

CSE 5095 (300): Mastering Complex Networks: A System Approach

Course Information

Time and location:	Mon.: 5:00pm-7:30pm, ITEB C45
Instructor:	Jun-Hong Cui (jcui@engr.uconn.edu) Office: ITEB 267 Phone: (860) 486-8951
Instructor office hours:	Mon. meetings or by appointment
Teaching assistant:	James Zheng Peng (zhengpeng@engr.uconn.edu)
Teaching assistant office hours:	TBD
Class online:	Check HuskyCT (http://webct.uconn.edu)

Objectives

To master complex networking technologies, innovative learning approaches are sought. In this class, students will learn how to put "principles into practice" via well designed hands-on-networking labs, accompanied by lectures (based on needs). The class will cover router and end-system labs in the areas of single segment IP networks, multiple segment IP networks and static routing, dynamic routing protocols (RIP, OSPF and BGP), LAN switching, transport layer protocols: UDP and TCP, NAT, DHCP, DNS, and SNMP. State of the art Cisco routers will be explored in the class.

Upon successful completion of the class, students will gain a deep understanding of complex networks including network architectures, protocol design and system implementation. Students will accumulate valuable network system experiences which are highly demanded in advanced networking studies and research as well as industry job market.

Course Prerequisites

- CSE3300 (245) or equivalent, and permission of the instructor.
- Because of limited lab equipment, enrollment is limited to 16 students.

Textbook

- The textbook is [Mastering Networks: An Internet Lab Manual](#) by Jorg Lieberherr, University of Virginia; Magda El Zarki, University of California, Irvine. ISBN: 0-201-78134-4. Publisher: Addison-Wesley. Copyright: 2004.

Class Meetings

The labs are due at a rate of roughly **one lab every two weeks**. A short pre-lab Q&A and lab report are required for each lab. These labs will be done in a networked lab setting consisting of two racks of equipment, with each rack consisting of 4 Cisco2600-family routers, 4 hubs, and 4 Linux hosts.

We will meet once a week (Monday, 5:00pm-7:30pm, in ITEB C45). In each of the class meetings, either the instructor presents some background knowledge for the labs (based on needs), or we form as a group to discuss progress, problems encountered, successes achieved, etc.

Because this course is largely self-directed, self-discovery lab work, *you will need to be motivated, conscientious, and organized in order to complete this course successfully*. Moreover, the labs are self-paced, and you will do them in the lab at a time of your own choosing. TA will arrange for times to be in the lab to help you with the labs if you need assistance. See his office hours at the beginning of this syllabus.

Lab Location

ITEB C45: Room 45 at the concourse level of the ITE Building. You will need the combination to the lab, which can be obtained from the instructor when you show up in the first class. Please carefully follow the instructions to well use and maintain the lab.

Useful Links

- [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
- A.Rodriguez, J. Gatrell, J. Karas, R.Peschke. TCP/IP Tutorial and Technical Overview, IBM Redbook ([HTML](#), [PDF](#))
- [Network Sorcery](#)
- [GNU Zebra Manual](#)
- [Full Standard RFCs](#)
- [All RFCs](#)
- [FreeBSD Man Pages](#)

Grading

There are 6 labs for this course. There are **NO** exams. The labs are fun and challenging, and with effort can be done well. If you put in the time to do the labs, do them well, and do them on time, you will get a **GOOD** grade in this course. Lab reports will be graded. The pre-labs will not be graded but will be checked to make sure you have made a reasonable effort. You can also do one optional lab for extra credits.

Late Policy

No late assignments will be accepted. Labs handed in late will **lose 10% daily** of the maximum possible credit.

Academic Integrity

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.