

CSE 245/330: Computer Networks

Course Information

Time and location:	TuTh 09:30am – 10:45am, ITEB 119
Instructor:	Jun-Hong Cui (jcui@cse.uconn.edu) Office: ITEB 267 Phone: (860) 486-8951
Instructor office hours:	TTh 10:45am - 11:45am or by appointment
Teaching assistant:	Yona Raeko (yonaraekow@gmx.de)
Teaching assistant office hours:	Mon. 1:00pm – 3:00pm (Office: ITEB 230)
Class online:	Check WebCT (http://webct.uconn.edu)

Objectives

The past few years have seen a remarkable growth in the global network infrastructure. The Internet has grown from a research curiosity to something as essential as the ubiquitous telephone and utility networks. It has been able to withstand rapid growth fairly well and its core protocols have been robust enough to accommodate applications that were unforeseen by the original Internet designers, such as the World Wide Web. Furthermore, networking is becoming an essential component of many systems.

In this class, we will study the fundamental principles in the design and implementation of computer communication networks, their protocols, and applications. Topics to be covered include: layered network architectures, network applications, network programming interfaces (e.g., sockets), transport services, data link protocols, local area networks and network routing. Examples will be drawn primarily from the Internet TCP/IP protocol suite. Through homework assignments and class projects, the students will learn how the Internet works and how to design Internet applications.

This course is appropriate for graduate students as well as undergraduate students. For graduate students, there will be more requirements: some advanced projects and some additional paper readings. Basically, besides grasping the fundamental concepts in the design and implementation of computer communication networks, their protocols, and applications, graduates are expected to have deeper understanding of the design and implementation principles of networks through doing the advanced projects, and at the

same time, gain some basic skills in networking research by reading and criticizing some good research papers.

Course Prerequisites

- A rudimentary understanding of algorithms, computer architecture, and operating systems would be helpful.
- Programming experience in C is required.
- System experience in Unix/Linux is preferred.

Textbook

- [Computer Networking: A Top-Down Approach Featuring the Internet](#), Second Edition, by J. F. Kurose and K. W. Ross, Addison Wesley, 2002.

List of Topics

- Chapter 1: Computer Networks and the Internet
- Chapter 2: Application Layer
- Chapter 3: Transport Layer
- Chapter 4: Network Layer and Routing
- Chapter 5: Link Layer and Local Area Networks
- Chapter 6 & 7: Multimedia Networking and Security (if time permits)

References

- [UNIX Network Programming](#), Volume 1, Second Edition: Networking APIs: Sockets and XTI, by [W. Richard Stevens](#), Prentice Hall, 1998.
- TCP/IP Illustrated, Volume 1: The Protocols, by [W. Richard Stevens](#), Addison-Wesley, 1994, ISBN 0-201-63346-9
- Computer Networks, A Systems Approach, by [Larry L. Peterson](#) and Bruce S. Davie, Morgan Kaufmann Publishers, 2nd edition, 1999
- Computer Networks, Fourth Edition, by [A. S. Tanenbaum](#), Prentice Hall PTR, 2003.

Grading

There will be 4 homeworks, 2 programming projects, one in-class midterm exam (in the early of March), and one final exam. The exams will be closed-book and closed-notes. For graduate students, there are 5 to 7 paper reviews.

The final course grade will be computed as follows:

Undergraduate students:

- Homework: 12% (3% each)
- Projects: 33% (proj1: 17%, proj2: 16%)
- Mid-term exam: 25%
- Final exam: 30%

Graduate students:

- Homework: 12% (3% each)
- Projects: 33% (proj1: 17%, proj2: 16%)
- Paper reviews: 10%
- Mid-term exam: 20%
- Final exam: 25%

If you have questions regarding the grading of your homeworks, projects or exams, you **MUST** come to see either the instructor or the grader **WITHIN ONE WEEK** after the date your homeworks, projects or exams have been returned to you.

Computer Accounts

You are expected to use the Unix machines in ECS ([Engineering Computing Services](http://www.engr.uconn.edu/ecs/newpeople.htm)) for the programming projects. If you do your projects in other system environments, it is your responsibility to make sure your programs can run on the ECS Unix machines. (NOTE: TA will grade the projects on the ECS Unix machines.) If you do not have an ECS UNIX account, you need to apply for one at <http://www.engr.uconn.edu/ecs/newpeople.htm>.

Paper Reviews

The objective of paper reviews is to help the graduate students develop some basic networking research skills and explore some interesting research topics in networking. We will have 5-7 papers. Before each class, a graduate student should read the required paper and prepare a (approximately) one to two-page long written critique for the paper. Requirements and submission instructions will be posted separately. Note that paper review can be done **in a small group** (with at most two students). It is recommended that two students form a study group so that you can discuss with each other and write a good paper critique.

Late Policy

Homeworks and projects must be turned in before the specified due date and time. Late homeworks and projects will **NOT** be accepted.

Academic Integrity

YOU MUST DO YOUR HOMEWORKS AND PROJECTS ON YOUR OWN UNLESS THEY ARE SPECIFIED AS GROUP WORK!

You may discuss the homework with anyone and use any reference material, provided you do not copy any other person's work or solution books. Appropriate reference or credit must be acknowledged if you do not solve the homework problems on your own.

For the programming projects, it is expected that you have written **EVERY LINE OF CODE** that you submit (with the exception of code given out in class). The following are examples of activities that are **PROHIBITED**:

- Writing code with another student.
- Copying code from another student.
- Giving code to another student (via email, printouts, etc).
- Posting code in a publicly accessible location.

Such activities will result in zero points awarded for the project.

The first project will be done **in a small group**. Two or three people can form a group. For the group project, it is expected that your group have written **EVERY LINE OF CODE** that you submit (with the exception of code given out in class). The following are examples of activities that are **PROHIBITED**:

- Writing code with another group.
- Copying code from another group.
- Giving code to another group (via email, printouts, etc).
- Posting code in a publicly accessible location.

Such activities will result in zero points awarded for the project.

We will follow the [University Policy on Academic Integrity](#) regarding any cheating and plagiarism. Take the time to familiarize yourself with the contents of this page, as you are responsible for its contents.