



## **CPE 490 B - Information Systems Engineering I: Computer Networking**

Schaefer School of Engineering & Science, **Fall 2022**

Meeting Times: 6:30pm – 9:20pm, Tuesday

Classroom Location: Babbio 220

Instructor: Professor James Xiaojiang Du

Contact Info: [xdu16@stevens.edu](mailto:xdu16@stevens.edu)

Office: Burchard 205

Office Hours: Tuesday 3:30pm – 5:30pm

Zooming Link: <https://stevens.zoom.us/j/3227702932>

Course Web Address: <https://sit.instructure.com/courses/61216>

Prerequisite(s): MA 134

Co-requisite(s): None

Cross-listed with: N/A

### **COURSE DESCRIPTION**

The purpose of this course is to introduce students to the fundamentals of computer networking, layering, protocols and applications. The course has an emphasis on the Internet and associated architectures. At the end of this course, student should be familiar with topics such as protocol layering, HTTP/S, DNS, SNMP, ICMP, TCP, UDP, BGP, Link State, Distance Vector, Medium Access, TDMA, FDMA, etc.

### **LEARNING OBJECTIVES**

**After successful completion of this course, students will be able to understand ...**

- The basic principles of computer networking, layering, protocols and applications;
- The Physical Layer Transmission Media, Wireless Transmission, Satellite Communications, Public Switched Telephone Network, Mobile Telephone System, Cable).
- Data Link Layer Design Issues, Error Detection and Correction.
- The Medium Access problem, TDMA, FDMA, CDMA and 802.11 protocols
- The Network Layer Design Issues, Routing Algorithms, Congestion Control, Quality of Service, Internetworking, Network Layer in the Internet.
- The Transport Layer Service, UDP, TCP).
- The Application Layer (e.g., DNS, Voice over IP).
- How to choose different network design choices and parameters
- How to evaluate network performance

## FORMAT AND STRUCTURE

This course is comprised of weekly lectures, in-class group exercises, technical paper reading & presentation.

## COURSE MATERIALS

**Textbook:** Andrew S. Tanenbaum, Computer Networks, 6th Edition, Pearson, 2019, ISBN-10: 0135408008, ISBN-13: 978-0135408001

## COURSE REQUIREMENTS

**Homework:** There will be a few homework assignments throughout this course.

**In-Class Exercise:** There will be an In-Class Exercise in almost every class.

**Technical Paper Reading & Presentation:** You are required to read a recent research paper in the areas of computer networks or wireless networks. The paper list will be given later. The papers are from top networking conferences (such as IEEE Infocom, ICC, GlobeCom, ACM MobiCom, ACM MobiHoc, etc). The purpose of the Technical Paper Reading is to let students know the up-to-date research frontier in networking area. You need to prepare slides and talk about the main content of the paper.

**Exams:** There will be a mid-term exam and a final exam.

## GRADING PROCEDURES

Item	Weight
<b>Homework</b>	5 %
<b>In-Class Exercise</b> (No make-up exercise will be allowed)	15 %
<b>Technical Paper Reading &amp; Presentation</b>	20 %
<b>Midterm Exam</b>	30 %
<b>Final Exam</b> (Only cover materials after Midterm Exam)	30 %

## ACADEMIC INTEGRITY

**Student Code of Academic Integrity:** *All Stevens students promise to be fully truthful and avoid dishonesty, fraud, misrepresentation, and deceit of any type in relation to their academic work. A student's submission of work for academic credit indicates that the work is the student's own. All outside assistance must be acknowledged. Any student who violates this code or who knowingly assists another student in violating this code shall be subject to discipline.*

## LEARNING ACCOMODATIONS

Stevens Institute of Technology is dedicated to providing appropriate accommodations to students with documented disabilities. The Office of Disability Services (ODS) works with undergraduate and graduate students with learning disabilities, attention deficit-hyperactivity disorders, physical disabilities, sensory impairments, psychiatric disorders, and other such disabilities in order to help students achieve their academic and personal potential. They facilitate equal access to the educational programs and opportunities offered at Stevens and coordinate reasonable accommodations for eligible students. These services are designed to encourage independence and self-advocacy with support from the ODS staff. The ODS staff will facilitate the provision of accommodations on a case-by-case basis.

**Disability Services Confidentiality Policy**

Student Disability Files are kept separate from academic files and are stored in a secure location within the Office of Disability Services. The Family Educational Rights Privacy Act (FERPA, 20 U.S.C. 1232g; 34CFR, Part 99) regulates disclosure of disability documentation and records maintained by Stevens Disability Services. According to this act, prior written consent by the student is required before our Disability Services office may release disability documentation or records to anyone. An exception is made in unusual circumstances, such as the case of health and safety emergencies