Computer Networks (CS 430)

General Information

Instructor

Roman Yasinovskyy

Contact

Email: roman@luther.edu

Office Hours

See my calendar and schedule an appointment.
Walk-ins are welcome!

Prerequisites

Object-Oriented Programming (CS 25x)
Computational Models (CS 260)

Meeting time

MWF 11-12 Olin 112

Course Description

Concepts, principles, protocols, and applications of computer networks with a focus on the Internet, including application layer protocols such as http, smtp, socket programming and peer-to-peer networks; transport-layer protocols such as TCP, UDP and congestion control; network layer algorithms for routing and broadcast, and multicast; link-level protocols for local area networks such as Ethernet and WiFi; and issues in network privacy and security.

Course Goals

- Improve your network troubleshooting skills
- Improve your network programming skills
- Understand network protocols and their tradeoffs
- Learn to recognize and solve common networking problems
- Learn to critically evaluate network design

Textbook

Kurose, J. F., & Ross, K. W. (2017). *Computer Networking: A Top-down Approach*. Boston, MA: Addison-Wesley.

Older editions are accepted.

Course Outline

Computer Networks and the Internet

- Packet Switched Networks
- Delay, Loss, and throughput
- Network Layers

Application Layer

- The Web and HTTP
- DNS Overview
- Socket Programming

Transport Layer

- Multiplexing and Demultiplexing
- Connectionless Transport
- Connection-oriented Transport
- Congestion Control

Network Layer

- Internet Protocol
- Routing Algorithms

Link Layer

- Error Detection and Correction
- Multiple Access Links
- Local Area Networks

Wireless and Mobile Networks

- 802.11
- Cellular Internet Access

Multimedia Networking

- Streaming
- Voice over IP

Security in Computer Networks

- Secure and Insecure Connections
- Security Protocols

Grading

Points Distribution

Assignment	Percentage
Exercises	30
Projects	30
Exams	20
Final project	20
Total	**100**

Final Grades

Grade	Required Minimum
A	93
A-	90
B+	87
B	83
B-	80
C+	77
C	73
C-	70
D+	67
D	63
D-	60

Class Requirements

Participation

Class period will be split between lecturing and hands-on activities. Please read the assigned materials and come to class with questions. It is fine to be confused as long as you demonstrate positive attitude and progress.

Resources

You should bring your laptop and/or a virtual machine to every class and be prepared to use Linux distribution and IDE of your choice to complete assignments.

Homework

Select activities and reading will be assigned to reinforce course material.

Select reading homework will be assigned. Top 10 exercise scores will be included in the final grade.

Unless specified otherwise, all assignments are individual and you must submit your original work to fulfill the requirements.

Accommodations

Please let me know if you need any additional accommodations.