COMP 3825: Networking and Information Assurance – Fall 2018

Basic Information:

Time & Place: MW 12:40-2:05 PM, DH119
Instructor: Xing Gao, 321 Dunn Hall, Email: xgao1@memphis.edu
Office Hours: M 2:30-3:30 pm, Th 3:00-4:00 pm, or by appointment
Teaching assistant: Laqin Fan (lfan1@memphis.edu), DH221
Office Hours: W 4-5:30 pm

Course Overview

This is an undergraduate course on computer network and security. This course introduced the principles and practices of computer networks, network protocol and application design, and basic notions of computer and network security. It covers net-centric computing; communication and networking; world-wide web; multimedia networking; network management; basic issues in computer security; principles of network security; threat modeling; basic methods and protocols in cryptography; web security; Denial of Service (DoS) attacks; security policies; netiquette and cyberethics. The lecture will be conducted in an interactive fashion. A group of two or three students will identify and work on a project. Plus, there will be about five homework assignments, and midterm and final exams.

Grading Policy

Grades will be computed as follows:
10% Class participation
25% Homeworks
20% Term Project
15% Mid-term Exam
30% Final Exam

Resources:

Required Text:

• Computer Networking: A Top-Down Approach, 7th Edition, James F. Kurose and Keith W. Ross, Pearson, 2017.

Intended Outcomes:

Understand the concepts of protocol layering, protocols, and network performance. Understand conceptual aspects of application protocols. Write a simple network application. Understand principles behind transport layer services and various Internet transport layer protocols. Understand the concepts of data/control plane, routing, and forwarding. Design a simple

network protocol to achieve certain functionality. Understand principles of network security, including confidentiality, integrity, authenticity, and availability. Understand basic methods and protocols in cryptography. Understand ethical issues in computer and network security.

Academic Honesty:

Students are required to follow the Honor System of University of Memphis.

Course Syllabus (This is a tentative schedule):

List lecture topics or chapter sections by week or lecture meeting days.

Lecture	Date	Topics
1	8/27	Course Overview and Introduction
2	8/29	Introduction & Network Core
3	9/3	No class (Labor day)
4	9/5	Network Core and Delay
5	9/10	Protocol Layering and Network Security
6	9/12	Intro to Applications
7	9/17	Web
8	9/19	Email
9	9/24	DNS
10	9/26	Socket Programming
11	10/1	Transport Layer
12	10/3	TCP (Project)
13	10/8	TCP
14	10/10	Network Layer Overview
15	10/15	Midterm
16	10/17	No class (fall break)
17	10/22	Network Service Model and IP
18	10/24	NAT, ICMP, Link State Routing Algorithm

19	10/29	Distance Vector Routing Algorithm
20	10/31	Routing in the Internet
21	11/5	Routing in the Internet
22	11/7	Message Integrity
23	11/12	Public-Key Cryptography
24	11/14	Message Authentication
25	11/19	Ethics in Computer Networking and Security
26	11/21	No class (Thanksgiving)
27	11/26	Securing Web
28	11/28	In-class presentation
29	12/3	In-class presentation