CECS 474: Computer Network Interoperability

Course: Computer Network Interoperability

Term: Spring 2022

Instructor: Haixia Peng

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Class Times: Tue. & Thu., 9:30-10:20 AM

Room for Lectures: ECS 302

Lab Times: Tue. & Thu., 10:30-11:45 AM

Room for Labs: ECS 305

Office Hours: Thu. 3:00 - 4:15 PM (Room ECS 525)

Class, Lab, & Office Hours Zoom Link (for the first three weeks)**:** https://csulb.zoom.us/j/84827582187

Course Description: This course is a comprehensive introduction to computer networks. The focus is on the concepts, the protocols, and the fundamental design principles that have contributed to the success of the Internet. Topics include: history of the Internet, transmission media and technologies, switching and multiplexing, protocols and layering, LAN (wired and wireless), congestion/flow/error control, routing, addressing, internetworking (Internet) including TCP (transmission control protocol).

Course Outcomes:

1. The two high-level course outcomes are:
    a) Learn to think like a network engineer.
    b) Become familiar with the main components of the Internet.
2. The lower-level outcomes are:
    a) Have a good understanding of protocols and networking design concepts.
    b) Have a working knowledge of transport protocols with a special emphasis on TCP and retransmission protocols.
    c) Have a good understanding of the IP layer (including routing, addressing, …).
    d) Have the ability to describe different Local Area Networks technologies and the fundamentals of the underlying protocols (layer 2).
    e) Be competent with discrete-event simulation.
    f) Be competent with basic network utilities.

Course Structure and Delivery Mode: This course is conducted entirely online for the first three weeks and change to face-to-face until Feb. 7th, 2022. You will access the course material and activities on BeachBoard. If you need technical assistance at any time during the course or need to report a problem with BeachBoard, please contact the Technology Help Desk using their online form, by phone at (562) 985-4959.

Course Communication: We will use BeachBoard to make announcements, communicate information, post assignments and corresponding due dates, and discuss course-related topics. Please note, it is your responsibility to check BeachBoard's dashboard regularly, as it will contain important information about upcoming class assignments, activities, or concerns.

Course Content (Tentative):

1. **Introduction**: Internet as a network of networks, standardization, digital transmission principles and technologies, switching and multiplexing technologies, design of network: the layered approach, its advantages and shortcomings, protocols, services, issues in Quality of Service;
2. **Data link layer** from an introduction to error detection to framing, multiple access protocols: Aloha, CSMA/CD and CSMA/CA. Example of LAN technologies: Ethernet, WiFi, and Switches;
3. **Internetworking**: introduction, naming, addressing, IP: fragmentation, error handling;
4. **Routing**: fundamentals, Intra-domain routing (RIP, OSPF), Inter-domain routing (BGP);
5. **Transport layer**: from congestion control principle to current protocols (TCP and UDP), reliable data transfer;
6. ……

Textbook: Computer Networking: A Top-Down Approach, 8/e, James F. Kurose, Keith W. Ross, ISBN 9780136681557.

Exam Schedule:

1. **Midterm Exam**: March 10, Thursday, 9:30 AM
2. **Final Exam**: Undetermined

Evaluation Components:

1. **Homework Assignments**: There will be 3 homework assignments. Homework assignments should be done individually. 25% deduction for up to 24 hours late submission. 50% deduction for more than 24 hours and up to 48 hours late submission. No credit for more than 48 hours late submission.
2. **Laboratory Assignments**: There will be 3 laboratory assignments. Laboratory assignments can be done in groups of at most 3. 25% deduction for up to 24 hours late submission. 50% deduction for more than 24 hours and up to 48 hours late submission. No credit for more than 48 hours late submission.
3. **Midterm and Final Exams**: There will be no make-up for the midterm and final exams.

Evaluation Components	Weight
Homework Assignments	15%
Laboratory Assignments	30%
Midterm Exam	25%
Final Exam	30%

Grading:

Letter Grade	Percentage
A	[90 - 100]
B	[80 - 89]
C	[70 - 79]

D	[60 - 69]
F	[0 - 59]

Contact Options: Participating in virtual office hours is highly encouraged. You may use your **csulb email** to email your questions to the instructor, and the response will be returned within 48 hours (excluding weekends or holidays). Please put "CECS 474" in the subject. Please note, if you email the instructor just before the assignment due date or exam, you may not receive the response in a timely manner since the responses will be in first-come-first-serve policy.

Cheating and Plagiarism: Cheating and plagiarism will not be tolerated in this course. Any individual caught cheating on homework, lab projects, midterm exam, or the final project will be punished to the full extent allowed under University regulations. Plagiarism on papers or assignments is not acceptable and work that is plagiarized will not receive credit. Plagiarism is considered cheating. Note: Any time another person's work is used without giving them proper credit, it is considered plagiarism and cheating. At a minimum, any student caught cheating will receive no credit for the work concerned and will receive a reduction of one letter grade from their final course grade. To learn more about the University policy on Cheating and Plagiarism, please visit:

Academic Information and Regulations-Cheating and Plagiarism

University Withdrawal Policy: Class withdrawals during the final 3 weeks of instruction are not permitted except for a very serious and compelling reason such as accidents or serious injury that is clearly beyond the student's control and the assignment of an incomplete grade is inappropriate (see Grades). Application for withdrawal from CSULB or from a class must be filed by the student online whether the student has ever attended the class or not; otherwise, the student will receive a grade of "WU" (unauthorized withdrawal which counts as an "F" in the GPA) in the course. More information regarding the university guidelines on dropping and withdrawing can be found at:

Dropping and Withdrawal

Student Grievance Policy: Please check CSULB grievance policy and procedure at:

Student Grievance Procedures

Special Needs Accommodations: Students with a disability or medical restriction who are requesting a classroom accommodation should contact the Bob Murphy Access Center (BMAC) and also notify the instructor. BMAC personnel will work with the student to identify a reasonable accommodation in partnership with appropriate academic offices and medical providers. Only approved BMAC petitions will be accommodated.

Disclaimer: In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change.

Additional Information

BeachBoard Access: To access this course on BeachBoard you will need access to the Internet and a supported web browser (Please note: The preferred web browser to use when accessing information in this course is Google Chrome. Google Chrome minimizes technical issues and responds well to the technology used in this course.). You may access BeachBoard directly at https://bbcsulb.desire2learn.com/d2l/login and log in with your CSULB campus ID and password. You may also access it via Single-Sign-On page at https://csulb.okta.com/. Once logged in, you will see the course listed under "My Courses". Click on the title to access the course page.

Please contact the department if you need support with access to the Internet, electronic devices, or any other issues related to accessing your course.

Tutoring: Take advantage of free peer tutoring (virtual) provided by Engineering Student Success Center (ESSC): Engineering Tutoring

Additional Resources: There are many services on campus to help you achieve success in your courses. Links to the following services are also available in BeachBoard course homepage under "CSULB Student Resources":

1. Counseling and Psychological (CAPS)
2. Disabled Student Services
3. Enrollment Services
4. Financial Aid
5. Learning Assistance Center
6. Student Health Services
7. Tutoring at CSULB
8. University Library
9. Writers Resource Lab

Personal Assistance: Any student who is facing academic or personal challenges due to difficulty in affording groceries/food and/or lacking a safe and stable living environment is urged to find help from corresponding programs and services. The students can also email supportingstudents@csulb.edu, call (562)985-2038, or if comfortable, reach out to the instructors as they may be able to identify additional resources.