EE450 – Computer Networks
Nazarian Spring 2013
University of Southern California
Ming Hsieh Department of Electrical Engineering

Course Description
This course provides an in-depth discussion and analysis of the global Internet, with focus on the design principles, layering and protocol design and analysis. Topics covered include the Internet structure and architecture, Transport and congestion control protocols, socket programming, network layer and routing protocols, link layer and MAC protocols, network applications and internetworking.

Website
DEN: https://www.uscden.net/webapps/login/

Course Material
- Lecture slides which will be posted on DEN
- Lecture notes
- Textbook: Computer Networking: A Top-Down Approach, James F. Kurose, and Keith W. Ross, 6th edition. You may use ISBN 9781256634058 sold at bookstore for a low price.

Additional (Recommended) Readings
- Computer Networks, Andrew S. Tanenbaum
- Computer Networks: A System Approach, Larry L. Peterson and Bruce S. Davie
- Communications Networks, Alberto Leon-Garcia and Indra Widjaja
- Computer and Communication Networks, Nadir F. Mir
- Data Communications and Networking, B. Forouzan
- Computer Networking with Internet Protocols and Technology, William Stallings

Prerequisite
C or C++, Unix (more details will be provided during lectures)

Instructor
Dr. Shahin Nazarian
Office: EEB340
Office Hours: M 1-2pm, T 5:10-7:00pm, Th 5:10-7:00pm
Other times by appointment.
Phone: (213) 740-4653
E-Mail: shahin.nazarian@usc.edu

Grading Policy
Homework/Lab Assignments =	10%
Quiz =	10%
Midterms I, II =	(20%,50%) or (50%,20%) whichever higher
Final Project =	10%
Pop Quizzes	0.5% per quiz (extra credit)

You have only 10 days to contest a grade on any assignment or exam

Class Information

Section	Type	Time	Days	Instructor	Location
30560R	Lecture	2:00-3:20pm	Tue, Thu	Shahin Nazarian	OHE122
30564R	Lecture	3:30-4:50pm	Tue, Thu	Shahin Nazarian	GFS118
30568D	Lecture	2:00-3:20pm	Tue, Thu	Shahin Nazarian	OFF CAMPUS
30562R	Discussion	12:00-12:50pm	Friday		OHE132
30566R	Discussion	10:00-10:50am	Friday		GFS116
30570D	Discussion	12:00-12:50pm	Friday		OFF CAMPUS

Teaching Assistants (in alphabetical order)

Amirhossein Mohajerin Ariaei mohajera@usc.edu
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Phone: 213 740 4372

Hao Feng haofeng@usc.edu
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Mentors (in alphabetical order)

Armen Babayan babayana@usc.edu
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Indranil Sen indranis@usc.edu
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Graders (in alphabetical order)

Mukund Goel mukundgo@usc.edu
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Xiaofeng Zhang xiaofenz@usc.edu

Academic Integrity

Plagiarism, cheating and unauthorized collaborations will not be tolerated.
You should either attend the first lecture and/or watch the recorded lecture for more details regarding the assignments and our course policies.
Please also ask the instructor if you have questions about proper behavior and/or review the information (including a 15-minute tutorial) posted in the following website:

http://www.usc.edu/libraries/about/reference/tutorials/academic_integrity/index.php

More information about academic integrity including USC policies can be found at the following:

http://www.usc.edu/student-affairs/SJACS/pages/students/publications.html

Exams

There are three exams, all of which are closed book; with no calculators allowed. Part of each exam may be dedicated to testing on the hw/lab/project assignments. You will see the guidelines to each exam about 5 to 7 days in advance to the exam date. Any cheating may result in an "F" in the course and will be referred to Student Affairs for other penalties. We may also have several pop quizzes to encourage students to attend the lectures and discussion classes, work on the assignments and study the course with the class pace. Each pop quiz weighs 0.5% extra credit and happens sometime during the lecture for on-campus students.

Off-campus students will have a take-home quiz that is equivalent to all on-campus pop quizzes. We will email our off-campus students late April and let them know about the date of the take-home quiz and give them 24 hours to complete it.

Exam	Date	Location
Quiz	Tuesday, March 5 (during lecture)	TBA
Midterm I	Tuesday, April 2 (during lecture)	TBA
Midterm II	Tuesday, April 30 (during lecture)	TBA
Pop Quizzes	Not Pre-announced	In Class

Expectations

Students are expected to attend classes, take notes, and participate in discussions by asking questions and providing answers/arguments. You will be expected to have reviewed the posted slides before each lecture. This will greatly aid your comprehension of the lecture material. You are also encouraged to read the listed sections of the main textbook.

Discussion Sessions

The main purpose of discussion classes is to help you learn the tools and also discuss the lab, homework and final project assignments and exams. We will have weekly announcements about this, so that you know the plan for the coming discussion class in advance. You need to watch the taped Friday discussion in a timely manner in case you miss attending the discussion class.

HW, Lab, and Project Assignments

Assignments are your key to learning. They are designed to familiarize you with the problems and skills you will need for your future career and also more advanced courses. Some lab assignments will also be included to guide you through learning the tools and standards/protocols. Only by doing real problems or lab tasks on your own will you develop the skills and understanding to succeed. Please also note the following guidelines:

- There will be approximately 10 HW/Lab assignments. You will find the submission information in the document header. The first lab and the final project are programming-based. This is to highlight the importance of software skills in networks and applications. The final project will be defined in 3 phases. You should carefully

read the information in the assignment header for submission guidelines (when and where to submit, etc.)

- All the assignments are individual-based unless otherwise specified. This means you are NOT allowed to discuss the details of your solution with your classmates before submitting the assignment.
- It is expected that students will present their own work in their own creative way. You should show all the steps used to arrive at the solution.
- **If you do not know the answer to a problem in any assignment you are encouraged to use our support (office hours, discussion board, etc.) It is wiser to not submit and lose some points than facing the academic dishonesty consequences.**
- **We take academic honesty very seriously. Powerful techniques are used to detect whether a student copied from others in class, previous semesters or online resources. However despite all the warnings given throughout the semester, at least 10% of students are caught violating the academic integrity rules. Those caught copying, allowing others to copy, or any other type of unauthorized collaboration or plagiarism on any homework, lab or project assignment will receive a 0 on the assignment and one letter grade reduction for the entire course. The academic integrity (AI) violation will be reported to the Student Affairs for other penalties including failing the course. In addition to possible financial consequences, a record of academic dishonesty can seriously damage one's USC standing or future career.**
- Homework assignments should be done neatly and papers stapled together. All writing and drawing should be clear.
- You should carefully read the information in the assignment header to know about the submission guidelines (when and where to submit, etc.)
- You should write your first name, followed by your last name, and your student ID on the first page of your submission. You will lose 5% of the total points if any of the afore-mentioned items is missing.
- Questions and concerns regarding lecture slides and notes should be forwarded to the instructor, and those related to assignments to the TAs/mentors.
- **We highly recommend posting your questions on the blackboard discussion board for each assignment, so others would be able to review your questions and our answers.**
- All emails to the TAs and graders should be cc'ed to shahin.nazarian@usc.edu.
- DEN students should either email their work to denh@usc.edu or fax them to (213) 740-9121 or (213) 740-8591. Please review the most updated information in http://gapp.usc.edu/graduate-programs/den/technical-support/homework-and-exams
- Note that all (hw, Lab, and project) assignments may directly be tested in exams as well. The assignment-related questions will be designed to be straightforward for those who worked on the assignments.

Academic Accommodations

Any student requiring academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m. - 5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

EE450 Tentative Course Schedule and Lecture Topics

Wk	Tuesday Lectures	Thursday Lectures	Friday Discussions	Textbook Section (Recommended)
1	1/15: Intro to computer networks	1/17: Intro (cont.)	1/18: Lab1 LAB1 assigned	1.1-1.3,1.7
2	1/22: Performance measures	1/24: Performance measures (cont.), Protocols & layering	1/25: Lab1/HW1 HW1 assigned	1.4,1.5 **LAB1 due (Sun, 1/27)**
3	1/29: Protocols & layering (Cont.)	1/31: Addressing **HW1 due**	2/1: HW2 HW2 assigned	2.1-2.3
4	2/5: Addressing (cont.)	2/7: Socket design	2/8: HW2	2.5-2.9, 3.3 (intro)
5	2/12: Socket (Cont.), Switching technologies	2/14: Switching tech. (cont.), Physical layer **HW2 due**	2/15: Project Project (3 phases) assigned	3.4 (intro, 3.4.1, 3.4.2)
6	2/19: Physical layer (Cont.)	2/21: Physical layer (Cont.)	2/22: Project/HW3 HW3 assigned	5.8 (intro, 5.8.1)
7	2/26: Physical layer (Cont.)	2/28: Data link layer **HW3 due**	3/1: LAB2/Quiz practice LAB2 assigned	5.1-5.4
8	3/5: **Quiz**	3/7: Data link layer (Cont.)	3/8: LAB2/Quiz review **Phase I due**	5.5-5.7
9	3/12: Data link layer (Cont.)	3/14: Data link layer (Cont.)	3/15: HW4/Project **LAB2 due** HW4 assigned	6.1,6.3
	3/18-3/23: Spring Recess			
10	3/26: Data link layer (Cont.) Internetworking	3/24: Internetworking (Cont.), Network layer **HW4 due**	3/25: Lab3/Midterm I review LAB3 assigned	4.1-4.4
11	4/2: **Midterm I**	4/4: Network layer (cont.)	4/5: Midterm I review **Phase II due** HW6 assigned	4.5-4.8
12	4/9: Network layer (cont.)	4/11: Network layer (cont.) **HW5 due**	4/12: Project/HW6 HW6 assigned **LAB3 due**	3.1-3.8
13	4/16: Transport layer	4/18: Transport layer (cont.)	4/19: Lab4 LAB4 assigned **Phase III due**	8.1-8.4
14	4/23: Transport layer (cont.)	4/25: Network Security **HW6 due**	4/26: Midterm II practice	8.9
15	4/30: **Midterm II**	5/2: slack/review	5/3: Midterm II review **LAB4 due**	