less than 6 feet for longer than 15 minutes while unmasked) with a suspected or confirmed COVID-19 patient within the past 14 days; you are not allowed to come to campus. Please complete the campus [online reporting form](#). A campus official will reply to provide guidance and information.

**Safety Measures:** Consistent with the Governor's order and updated state public-health guidelines, face masks or cloth face coverings are required to be worn in public spaces on-campus and during in-person classes to reduce possible exposure to COVID-19 and prevent the spread of the virus. Physical distancing must be practiced by maintaining 6 feet of distance between individuals. Good hygiene of hand washing for a minimum of 20 seconds or using hand sanitizer is required. Please avoid touching your face with unclean hands. Disposable face masks will be provided to anyone who arrives to campus without one.

Please see university website for the most updated information:

[www.fresnostate.edu/coronavirus](http://www.fresnostate.edu/coronavirus)

As part of your participation in virtual/online instruction, please remember that the same student conduct rules that are used for in-person classroom instruction also apply for virtual/online classrooms. Students are prohibited from any unauthorized recording, dissemination, or publication of any academic presentation, including any online classroom instruction, for any commercial purpose. In addition, students may not record or use virtual/online instruction in any manner that would violate copyright law. Students are to use all online/virtual instruction exclusively for the educational purpose of the online class in which the instruction is being

provided. Students may not re-record any online recordings or post any online recordings on any other format (e.g. , electronic, video, social media, audio recording, web page, internet, hard paper copy, etc.) for any purpose without the explicit written permission of the faculty member providing the instruction. Exceptions for disability-related accommodations will be addressed by Student Disability Services working in conjunction with the student and faculty member.

**Description:** CSCI 156 (3 units): Review of underlying network technologies. Application-level interconnections, network architectures, addressing, mapping abstract addresses to physical addresses, routing datagrams, error and control messages, protocol layering, gateways, subnets. Client-server interactions. Upper layers of protocol stacks.

**Objectives:** The aim of this course is to help student have a comprehensive understanding of the computer network concepts, layering architecture, TCP/UDP transport protocols, routing algorithms, and medium access control protocols.

**Learning Outcomes:** Students should be able to understand and analyze various network protocols/architectures in traditional and emerging network technologies, apply common problem solving techniques, grasp necessary programming skills, and utilize simulation tools.

**Corequisite:** Introduction to Operating Systems (CSCI 144).

**Software requirements:** Coding can be done with C++/Java/Python. In addition, [www.gitlab.com](https://www.gitlab.com) (private projects) is recommended for version control and code management of the project.

**Attendance:** Attending the class is required and enforced. If you are absent from class, it is your responsibility to check on class announcements and study recorded lectures.

**Practices:**

- There are **6** practices with 1% each.
- Students receive credit for submitting practices online.
- Solutions are discussed in class and posted on Canvas for students to compare with their own work.
- Practices are designed to help students establish solid understanding of critical concepts and applications.

**Homework:**

- There are **6** online homework with 1% each.
- Students work on a time-limited homework session in Canvas within a specific two-day period.
- Homework is designed to help students enhance their analysis and application of important principles and algorithms.

**Quizzes:**

- There will be **4** in-class *online* quizzes with 2% each
- Students need to bring their laptops to complete the quiz on Canvas
- Quiz serves as one major assessment of student performance and preparation of exams.

**Lab practices:**

- There are **4** lab practices (1% each) for important contents in the class.
- 4 labs are performed with WireShark real time packet sniffing software.
- Labs are assigned to enhance the understanding through real-world experiments.

- Lab report should be submitted through Canvas.

### **Project and Presentation**

- This is an individual project.
- Course projects involve *socket programming* with TCP and/or UDP.
- All projects are DUE the day before the last day of instruction and will be graded through demonstration to the instructor individually.
- This project will be 4%.
- A student is also required to make a presentation (3%) on an industry level networking protocol (subject to instructor's approval).

Assignments and projects are submitted through **fresnostate.instructure.com**. No Email or hardcopy is accepted unless instructed to do so.

**Penalty for late submission:** Late assignments and projects are subject to penalty of 10% and not accepted after one week from the initial due date.

### **Exams:**

- There will be one review class immediately before each exam.
- The style of exams will be announced in the review class.
- Make-up exam is permitted only in special cases and is handled case by case by the instructor.

### **Grading:**

**A: 85-100; B: 70-84; C: 55-69; D: 40-54; F: <40**

<b>6 practices</b>	<b>6% (1% each)</b>
<b>5 homework</b>	<b>5% (1% each)</b>
<b>4 lab reports</b>	<b>4% (1% each)</b>
<b>4 quizzes</b>	<b>8% (2% each)</b>
<b>Project</b>	<b>4%</b>
<b>Presentation</b>	<b>3%</b>
<b>Midterm exam (2 parts)</b>	<b>30%</b>
<b>Final exam</b>	<b>40%</b>

**Important:** a student has to receive a C or above in project for an overall A grade in the class.

**Note:** This syllabus and schedule are subject to change in the event of extenuating circumstances. If you are absent from class, it is your responsibility to check on announcements made while you were absent.

### **Course Policies:**

- Questions and discussions are welcome and encouraged.
- Students are expected to work independently in homework assignments and collaborate as a team in group projects.
- Cheating and dishonesty will be heavily punished according to university policy.

### **University Policies**

The syllabus must note the university **Policy on Students with Disabilities**, the **University Honor Code**, the **Policy on Cheating and Plagiarism**, a **statement on copyright**, and the **university computer requirement**. University policies can be included in the syllabus by reference to statements in the

University Catalog and Class Schedule. For example, one might state: "For information on the University's policy regarding cheating and plagiarism, refer to the Class Schedule (Legal Notices on Cheating and Plagiarism) or the University Catalog (Policies and Regulations)." These may also be incorporated by directing students to the online required syllabus policy statement page:

[http://www.csufresno.edu/academics/policies\\_forms/instruction/RequiredSyllabusPolicyStatements.htm](http://www.csufresno.edu/academics/policies_forms/instruction/RequiredSyllabusPolicyStatements.htm)

Below are some sample statements that provide more than just the reference. In all instances, it is recommended that specific examples of what you consider to be cheating and plagiarism be included. See also those listed in the University Policy.

**Students with Disabilities:** Upon identifying themselves to the instructor and the university, students with disabilities will receive reasonable accommodation for learning and evaluation. For more information, contact Services to Students with Disabilities in the Henry Madden Library, Room 1202 (278-2811).

**Honor Code:** "Members of the CSU Fresno academic community adhere to principles of academic integrity and mutual respect while engaged in university work and related activities." You should:

- a) understand or seek clarification about expectations for academic integrity in this course (including no cheating, plagiarism and inappropriate collaboration)
- b) neither give nor receive unauthorized aid on examinations or other course work that is used by the instructor as the basis of grading.
- c) take responsibility to monitor academic dishonesty in any form and to report it to the instructor or other appropriate official for action.

**Cheating and Plagiarism:** "Cheating is the actual or attempted practice of fraudulent or deceptive acts for the purpose of improving one's grade or obtaining course credit; such acts also include assisting another student to do so. Typically, such acts occur in relation to examinations. However, it is the intent of this definition that the term 'cheating' not be limited to examination situations only, but that it include any and all actions by a student that are intended to gain an unearned academic advantage by fraudulent or deceptive means. Plagiarism is a specific form of cheating which consists of the misuse of the published and/or unpublished works of others by misrepresenting the material (i.e., their intellectual property) so used as one's own work." Penalties for cheating and plagiarism range from a 0 or F on a particular assignment, through an F for the course, to expulsion from the university. For more information on the University's policy regarding cheating and plagiarism, refer to the Class Schedule (Legal Notices on Cheating and Plagiarism) or the University Catalog (Policies and Regulations).

**Computers:** "At California State University, Fresno, computers and communications links to remote resources are recognized as being integral to the education and research experience. Every student is required to have his/her own computer or have other personal access to a workstation (including a modem and a printer) with all the recommended software. The minimum and recommended standards for the workstations and software, which may vary by academic major, are updated periodically and are available from Information Technology Services (<http://www.csufresno.edu/ITS/>) or the University Bookstore. In the curriculum and class assignments, students are presumed to have 24-hour access to a computer workstation and the necessary communication links to the University's information resources."

**Disruptive Classroom Behavior:** "The classroom is a special environment in which students and faculty come together to promote learning and growth. It is essential to this learning environment that respect for the rights of others seeking to learn, respect for the professionalism of the instructor, and the general goals of academic freedom are maintained. ... Differences of viewpoint or concerns should be expressed in terms which are supportive of the learning process, creating an environment in which students and faculty may learn to reason with clarity and compassion, to share of themselves without losing their identities, and to develop and understanding of the community in which they live . . . Student conduct which

disrupts the learning process shall not be tolerated and may lead to disciplinary action and/or removal from class."

**Copyright policy:** Copyright laws and fair use policies protect the rights of those who have produced the material. The copy in this course has been provided for private study, scholarship, or research. Other uses may require permission from the copyright holder. The user of this work is responsible for adhering to copyright law of the U.S. (Title 17, U.S. Code). To help you familiarize yourself with copyright and fair use policies, the University encourages you to visit its copyright web page:  
<http://www.csufresno.edu/library/about/policies/docs/copyrtpolicyfull.pdf>

Technology Innovations for Learning & Teaching (TILT) course web sites contain material protected by copyrights held by the instructor, other individuals or institutions. Such material is used for educational purposes in accord with copyright law and/or with permission given by the owners of the original material. You may download one copy of the materials on any single computer for non-commercial, personal, or educational purposes only, provided that you (1) do not modify it, (2) use it only for the duration of this course, and (3) include both this notice and any copyright notice originally included with the material. Beyond this use, no material from the course web site may be copied, reproduced, re-published, uploaded, posted, transmitted, or distributed in any way without the permission of the original copyright holder. The instructor assumes no responsibility for individuals who improperly use copyrighted material placed on the web site.

For complete university policies, please refer to  
<http://academicaffairs.csufresno.edu/assocprovost/RequiredSyllabusPolicyStatements.htm>