CS 462 – Computer Networks

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Course Description:
Fundamental concepts of data transmission, network architecture, data security, error control, routing, switching, and congestion control. Study of network protocols: IEEE 802.x, TCP/IP, ATM, Wireless Internet and Mobile Computing.

Credits: 3
Prerequisites: CS 452

Learning Resources:

Evaluation
Lab & Homework: 60%
Midterm Exam: 20%
Final Exam: 20%
Students must pass all exams and lab/homework assignments to get a passing grade.

Course Content
1. What constitutes a computer network? (1 week)
2. Overview of Networking Protocols. (1 week)
3. Protocol Implementation. (2 weeks)
4. Physical link control. (2 weeks)
5. Data Link control and local area networks (LANs). (2 weeks)
6. Bridging and routing in LANs. (2 weeks)
7. Packet Switching and Routing Protocols. (3 weeks)
8. Wireless Protocols. (1 week)
9. Network Security and IPv6 (0.5 week)
10. State-of-the-art in high-speed network deployment (0.5 week)

Course Outcomes
1. Explain the concept of packet-switching, and identify and analyze the different types of packet delay in packet-switched networks (ABET Outcomes: a, e, i, l, m)
2. Describe the essential principles of a transport layer protocol (reliable data transfer, flow control, congestion control) (ABET Outcomes: a, e, i, m)
3. Use IP addressing and apply routing algorithms to find shortest paths for network-layer packet delivery (ABET Outcomes: a, e, i, j, m, n)
4. Describe and compare data link layer services and multiple access techniques (ABET Outcomes: a, b, c, e, i, j, m)
5. Describe network security issues and some of the methods that address them (ABET Outcomes: a, e, j)
6. Use networking tools to observe and analyze behaviors of networking protocols (ABET Outcomes: b, e, i, j, k)
7. Participate effectively in a project-based team environment (ABET Outcomes: d, f)

**American Disability Act**
Any student who has a disability and is in need of classroom and exam accommodations, please contact the instructor and the Services for Students with Disabilities Office in Old Library 2136 at the beginning of the semester.

**Scholastic Dishonesty**
Asking for help in understanding a problem or lending assistance to explain difficult points is encouraged. However, the copying of another student's assignment, or the common solution of written or programming assignments, or changing variable names of programming assignments, will be considered as cheating, unless group solution is specifically allowed. The purpose of assignments is to provide individual evaluation as well as a tool for learning and exploration of material. Note that the operational word in the definition of cheating is copying, not submission.

Students found guilty of academic dishonesty will be subjected to disciplinary action as prescribed by the Computer Science Department's prescribed disciplinary procedures. Disciplinary action for this course includes, but is not limited to, failure for the course.