Cleveland State University
Department of Electrical and Computer Engineering

EEC 484: Computer Networks

Catalog Description: EEC 484 Computer Networks (3-0-3).
Pre-requisite: CIS 265
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 and Computer Engineering.

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 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.

Fulfills the Following Computer Engineering Program Objectives and Outcomes:

Objectives: Practice computing engineering in the area of computer networks.
1. Define and diagnose problems, and provide and implement computer engineering solutions in industry, business, and government.
2. Observe engineering ethics in the practice of computer engineering.
3. Collaborate with others as a member or as a leader in an engineering team.
4. Develop their knowledge beyond the undergraduate level and to keep current with advancements in computer engineering

Outcomes: (a) Knowledge of mathematics, science, and engineering.
(c) Ability to design a system, component, or process.
(e) Ability to identify, formulate, and solve computer engineering problems.
(i) Recognition of the need for, and an ability to engage in life-long learning.
(k) Ability to use the techniques, skills, and modern engineering tools.

**Contribution of Course to Meeting the Professional Component:**
- Math & Basic Science: 0 credits;
- Engineering Topics: 3 credits;
- General Education: 0 credits

**Prerequisites by Topic:**
1. Operating Systems
2. Computer Organization
3. Data Structure and Algorithms

**Topics:**
1. Introduction to computer networks 7
2. Reference models and networking standards 2
3. Application layer protocols (HTTP & DNS) 8
4. Transport layer protocols (TCP & UDP) 8
5. Routing algorithms 4
6. Internet Protocol 4
7. Ethernet protocol and other data link layer protocols 6
Tests 6
Total: 45

**Computer Usage:** Students are expected to use Java software development kit to implement the term project. Students are also expected to use a network package sniffer tool (called wireshark) as part of their project for debugging and performance evaluation purposes.

**Design Projects:** Students are expected to design and implement a simple reliable data communication or routing application.

**Prepared by:** Dr. Wenbing Zhao
**Date:** August 2013