Department of Electrical & Computer Engineering
ECE 642 - Computer Networking
Fall 2013

Course Name: Computer Networking
Credits: 3
Classroom: Gornto 204
Class Hours: M 4:20 PM – 7 PM
Office Hours (KH 231C): M, R 2 PM – 3:30 PM
Instructor: ChunSheng Xin
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Required Textbooks:

Suggested Reference Book:

Prerequisite Course and Knowledge:
- ECE 355 or equivalence
- C/C++ programming

Course Description and Objectives:
The course is based on the ISO (International Standard Organization) OSI (Open Systems Interconnection) reference model for data communications. A focus is placed on the analysis of protocols at different layers, network architectures, and networking systems performance analysis. The objectives are to
- Study the fundamental concepts of computer networks
- Learn the principles of data communications
- Study the architectures of LANs and WANs
- Learn the layered network protocols
- Use network simulation tools, such as OPNET and ns2, to analyze network performance
- Learn how to design simple network protocols
- Understand the fundamentals of wireless networks

Tentative Topics:
1. Introduction to computer networks
   - Uses of computer networks
   - Network hardware
   - Network software
   - Network reference models
2. The physical layer
   The theoretical basis for data communications
   Transmission media
   Wireless transmission
   Switched telephone system
   Mobile telephone system
   Cellular radio

3. The data link layer
   Design issues
   Error detection and correction
   Elementary data link protocols
   Sliding window protocols
   Example data link protocols

4. The medium access control layer
   Channel allocation problem
   Multiple access protocols
   802.3 (Ethernet)
   802.2 (logical link control)
   802.11 (WLAN)
   Bridges

5. The network layer
   Design issues
   Routing algorithms
   Congestion control algorithms
   Quality of service
   Internetworking
   Internet Protocol (IP)

6. The transport layer
   Transport services
   Elements of transport protocols
   TCP
   UDP
   Network performance improvement and analysis

7. The application layer
   The domain name system
   E-mail
   WWW
   FTP
   TELNET

Grading Scale (%):

- Homework, 15
- Term paper, 15 (12 for term paper and 3 for presentation)
- Mid-term examination, 30
Final examination, 40

Academic Honesty:
Students are expected to follow the ODU Honor Code for all assignments, term papers, and examinations. All work that you turn in with your name on it should reflect your work; references are provided at the appropriate places. A first offense will result in the homework/examination/term-paper grade of zero for all participants. A second offense will result in a grade of F for the course for all participants.

ODU Email accounts:
Please activate your email account. Important information about the class will be announced through your ODU email account.

Attendance Policy:
You are strongly encouraged to attend all classes and actively participate in the class discussion.

Make-up Examinations
Examinations can be rearranged only if the individual has a physical problem evidenced by his/her Doctor’s prescription.

Questions to Your Grades
You may request the instructor to reevaluate your examinations, term papers, and other course materials if you have any question to your course grade. Written request must be submitted to the instructor within 15 days after the grade was assigned.

Honor Code
We, the students of Old Dominion University, aspire to be honest and forthright in our academic endeavors. Therefore, we will practice honesty and integrity and be guided by the tenets of the Monarch Creed. We will meet the challenges to be beyond reproach in our actions and our words. We will conduct ourselves in a manner that commands the dignity and respect that we also give to others.