CSC / ECE 573 Internet Protocols, Fall 2005

Syllabus

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Description

The Internet is without question one of the revolutionary technologies of our time. The impact has been phenomenal, and new capabilities yet to emerge will likely also have a profound impact. There have been many networking and internetworking protocol families implemented, but the TCP/IP protocol suite has dominated for the last 20 years and will continue to do so for a long time to come.

This course will introduce the protocols in the TCP/IP family. For each protocol we study its function, some design considerations, and details of its operation. We also study briefly the sockets application programming interface, and client / server programming for distributed Internet-based applications.

Goals and Benefits

You will learn the function and operation of the most important Internet protocols, including IP, TCP, DNS, ICMP, BGP, etc.

You will learn where to find the full specification of any protocol you want to know about, and how to search for a specific piece of information. You will learn to read and understand the standards documents, and how to write them, including what a specification should include, and how to write a spec clearly and unambiguously.

You will be able to take the output from a packet sniffer and understand what the network traffic contents.

You will be able to read a protocol implementation and match it to a specification (perhaps with some additional documentation), and have some idea about how to implement a protocol.

You will be able to write correct and moderately efficient application clients and servers using the sockets API.

(You may learn a little bit about host and router network configuration, but that is not a major purpose of this course.)

Prerequisites

You are expected to have taken already CSC/ECE 570 (Computer Networks), or its equivalent. Almost all students in this class are Computer Science, Computer Engineering, or Electrical Engineering graduate students.

You need to be a proficient programmer. Examples given in class will be in the "C" programming language.

Instructor

Dr. Douglas Reeves
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Office Hours: I will be available immediately after class each day for short questions, and if there is something you want to discuss at length, we'll head to my office. Any other time I am also available, as long as I have no conflicts on my calendar. Just call ahead to make sure I'm in my office, or check my web page for announcements of days I will be unavailable, or make an appointment with me for a specific time, or simply knock on my office door if you are

	in the building. I also respond to individual emails pretty quickly. I especially encourage use of the class message board, because questions and answers that appear there are seen by the whole class.
Teaching Assistant	Ms. Juan Du Office hours: Monday and Friday, 1:00-3:00pm Office Location: 243 Ventures III Office Phone Number: 919-513-7309 Email: jdu "at" ncsu "dot" edu
Lecture Time and Place	11:05am -- 12:20pm, Tuesdays / Thursdays EB II, room 1021, Centennial Campus
Website	http://courses.ncsu.edu/csc573/lec/001/
Readings / Sources of Information	Our "required" textbook is Internetworking with TCP/IP, Vol 1, 5/E by Douglas Comer. A "recommended" textbook (if you need it) about network programming using the sockets API, and client / server application design and implementation, is "Internetworking with TCP/IP, Vol. III: Client-Server Programming and Applications (Linux / Posix version) ", by the same author. There is also a Windows version if you prefer. We will reference extensively the IETF RFCs, which are available in lots of formats. Links to some of these formats are available through our links page.
Homework	Homework should be prepared electronically and submitted using the "Submit" utility. Homeworks in some cases may involve programming and/or running tests and collecting data. Sometime during the semester I will review in person with each student one or more of their homework assignments.
Project	You can choose from one of 3 project choices. There are due dates for each of the 4 project steps. The instructions for each step will be handed out at the start of the semester.
Working in Groups	Projects should be done in groups of 2; you choose who you want to work with. If your group isn't working out, you can get a "divorce" and regroup, at any time. Homeworks should be worked on and submitted individually. I don't mind if you talk with other students about the homework, including getting help if you need it, but submit your own work and not a copy of someone else's.
Late Policy	I do not accept late homeworks; the due dates are shown, and I will hand out the homework at least 1 week in advance. However, because all of us are busy and stuff happens that we don't expect, every student is allowed to submit any ***one*** homework 3 days late. For each assignment a late submit date will also be established. You do not need to coordinate with me; we will automatically check the late submit locker for any work that has been submitted.
Exams	There are two exams (a mid-term and a final exam). The final is cumulative. A study guide will be provided for each exam.
Participation / Effort	Over the years I have found a high correlation between class attendance and grades. If you are attending class regularly, asking questions and volunteering opinions, and very dependable about submitting your work, that is definitely evidence of participation and effort.

Grading

The grading scale is as follows:

Score	Grade
97.5-100	A+
92.5-97.4	A
90.0-92.4	A-
87.5-89.9	B+
82.5-87.4	B
80.0-82.4	B-
etc.	

The weighting factors are as follows:

Component	Weight
Homeworks	30%
Mid-Term Exam	15%
Final Exam	30%
Project	20%
Participation	5%

Students with Disabilities

Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with Disability Services for Students at 1900 Student Health Center, Campus Box 7509, 515-7653. See also the web page on disability services for students.

Academic Integrity

NC State has its own policies and procedures about academic integrity.

I expect students to be completely trustworthy. Do not plagiarize (copy code, answers, text, ... from the web), unless you cite the source properly and **have first received my permission**.

Let's don't go into punishments; just be honest.

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Maintained by Douglas S. Reeves