Catalog Description: EEC 584 Computer Networks (4-0-4).
Prerequisite: graduate standing.
Network architectures, layered network protocol design issues, reference models, network standards, data link and medium access control protocols, routing algorithms and the Internet Protocol, ARP and DHCP, transport-level protocols including TCP and UDP, application-level protocols such as HTTP and DNS.


Coordinator: Dr. Wenbing Zhao, Associate Professor of Electrical Engineering and Computer Science.

Course Objectives: This course is designed to:
1. Introduce students to the basic concepts of computer networking.
2. Expose students to core data communication protocols.
3. Solidify understanding of concepts and networking protocols through a series of lab exercises.
4. Solidify understanding of the inner working of networking protocols by a term project involving with socket programming.

Expected Outcomes: Upon completion of this course, students should be able to:
1. Understand the concepts of computer networking.
2. Understand core data communication protocols, in particular, the mechanisms required to achieve reliable data communication.
3. Understand core routing algorithms.
5. Design and implement simple networked applications.
Prerequisites by Topic:

1. Operating Systems
2. Computer Organization
3. Data Structure and Algorithms

Topics:

1. Introduction to computer networks   8
2. Reference models and networking standards   2
3. Application layer protocols (HTTP & DNS)   8
4. Lab exercises for application layer protocols   4
5. Transport layer protocols (TCP & UDP)   8
6. Lab exercises for transport layer protocols   2
7. Routing algorithms   4
8. Internet Protocol   4
9. Lab exercises for Internet Protocol   2
7. Ethernet protocol and other data link layer protocols   8
8. Lab exercises for data link layer protocols   2
Tests   8
Total:   60

Computer Usage: Students are expected to use a network package sniffer tool (called wireshark) to carry out lab exercises. Students are also expected to use Java software development kit to implement the term project.

Design Projects: Students are expected to design and implement a simple network protocol or an interesting networked application.

Prepared by: Dr. Wenbing Zhao

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