

Using Networked Information Systems

(LIS 353)

Section B Thursday, 3–5:50 PM Room 106, Lincoln

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INSTRUCTOR

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REQUIRED TEXTS

Eric A. Hall. *Internet Core Protocols: the Definitive Guide* (O'Reilly & Associates, Inc. , 2000).

SCOPE AND OBJECTIVES

The goal of this course is to give a thorough overview of the Internet, preparing the student to take a leadership role in the use, instruction, design and implementation of networked information systems in diverse organizational settings. Basic competency with computer tools is expected per GSLIS entry requirements. Otherwise, only minimal prior experience with the Internet is required. Access to the Internet is required for this course, and may be obtained in the LRL at GSLIS, at home or work via dial-in modem, in computing laboratories at UIUC or elsewhere, etc. The course content will include:

- An overview of the Internet, including its history, development, basic concepts and protocols
- An introduction to the services of the Internet, their design, and documentation.
- An overview of some of the policy and standardization issues associated with the Internet.

Objectives

- Explore the foundations of Internet tools and the protocols and standards on which they are based.
- Understand the history and status of networked information resources.
- Understand the uses and limitations of current resources.
- Prepare to shape, produce, and use future network resources.

THIS SYLLABUS

The official syllabus for this course is the SGML version that is linked off the class web page. Expressions of the syllabus in other formats are derived from the SGML version. The current SGML version should be consulted to resolve any inconsistencies among other renditions.

HALF UNIT REGISTRATION

Students enrolled in the class for a half unit are excused from the Take-home exam.

BASIS FOR EVALUATION

Students are responsible for their performance in meeting their own educational goals and those of the course; instructors are responsible for providing guidance, expertise, and support to help students reach those goals. Students are expected to participate in class exercises and discussions. Satisfactory work will receive a grade in the C range, good work will receive a grade in the B range, and superior work will receive a grade in the A range.

Final grades will be calculated as follows:

- Take-home Exam: 20%
- Internet Service Design Exercise: 30%
- RFC Oral Presentation: 30%
- General participation, in and out of class: 20%

On Adapting the Work of Others

Criteria for grading assignments include (but are not limited to) creativity and the amount of original work demonstrated in the assignment. However, students are permitted to use and adapt the work of others, provided that the following guidelines are followed:

- Use of other people's material must not infringe the copyright of the original author, nor violate the terms of any licensing agreement. Know and respect the principles of fair use with respect to copyrighted material.
- Students must scrupulously attribute the original source and author of whatever material has been adapted for the assignment. Summarize (e.g. using sourcecode comments) the changes or adaptations that have been made. Make plain how much of the assignment represents original work.

Take-home Exam

The exam will be distributed via the class web pages, completed working alone, and submitted to the instructor via email. It will cover material from the readings and class discussions. Students will have

three weeks to complete the exam. Students may use books, articles, notes, and computers to complete the problems, but may not solicit or receive assistance from other human beings.

Internet Service Design Exercise

Design an application protocol for a simple Internet service. Your expression of the design may take one of two forms:

- An RFC, written in conformance to the guidelines detailed in [RFC 2223](#). You may also find it useful to consult [RFC 2629](#) and the IETF document *Considerations for Internet Drafts*. You need not submit your RFC to the IETF for publication.
- A server written in a high-level programming language, and submitted to the instructor as machine-readable source code. Document the code thoroughly using source code comments and a user manual format such as Perl's POD or a Unix man page. Be prepared to schedule a demonstration of your server with the instructor.

RFC Oral Presentation

Choose an Internet RFC (standard, informational, experimental, historical, or BCP), and review it. Prepare, schedule, and deliver a twenty minute class presentation on the contents of the RFC. No more than two presentations may be scheduled for a single class period. There are enough RFCs that everyone should be able to report on a different one.

General Participation

The class participation grade is based on consistent attendance, contribution to in-class and/or online discussions, and providing assistance to classmates outside of class.

ACCESSIBILITY

To insure that disability-related concerns are properly addressed from the beginning of class, students with disabilities who require reasonable accommodations to participate in this class are asked to contact the instructor as early as possible.

SEMESTER OUTLINE

Part I: Introduction and Overview

January 18

Class objectives, important ideas, Unix commands, GSLIS LAN Tour

Readings: Syllabus

Part II: Analog and Digital Communication

January 25

Discrete symbol systems, analog vs. digital, binary encoding, character codes, error detection

Readings: FCIT [Educator's Guide](#)

Part III: Local Area Networks

February 1

Readings: PCLT [Ethernet Intro](#),
Spurgeon's [Ethernet Intro](#)

Part IV: Overview of TCP/IP	<i>February 8</i>
Readings: Hall, chapter 1 and Appendix A	
Part V: The Internet Protocol (IP)	<i>February 15</i>
Readings: Hall, chapter 2	
Part VI: The Address Resolution Protocol (ARP)	<i>February 22</i>
Readings: Hall, chapter 3	
Part VII: The Internet Group Management Protocol (IGMP)	<i>March 1</i>
Readings: Hall, chapter 4	
Part VIII: The Internet Control Message Protocol	<i>March 8</i>
Readings: Hall, chapter 5	
Part IX: Spring Break (no class meeting)	<i>March 15</i>
Part X: The User Datagram Protocol (UDP)	<i>March 22</i>
Readings: Hall, chapter 6	
Part XI: The Transmission Control Protocol (TCP)	<i>March 29</i>
Readings: Hall, chapter 7	
Part XII: Name Service Concepts	<i>April 5</i>
Readings: Berg's DNS demystified , Kohlhepp's DNS Cookbook recipe , Windbigler's DNS Overview	
Take-home Exam distributed: Due April 26	
Part XIII: Applications: The Worldwide Web	<i>April 12</i>
Readings: Marshall's HTTP made really easy	
Part XIV: Applications: distributed information retrieval	<i>April 19</i>
Readings: Paul Miller's Z39.50 for All , Finnegan and Ward's Z39.50 Made Simple	

Part XV: **Security Issues**

April 26

Readings: Honeynet [Whitepapers](#)

Take-home Exam: Due at 5 PM.

Part XVI: **Reading Day (no class meeting)**

May 3

Part XVII: **Wrapup and Course Evaluation**

May 10

Final Projects: Due at 5 PM.