

Syllabus

ESCE-4670 Computer Communications Networks (CCN)

Fall 2007

Instructor:

Prof. Koushik Kar

Electrical, Computer & Systems Engineering

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Class times:

Mon, Thu: 12:30-1:50pm

Format:

Classes: 14 weeks, 28 sessions

Homeworks: 9

Exams: 3

(Two mid-semester exams, and one final exam.)

Course Description:

Introduction to the basic concepts of computer and communication networks, like flow control, congestion control, end-to-end reliability, routing, framing, error-recovery, multiple access and statistical multiplexing. In-depth presentation of the different networking layers, with emphasis on the Internet reference model. Protocols and architectures such as the TCP, IP, Ethernet, wireless networks etc. are described in order to illustrate important networking concepts. Introduction to quantitative analysis and modeling of networks .

Prerequisites/Corequisites:

Basic understanding of computer components and operations (as in ECSE-2610) and elementary probability (as in ECSE-4500, MATH-2800 or ENGR-2600) are *required*. Students can be taking this course and ECSE-4500 at the same time. Basic understanding of computer organization and operating systems (as in ECSE-2660) is *desirable*, but not required.

Text:

Required

J.F. Kurose, K.W. Ross, *Computer Networking, A Top-Down Approach Featuring the Internet (3rd Ed.)*, Addison-Wesley, ISBN 0-321-22735-2 .

Publisher's Web Page: <http://www.awl.com/kurose-ross>

We will cover the first six chapters from this book.

References

1. S. Keshav, *An Engineering Approach to Computer Networking*, 1997.
2. B. Davie, L. Peterson, *Computer Networks: A Systems Approach*, 1999.

3. A. Tannenbaum, *Computer Networks* (4th Ed.), 2002.
4. D. Bertsekas, R. Gallager, *Data Networks* (2nd Ed.), 1991.

Tentative list of topics:

- Introduction: Computer Networks and the Internet: Chapter 1
- Application Layer: Chapter 2
- Transport Layer: Chapter 3
- Network Layer : Chapter 4
- Link Layer: Chapter 5
- Wireless Networks: Chapter 6
- Performance Analysis: Fundamentals of Queuing Theory: Handouts will be provided.

Tentative Grading Percentages:

Homeworks:	20%
2 Mid-Semester Exams:	25% each
Final Exam:	30%

Course Delivery Format/Policies:

This course will consist of lectures, homeworks and examinations.

- **Homeworks** will contain numerical problems, short-answer type qualitative questions, and possibly some reading exercises.
- If you feel that an error was made in grading, do not wait toward the end of the semester to tell us about it. **PLEASE DIRECT ALL GRADING RELATED REQUESTS TO THE TA.** You should submit a regrading request to the TA within a week of the date the graded material was returned to the class. Requests for regrading will not be accepted after that time. Any graded material that is not picked *up within two weeks will be discarded.*
- **Exams** will contain quantitative problems, true/false questions and short-answer questions. The focus will be on understanding of concepts, and problem-solving skill.
- Exams will be **open-book/notes**, but will be time-constrained.
- Material from lecture slides, text and reading/homework assignments will be included in the scope of exams.

Homework Submission Policy:

- All homeworks must be submitted by the indicated deadline; homeworks submitted after the deadline will not be graded, unless it has a special prior approval of the instructor.
- We prefer that students use the LMS Dropbox for submitting homeworks. Alternatively, in-class students can hand in hardcopies to the instructor in class, and distance-learning students can mail/fax it at the address/number provided below. In all cases, the homework must reach us by the deadline.

RPI – OGE, Distance Learning
110 8th Street, DCC 134
Troy, NY 12180.
Fax: (518) 276-8026

Miscellaneous:

The purpose of these different instruments is to have a positive learning experience, critical thinking about networking issues, and sound grasp of fundamentals. **If you feel any of these instruments is not working for any reason, please send me an email and I will consider a change in the format of delivery. The LMS (WebCT) bulletin board is a good forum for**

exchange of opinions.

- Important: All course materials will be put up on the LMS (WebCT).
- Please use the WebCT bulletin board for administrative and discussion purposes. If you have questions which might be of interest to the entire group of students, please post to the mailing list and not send me the questions directly. Any one can reply to your questions, and you can reply to any one's questions. **The TA(s) will be assigned to watch the LMS (WebCT) bulletin boards on every day of the week. So you can expect prompt replies.**

Academic Integrity:

Student-teacher relationships are based on trust. Acts which violate this trust undermine the educational process. Violations of academic integrity will not be tolerated by your classmates, teaching assistants, or the instructor. Please refer to the *Rensselaer Handbook* for definitions of various forms of academic dishonesty and the applicable penalties. We take cheating very seriously; you can expect to be punished for violations of academic integrity.

Course Schedule

Session #	On Campus/Distance Learning Dates	Exams/Notes
1	Monday, August 27	
2	Thursday, August 30	HW1 assigned
	Monday, September 3	No Session: Labor Day
3	Thursday, September 6	
4	Monday, September 10	HW1 due; HW 2 assigned
5	Thursday, September 13	
6	Monday, September 17	HW2 due; HW3 assigned
7	Thursday, September 20	
8	Monday, September 24	HW3 due
9	Thursday, September 27	Exam1
10	Monday, October 1	
11	Thursday, October 4	
	Monday, October 8	No Session: Columbus Day
12	Tuesday, October 9	Tuesday follows a Monday Schedule; HW4 assigned
13	Thursday, October 11	
14	Monday, October 15	HW4 due; HW5 assigned
15	Thursday, October 18	
16	Monday, October 22	HW5 due; HW6 assigned
17	Thursday, October 25	
18	Monday, October 29	HW6 due
19	Thursday, November 1	Exam2
20	Monday, November 5	
21	Thursday, November 8	
22	Monday, November 12	HW7 assigned
23	Thursday, November 15	
24	Monday, November 19	HW7 due; HW8 assigned
	Thursday, November 22	No Session: Thanksgiving Break
25	Monday, November 26	HW8 due; HW9 assigned
26	Thursday, November 29	
27	Monday, December 3	Review Session; HW9 due
28	Thursday, December 6	Final Exam
No Final During Finals Week: Wed. Dec 12 - Tues. Dec 18		