CS 656 Master Course Plan
Fall 2024
Description (from NJIT Catalog)
The course introduces the protocols and standards of the TCP/IP suite that govern the functioning of the Internet. The material covered in class is a top-down approach on the introduction, discussion, and analysis of protocols from the data-link layer to the application layer. Alternative protocols to the TCP/IP suite and new protocols adopted by this suite are discussed. Numerical examples related to network planning and protocol functioning are analyzed.
Meeting Times
Please see the Registrar's schedule for your section meeting times and locations.
Pre-requisites
CS Department pre-requisites are assumed, including knowledge of C and/or Java. Students from non-STEM backgrounds must see the instructor.
Text and materials
Text: J F Kurose and K W Ross, Computer Networking 8th Edition. New York, NY; Pearson, 2020. ISBN-13: 9780136681557
Slides: link here: Kurose and RossLinks to an external site.
Schedule
Note: this may be fine-tuned as we go along

- Week 1, Ch 1, Networks, Internet, Edge/Core
- Week 2, Ch 2, Application Layer
- Programming Project
- Week 3, Ch 2, App Layer, Web, HTTP/SMTP, FTP
- Week 4, Ch 3: Reliable Data Transfer: Multiplex/Demultiplex
- Programming Project
- Week 5, Ch 3: RDT, TCP, UDP
- Week 6, Ch 3: TCP Congestion, Flow, transport layer performance
- Week 7, Ch 4: Data Plane: Router internals, IPv4 addressing
- Midterm
- Week 8, Ch 4: Forwarding and SDN
- Week 9, Ch 5: Control Plane: Routing algorithms LS, DV, Network Management
- Programming Project
- Week 10, Ch 5: Control Plane: SDN and OpenFlow
- Week 11, Ch 6: Link Layer, Multiple Access Protocols
- Programming Project
- Week 12, Ch 7: Wireless
- Week 13, Ch 8: Security
- Week 14, Special Topics: Multimedia, Cloud or Streaming

Programming Projects
There will be 3-4 substantial programming projects in C or Java. Projects may involve the design, development, and simulation of computer networks and protocols. Some projects may require tools like Wireshark or tcpdump which will be described in class. Instructions will be provided in

class. Projects will be done in groups. All group members will receive the same score on the project.

Academic Integrity

We take a very serious view of cheating. Aids including others' code, GPT, other Internet resources, etc. are strictly prohibited. We will aggressively prosecute all violations of Academic Integrity at the highest university penalty level.

Grading

50 % - Programming Projects
10 % - In-class exercises
20 % - Midterm
20 % - Final Exam

In-class exercises are individual or group work.

Course Policy

- No late work. No makeups or retakes. This applies to everything.
- We may ask your group (collectively or with specific group members) to run, modify or explain your programming project, including dry runs on unfamiliar input. Failure to do so will result in your score becoming 0 even if your actual submitted project ran perfectly and got a full score.
- Academic Integrity is a serious matter and we follow the NJIT University Academic Integrity Policy. All sanctions and penalties are applied aggressively as defined by the Dean of Students. Cheating on exams in any form results in a grade of F or XF. Please see the details posted in Canvas.
- Please see the specifics about programming, exams, assignments, etc. posted in Canvas.

Student Wellness

We would like the course to be smooth and enjoyable. We are happy to help. See us or send us an email.

Office hours:

Wednesdays: 3:30-4:30 pm
Office location: GITC 4321B
Email:sb936@njit.edu
Dr. Berenjian
END