

Roosevelt University: CST 352/452 – Network Design

Michael E. Ruth, Ph.D.

Course Meetings: Saturdays, 9:30 to 12:15 @ Schaumburg, Rm. 703

Office: Schaumburg, Rm. 600 (WW)

Phone: (312) 281-3303

Office Hours: Sa 12:30 to 3:30 PM

Email: mruth@roosevelt.edu

Or By Appointment

AIM: michaelruthphd

Course Description:

Communication system hardware, organization, and structure. Detailed examination of various communication protocols and interfaces used in computer networks, including routing and route discovery algorithms. A computer use course.

Course Objectives:

- Explain the relevant architectural concepts and models of internetworking with TCP/IP including layered network architectures, Internet organizations, and the RFC process.
- Describe the functionality and design of the Network & Transport layer protocols:
 - Network Protocols (IP): ARP resolution, addressing (classful & classless), forwarding, control, and error messages (ICMP)
 - Transport protocols (TCP & UDP): reliable/unreliable, ordered/unordered delivery & flow and congestion control
- Discuss routing architectures and algorithms including link-state and distance vector algorithms, routing schemes, and the related routing protocols (BGP, RIP, & OSPF)
- Employ a variety of tools designed to test, configure, and monitor TCP/IP network protocols and applications.

Textbook:

Internetworking with TCP/IP: Principles, Protocols, and Architecture (5th Edition)

by Douglas E. Comer

ISBN: 978-0131876712

Grading Policy:

- Midterm (25%)
- Final Exam (35%)
- Homework/Class Participation (40%)

+/- grading is used (roughly 100-92% = A, 91-90% = A-, 89-88% = B+, 87-82% = B, etc.

Course Policies:

- You only have **two free** absences. After that, you will be penalized a letter grade for each additional absence. (Each class is a week's worth of classes)
 - Exceptions may be approved by **instructor**, but expect to be denied.
- **You are responsible** for all material covered including all lectures, handouts, and announcements regardless of how they are delivered.
- **There will be no make-up examinations.**
 - *If the midterm is missed due to an emergency, the grade of the final will be substituted for the midterm grade.*
- Late homework will be graded **at my convenience if at all.**
- **More is expected from Graduate Students**
 - *Additional Assignments & Requirements*
- Come to class on time!
- As you walk into class, silence cell phones and any other noise-producing equipment.
- Any preceding policies may be waived at my discretion.

Disabilities:

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact the Office of Disabled Student Services, 310 Herman Crown Center, 312-341-3810, or e-mail nlitke@roosevelt.edu as early as possible in the term.

Academic Honesty:

Any instance of cheating will result in a grade of 'F' on that assignment / exam. A second offense will result in an 'F' in the course. Each assignment must represent your own work. You may discuss the assignments with other students, but you cannot copy or share assignment artifacts. Grievance procedure is at: [http:// roosevelt.edu/current/judicial/](http://roosevelt.edu/current/judicial/)

Tentative Course Schedule:

Dates	Topics	Reading
8/29	Introduction to CST 352/452 , Review, Concepts & Architectural Models, Protocol Layering	Syllabus, 1, 2, 3, & 10
9/5	Labor Day Holiday (No Classes)	
9/12	Addressing (Classful & Classless), ARP & RARP	4, 9, 5
9/19	Internet Protocol: Connectionless Datagram Delivery (IPv4)	6
9/26	Forwarding IP Datagrams	7 & 9
10/3	Internet Protocol: Error and Control Messages (ICMP)	8
10/10	User Datagram Protocol (UDP)	11
10/17	Midterm	Ch 1-11
10/24	Transport Control Protocol (TCP)	12
10/31	Routing Architecture & Routing between peers (BGP)	13 & 14
11/5	Last Day to Withdraw with a grade of "W"	
11/7	Routing within an Autonomous System: (RIP)	15
11/14	Routing within An Autonomous System: (OSPF)	15
11/21	Internet Multicasting, IP Switching & MPLS	16 & 17
12/5	Mobile IP & Private Network Interconnection (VPN, NAT)	18 & 19
12/12	Final Exam	Ch 12-19