CPE490 Information Systems Engineering I - Computer Networking

Schaefer School of Engineering & Science, Fall 2021

Meeting Times: 6:30pm – 9:00pm, Monday

Classroom Location: Burchard 118

Instructor: Professor James Xiaojiang Du

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Office: Burchard 205,   Office Hours: Monday 3:30pm – 5:30pm

Course Web Address: https://sit.instructure.com/courses/49781

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, 5th Edition, Prentice Hall, 2011, ISBN-10: 0132126958, ISBN-13: 978-0132126953.

COURSE REQUIREMENTS

Homework: There will be five (5) homework assignments throughout this course.

In-Class Exercise: There will be In-Class Exercise in all classes.

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, 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
Homework	5 %
In-Class Exercise (No make-up exercise will be allowed)	15 %
Technical Paper Reading & Presentation	20 %
Midterm Exam	30 %
Final 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
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Disability Services Confidentiality Policy
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