UNI CS 3470, Section 1 (Fall 2016)
Networking

Course Syllabus (Version 3.0)

Lecture: MWF 1:00pm-1:50pm ITTC 328

Contact Information

Instructor
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Office: 311 ITTC
Office hours: Tuesday/Thursday 2:00-5:00pm, and by appointment.
Class website: http://www.cs.uni.edu/~diesburg/courses/cs3470_fa16/index.htm and UNI eLearning

Objectives

- Understand the structure and organization of computer networks; including the division into network layers, role of each layer, and relationships between the layers.
- Understand the basic concepts of application layer protocol design; including client/server models, peer to peer models, and network naming.
- Understand transport layer concepts and protocol design; including connection oriented and connection-less models, techniques to provide reliable data delivery, and algorithms for congestion control and flow control.
- Understand network layer concepts and protocol design; including virtual circuit and datagram network designs, datagram forwarding, routing algorithms, and network interconnections.
- Understand the basic concepts of link layer properties; including error-detection and correction techniques, multiple access protocols, point to pint protocols, and characteristics of link layer media (including wireless links).
- Break down the components of network packets so as to identify their individual components and their relationship to other network packets.

Prerequisites

- Computer Science Majors
  - CS 1410 Computer Organization
  - CS 1520 Data Structures
  - CS 1800 Discrete Structures
- Industrial Technology Majors
  - TECH 1037 Intro to Circuits
  - TECH 2041Intro to Analog Electronics
  - TECH 2042 Intro to Digital Electronics
  - CS 1160 C/C++

Course Material

- Lecture notes (posted on the class Web site)
- UNI eLearning website for all other materials
- Required textbooks:
  - Peterson & Davie, *Computer Networks, A Systems Approach*, 5th Edition (ISBN 9780123850591)

Tentative Course Schedule

The following schedule is subject to change and is for general planning purposes only.

Date	Readings and Pre-class Assignments	Session Links and Announcements
8/22	Section 1.1	Session One – Introduction and Foundations
8/24		Session Two – Class Projects and Environment
8/26	Come prepared with homework 1 questions	Finish Session Two, discuss C examples
8/29	Section 1.2	Session Three – Foundations (pt 2)
8/31	Section 1.4	Session Four – Socket Programming
9/2	Sections 1.3, 1.5-1.6	Session Five – Performance and Internet Architecture
9/5	Labor Day	NO CLASS
9/7	Sections 9.1-9.1.2	Session Six - SMTP and HTML protocols
9/9	Chapter 2	Session Seven – Encoding and Framing
9/12		Session Eight - Crimping Workday
9/14	Chapter 2	Session Nine – Error Detection and Correction
9/16	Chapter 2	Session Ten – Reliability
9/19	Chapter 2	Session Eleven – Media Access
9/21	Chapter 3	Session Twelve – Finish Media Access, Switching and Bridging
9/23	Homework Review	Session Thirteen – Homework Review
9/26	Exam 1 Review	Session Fourteen – Exam 1 Review
9/28	Exam 1 (location SAB 102)	
9/30	Chapter 3	Session Fifteen – Switching and Bridging (pt 1)
10/3	Chapter 3	Session Sixteen – Switching and Bridging (pt 2)
10/5	Chapter 3	Session Seventeen –Switching and Bridging (pt 3)
10/7	Project 3	Session Eighteen –Advanced Socket Programming
10/10	Project 3 Workday	Project 3 Q&A day and Exam 1 Review
10/12	Chapter 3	Session Nineteen - The Internet Protocol
10/14	Sections 3.2.5-3.2.8	Session Twenty - Subnetting and Other Protocols
10/17	Chapter 3 Routing Algorithms	Session Twenty One- Link State Routing
10/19	Project 3 Work Day	
10/21	Chapter 3 Routing Algorithms	Session Twenty Two- Distance Vector Routing
10/24	Chapter 4	Session Twenty Three - Inter-AS Routing and IPv6
10/26	Homework Review	Session Twenty Four – Homework Review
10/28	Exam 2 Review	Session Twenty Five – Exam 2 Review
10/31	Exam 2 (location SAB 102)	
11/2	Chapter 5.1 - 5.2.2	Session Twenty Six - Transport Layer Introduction
11/4		Session Twenty Seven - TCP Flow Control
11/7	Chapter 9 - DNS	Session Twenty Eight - DNS
11/9	Chapter 5.2.2 - 5.2.4	Session Twenty Nine - TCP Sliding Window
11/11	Chapter 5.2.4-5.2.9	Session Thirty - TCP Sequence Numbers and Transmission Control
11/14	Chapter 6.2	Session Thirty One - Queuing Diciplines
11/16	Chapter 6.3	Session Thirty Two - TCP Congestion Control
11/18	Chapter 6.4	Session Thirty Three - Congestion Avoidance
11/28	Packet Sniffing Workshop	Work in class on project 5
11/30	Packet Sniffing Workshop	Work in class on project 5
12/2	Packet Sniffing Workshop	Work in class on project 5
12/5	Packet Sniffing Workshop	Work in class on project 5
12/7	Homework Review	Session Thirty Four - Homework Review
12/9	Final Review	Session Thirty Five - Final Review

Class Grading

The following coursework components contribute to your final grade, and to the degree shown:

Activity	Quantity	Points
Mini Projects	**4 @ 75pts, 1@ 25pts**	**325**
Homeworks	**9@25pts**	**225**
Regular Tests	**2@125pts**	**250**
Final	**1@200pts**	**200**

Homework assignments consist of short-answer questions, essays, or problems. The purpose of these assignments is to prepare you for exams. Anytime you need to write out more than a sentence or so, please **type out your homework.** If I can't read your homework, I'll give you one warning and allow you two days to make it readable. If it happens twice, the unreadable homework will receive a grade of 0.

There will be five challenging projects due during this course.

On exams, some of the questions asked will be based on lecture materials, assignments, and projects; some of the questions will test your ability to apply various principles learned in the class.

The final exam will be comprehensive.

The grading scale is as follows:

100 – 92	A	69.9 – 68	D+
91.9 – 90	A-	67.9 – 62	D
89.9 – 88	B+	61.9 – 60	D-
87.9 – 82	B	59.9 – 0	F
81.9 – 80	B-		
79.9 – 78	C+		
77.9 – 72	C		
71.9 – 70	C-		

If you do not pass the final exam, you will not pass the class (regardless what you earned on the rest of the class.)

Late Submission Policy

Late project solutions will incur a 10-point deduction each day the project is late. Project solutions received after two days from the original due date will receive 0 points. For example, a project solution submitted anytime on the Monday after the original due date of Friday will receive 0 points.

Homework solutions cannot be late, as we go over the answers in class.

Slack Days

Each student has **two** slack days. A slack day may be used to turn in a project solution a day late without incurring the 10-point deduction. Slack days cannot be used in fractional amounts. To use a slack day, indicate in the submission how many slack days are being used.

Computer Accounts

You will need CatID credentials to access the eLearning website. Make sure you are checking your UNI emails. Important class announcements will be sent frequently from the eLearning interface to your UNI email account.

Your Responsibilities

- Understand the lecture slides and reading assignments
- Attend office hours for extra help, as needed
- Uphold academic honesty in completing your assignments, projects, and exams
- Turn in your projects on time
- Check the class Web page and your email account regularly

Course Policies

Attendance: The University requires attendance in all classes. Absences may be excused with appropriate documentation. You should make up for any materials missed due to absences.

Missed exams: A missed exam will be recorded as a grade of zero. We will follow the university rules regarding all missed exams.

Scholastic Conduct: Since cheating definitions and academic ethics policies are often written for other types of classes, you might tend to wonder how those translate to a computer science course. You may be surprised to hear there are many ways to write a program to solve a specific problem. This is very similar to how there are many different ways to write an essay addressing a particular topic. In this course, I will be using plagiarism-detection software to detect similarities that are very unlikely to occur if students were working alone.

Additionally, you need to cite your source if you seek and use help found on the Internet (much like citing a source in an essay course). To do this, you need to put the URL and a brief description of the help you found in a comment directly above the affected block of code or in the homework assignment. However, if you do use code from the Internet, I reserve the right to ask you how it works line-by-line. If you cannot explain it to me, I will not give you credit for that part of the assignment. In other words, *if you use help or code found on the Internet, you must cite it **and** fully understand it.* It is usually better to try to figure things out on your own than to use something you don't understand.

In this class, homework assignments and projects must be done on your own as your own individual work. However, this does not mean that you cannot ask for help. Here are some general guidelines for keeping out of trouble.

If you are seeking help from a classmate:

- DO NOT ask to see their code/answer or look at their code/answer.
- DO explain your thought process and where you are stuck in words.
- DO draw diagrams on the board.

If you are helping another classmate:

- DO NOT show them your code/answer.
- DO NOT directly modify their code/answer.
- DO try to help them in words, similar examples from lectures and labs, and diagrams.

If I suspect a case of plagiarism or cheating, I will notify the student via email and allow the student to come in and explain what happened. If I determine that plagiarism or cheating has taken place, the following possible sanctions will occur (in accordance with UNI Academics Ethics Policies found at http://www.uni.edu/policies/301). The following list does not list all possible academic ethics violations, and it is your responsibility to be familiar with the full list (again, http://www.uni.edu/policies/301).

Policy Violation	Examples	Possible Sanctions
Level One	• Working with another student on a homework assignment, lab, project, or other assigned work when the instructor has not explicitly authorized collaborative work. • Failure to properly cite once in a paper, programming assignment, or project.	• Written warning in email. • Giving no credit for the assignment; course grade determined in the usual manner. • Reprimanding the student in writing in the form of a letter (permanent record, not visible to others).
Level Two	• Failure to properly cite more than once in a paper, programming assignment, or project. • Copying on an examination. • Giving unauthorized assistance to someone during an exam.	• No credit for the assignment; course grade determined in the usual manner. • No credit for the assignment; reduction in course grade. • Reprimanding the student in writing in the form of a letter (permanent record, is visible to others).
Level Three	• Using prohibited materials during an exam. • Acquiring or distributing exam questions from an unauthorized source. • Acquiring or distributing an exam answer key from an unauthorized source • Plagiarism on a large class project or assignment that affects a major or essential portion of work done to meet course requirements or else assisting others to do the same.	• Disciplinary failure for the course. (This will appear on the student's transcript.) • Reprimanding the student in writing in the form of a letter (permanent record, is visible to others).
Level Four	• Taking an exam for someone else or having someone else take an exam for you. • Repeated lower level violations such as fourth Level One, third Level Two or second Level Three violation.	• Permanent expulsion from the University and a notation of "academic disciplinary separation" on the student's transcript. • Reprimanding the student in writing in the form of a letter (permanent record, is visible to others).

Remember: Discussing assignments is good. Copying code or answers is not.

Incompletes: Incompletes are awarded only in very rare instances when an unforeseeable event causes a student who has completed all the coursework to date to be unable to complete a small portion of the work in the last week or two of the semester (typically the final project or exam). Incompletes will not be awarded for foreseeable events including a heavy course load or a poorer-than- expected performance. Verifiable documentation must be provided for the incomplete to be granted.

Accessibility: In compliance with the University of Northern Iowa policy and equal access laws, I am available to discuss appropriate academic accommodations that may be required for students with disabilities. Requests for academic accommodations are to be made during the first three weeks of the semester, except for unusual circumstances, so arrangements can be made. Students should register with Student Disability Services, 103 Student Health Center, to verify their eligibility for appropriate accommodations.