CS 5550 Computer Networks

Syllabus

Class Hours:
Tu-Thur, 6:30 – 7:45 PM,

***Venue*:**
College of Engineering and Applied Sciences,
Room: D-202

Instructor:
Dr. Shameek Bhattacharjee,
Room B-241,
Email: shameek.bhattacharjee@wmich.edu,
Office hours: Thur: 2– 4 PM,

Teaching assistants:
Abduljaleel Al-Hasnawi
Room: C-210,
Email: abduljaleelmoh.alhasnawi@wmich.edu

Prerequisite:
CS 2240 and CS 3310, all with a C or better.

Textbook:
Data Communications and Networking, Behrouz A. Forouzan, McGraw-Hill, 5th Edition.

Reference book:

1. *Computer Networks: A Systems Approach, Larry L. Paterson and Bruce S. Davis, Morgan Kaufmann, 5th Edition*

2. *Computer Networking: A Top-Down Approach, James Kurose and Keith Ross, Pearson, 7th Edition*

Course Outline:
Topics covered include:
- Network basics (4 lectures)
    - Introduction: Basic concepts, architecture, protocols, performance
    - Physical communication: Digital/Analog, multiplexing
- Data link network (5 lectures)
    - Encoding, framing, error detection, reliable transmission
    - P2P and shared access, Ethernet, MAC, random access
- Packet switching (2 lectures)

- Switching: Datagram, virtual circuits
- Internetworking (6 lectures)
    - Addressing: IPv4, IPv6, Subnets, ARP, DHCP, NAT, VPN
    - Routing: Distance vector routing, link state routing, OSPF, CIDR, BGP
- End-to-end networking (5 lectures)
    - Transmission: UDP, TCP
    - Congestion control
- Applications (2 lectures)
- HTTP, email, DNS, Overlay networks, CDN, P2P
  Network security (2 lectures)

(The order and number of lectures covering some of the topics might change)

Lectures: The lectures will involve both slides and blackboard discussions. Attending all the lectures will be very important for the students to develop the concepts and skills, and also to be able to perform well in the exams, assignments, and quizzes.

Homework: Written homework will be assigned throughout the semester. Assignments will be due at the beginning of the lecture on the dates announced. It is your responsibility to keep track of assignments and their due dates.

Programming/Labs and Project: There will be some labs and one socket programming project. Programming and Lab reports will be due at the beginning of the lecture on the dates announced later. There is an alternative option for a choosing a research project as well (please contact the instructor during office hours).

Quizzes: There will also be four or five unannounced pop quizzes during class hours containing 10-15 multiple choice questions. There will be no retake of the quizzes.

Exams: There will be one midterm exams and one final exam.
- Midterm – Oct 10th (Tentative)
- Final exam – According to department final exam week

Grading:
Homework -------------------> 25%
Pop quizzes ------------------> 10%
Programming Labs ----> 10%
Project ------------------------> 10%
Midterm ----------------------> 20%
Final ---------------------------> 25%

Normally, the standard thresholds for letter grades will be used. However, the thresholds may be lowered by as much as 10% or curved depending on the class performance.

Other Important Notes:

· No discussion on assignments or course difficulties over telephone with the instructor.

· No questions will be answered on the date of a test/exam.

· Any disagreement with grading on tests must be pointed out immediately after the class period (in which graded papers are returned) with written arguments for your claim.

Makeup Exams:

For those having <u>verified reasons</u> to be absent during an exam, makeup exams will be arranged on an individual basis. Please contact the instructor <u>at least 1 week</u> prior to the scheduled test date, as it will not be possible to schedule a makeup "after the fact".

Incompletes:

A grade of 'I' will be given only for cases in which there are <u>documented</u> medical problems or family emergencies.

Change of Enrollment Status Policy:

· Withdraws recorded as "W" on transcript: CHECK UNIVERSITY POLICY.

· Last day to withdraw from classes: CHECK UNIVERSITY POLICY.

Guidelines for Submission of Assignments:

· All work must be submitted on, $8^{1/2}$"X11" papers. Use only one type, size and color paper for each assignment. Please do not submit papers torn-off from the spiral notebooks.

· The material need not be typed unless otherwise specified. However, all work must be neat and easily readable.

· The solutions to the homework problems must be arranged sequentially. Each solution must be clearly labeled and separated from the previous and the next solution.

· If using pencil, please make sure that it produces easily readable contrast on paper.

· Assignments must be turned-in in the class before the start of the class on due dates. A late submission will not be accepted and will receive a grade of 'zero' unless a time extension is approved by the instructor in advance, or an emergency had occurred.

Academic Dishonesty:

Duplicate homework solutions written in collaboration with others is NOT acceptable. Although it is permissible to discuss the homework with others, these discussions should be STRICTLY of a general nature. All homework/labs at a detailed level must be done on your own. Students submitting the same or similar solutions to the homework/lab or a student who submits a lab downloaded off the Internet (or obtained from other sources including a compiler) will be considered as having cheated. Any evidence of cheating, copying or collusion, plagiarism, etc., will be graded as zero for all students involved and will be referred to Student Conduct for appropriate actions. You should consult with me if you are uncertain about an issue of academic honesty "prior" to the submission of an assignment or exam/test/quiz. The official college statement can be found below:

You are responsible for making yourself aware of and understanding the policies and procedures in the Undergraduate (pp. 274-276) [Graduate (pp. 25-27)] Catalog that pertain to Academic Honesty. These policies include cheating, fabrication, falsification and forgery, multiple submission, plagiarism, complicity and computer misuse. If there is reason to believe you have been involved in academic dishonesty, you will be referred to the Office of Student Conduct. You will be given the opportunity to review the charge(s). If you believe you are not responsible, you will have the opportunity for a hearing.