

LIS638-001 Internet Technologies and Information Services

Spring 2007 Room 355 LCLI. T/R 9:30- 10:45

Instructor: Professor Joseph Miller, 257-8854 (jbmiller@uky.edu)

Office: Room 518D King Library

Hours: M, TR 2:00-4:00 PM, W 10:00 -11:30 and by appointment.

Course Description: A course examining the structure, development, evolution, and use of the Internet and related network technologies. Discussion of network protocols, client/server architecture, web page design and publishing, markup languages (HTML, XML), and scripting as well as Internet information retrieval/Internet resource evaluation in the context of social/legal environment of the Internet and the evolving roles of libraries and librarians. **Prereq: LIS636, Foundations of Information Technology or consent of instructor.** 3 Credits.

Course Objectives

- To understand the historical background and evolution of today's Internet;
- To examine network topologies and layers (OSI model);
- To develop an understanding of the technological foundations of the Internet and core Internet protocols (TCP/IP, SMTP, FTP, Telnet, ICMP, RSS, and HTTP);
- To understand client/server relationships in the context of the Internet and intranets;
- To identify important Internet file formats and understand the access issues they present users and the software they require;
- To develop a framework for evaluating web resources and designs;
- To develop advanced web publishing and design skills with the Hypertext Markup Language (HTML);
- To learn techniques for image acquisition and manipulation as well as animations, sound, and video content creation for the web;
- To examine web enhancements possible with web programming techniques (ASP, PHP and JavaScript);
- To examine trends in markup and the use of HTML, DHTML, XHTML, and XML for information delivery and data structuring.
- To develop an understanding of the Internet as an information storage and retrieval system in the context of library services. Discussion will include how searchable Internet indexes are constructed, comparison of web search engines and directory services with more formal LIS information systems, and an examination of metadata and cataloging approaches (DC, RDF, METS, etc.) as they relate to enhancing intellectual access to Internet information;
- To examine the social/political context of the Internet, specifically in the areas of copyright and intellectual property rights, privacy/security issues, and the censorship/filtering debate.

Textbook

Molyneux, Robert. *The Internet Under the Hood: An Introduction to Network Technologies for Information Professionals*, Westport, CT: Libraries Unlimited, 2003. (ISBN 1-59158-005-6)

Supplemental Readings

We will depend on our textbook for much of the technical information in first half of this course. However, there are a number of course topics that are not well addressed in this one text. I have assigned a number of supplementary readings for those topics. In addition, I will use the Blackboard course management system as a way to present many of these supplemental resources as well as the UK ExecuTrain system that students can access with their u-connect

accounts. You will need a u-connect account, an AD account for Blackboard, and a SWEB account for this course.

Course Evaluation and Grading:

Examination 1	100 points (30%)
Examination 2	100 points (30%)
Projects	140 points (40%)
Total	340 points

Examinations will include short essay and/or objective questions drawing upon class discussions, lectures, out-of-class assignments, and assigned readings.

100-90% (306-340 pts) = A

89 -80% (272-305 pts) = B

79 -70% (238-271 pts) = C

Cheating and Plagiarism

A grade of E for the course will be assigned to any student guilty of cheating or plagiarism on an examination or an out-of-class assignment.

Exam Policy

It is the responsibility of every student to be present for exams. If a student misses an exam as a result of a documented illness or unforeseen emergency, the student will be given an opportunity for a make-up the test by appointment. If a student misses an exam for a non-medical or non-excused reason, the instructor will determine if a make up exam will be allowed. Students wishing to schedule a make up exam for a non-medical reason must seek advance approval from the instructor at least two weeks prior to the scheduled exam for a make up option to be considered.

Attendance Policy

Students are expected to attend class. While there is no formal participation component in the grading scale, note that unexcused absences that total up to one fifth of the contact hours for the course will result in a letter grade reduction. If the total of unexcused absences exceeds one third of the contact hours, an automatic grade of E will be assigned. Even if the absences are excused, if they total one fifth or more of the contact hours, the student may be required to petition for a late withdrawal. All absences, whether excused or unexcused, can not be made up. Students are responsible for all material covered during any absence.

Projects

Late assignments will have 10% deducted for every class period they are late. Projects are late if turned in any time after the end of class period they are due. The instructor reserves the right to modify the number of projects assigned or the due dates listed here if needed.

Project Summary

Project 1 (20 points): Email, Telnet, FTP, finger, whois, ping, and other useful utilities. Also Windows and client configuration, and configuring a TCP/IP connection in Windows for Ethernet and SLIP.

Project 2 (25 points): HTML, and graphics manipulation techniques; use HTML for tables, forms, and frames.

Project 3 (20 points): Web scripting and style sheet exercise.

Project 4 (25 points): Searching the Web and Search Engine Review: Information retrieval on the Internet. Searches will demonstrate search statement formulation and strategies, explore the various domains of the Internet, and contrast results in terms of recall and precision obtained with different search services. In addition, students will explore one assigned search engine or directory service in depth and prepare a review for the class listserv.

Course Project: (50 points) Students will create a web site on a topic or subject area selected from a list provided by the instructor or on some other approved topic. This project will require original content and research; it should not be merely a collection of pointers to other web sites. Students will design, construct, and upload a set of linked web pages with supporting graphics to the UK SWEB UNIX web server. Along with developing the content, all aspects of web publishing will be evaluated including initial design and layout, the accurate use of HTML, image acquisition and manipulation techniques, successful construction of document objects, formation of relative and absolute hypertext links, scripts for interactivity, and UNIX awareness as pertains to the successful uploading of the work.

General Overview of Course Topics

1. Introduction to the Internet: Development and Structure - Overview of the development of the Internet: How it began and how it has evolved over the last 30 years.
2. Network and Internet Technologies: Packets and Protocols, Clients and Servers
Basic network technologies and the OSI model are examined. Comparison of SLIP, PPP, and ethernet access. Protocols of the Internet--TCT/IP, ping, SMTP, Telnet, TN3270, FTP, gopher and HTTP. Discuss the function of each and why an understanding of them is important even in the current web environment. Develop an understanding of the client/server relationship as it pertains to the web.
3. Internet File Formats - An examination of the variety of file types found on the Internet
4. Web Authoring - Basic elements and principles of web authoring are examined including HTML, image acquisition, click maps and page layout. Students develop, upload, and evaluate their web pages. Students review Unix as it pertains to uploading to a unix web server. Web server issues and functions (CGI scripts, etc.) would be briefly examined.
Image acquisition and manipulation techniques
5. Graphics primer. Scanning technologies, appropriate formats, GIF animators.
6. Evaluation of web resources - Discussion of some important related issues including problems of authentication (evaluating) web information, dealing with content that may be inappropriate for some audiences, intellectual property rights and copyright.
7. Internet Information Storage and Retrieval - Develop an understanding of the issues surrounding the Internet as an information storage and retrieval system. Examine the different domains of Internet information (newsgroups, ftp sites, document repositories, etc.), how to use selected search engines, clearinghouses and directories; Web indexing (human and automated).
8. Metadata and Internet Resources - Discussion of the concept of Metadata, its use in HTML, and efforts to improve intellectual access to the Internet through cataloging activities (Dublin Core and PURLs).
9. Web programming and scripting - Introduction to enhancing web interactivity with selected multimedia and programming techniques (e.g. JavaScript, PHP, Macromedia Flash, etc.)
- 10 Markup language trends: An overview of some trends in markup languages and the web (DHTML, XHTML, XML, and EAD).

Weekly Schedule and Readings

Week 1 – 1/11

Course Introduction, UK Computing Accounts

Internet history

Text Readings:

Molynexu: Chapter 1, 2, 3 OR

Supplemental:

Hobbes' Internet Timeline: <http://www.zakon.org/robert/internet/timeline/>

UNIX File permissions readings:

<http://www.engr.uky.edu/unixhelp/index.html>

<http://www.users.csbsju.edu/~jgramke/Help/Web/permissions.html>

<http://www.users.csbsju.edu/~jgramke/Help/unix/unix/data/chmod.html>

Week 2 – 1/16, 1/18

Introduction to networks, OSI

Client/Server Architecture

Data layer: topologies, mac addresses

Bridges, hubs, switches

Ethernet

Phone/data systems

Text Readings:

Molyneux: Chapters 4, 5, Lab 1 on binary numbers, chapters 7, 8, 10

Week 3 – 1/23, 1/25

Internet Protocols

IP Addressing, Subnet masks, Domain names

PC Windows TCP/IP configuration

Connecting to the Internet: SLIP, PPP, ISDN

Email and SMTP, attachments and encoding

Discussion list programs, Usenet, spamming, and 'netiquette'

Text Readings:

Molyneux: Chapters 6, lab 2, chapter 11

Week 4 – 1/30, 2/1

Protocols and utilities: Telnet, FTP, Gopher, Finger, Ping, and Whois

Blogs, social networking and RSS

Internet File Formats: Documents (PDF, etc.) and Web graphics formats

File Compression and Encoded formats.

Graphics primer: background and text colors and Web palates

Image acquisition and manipulation programs, GIF animation

Text:

Molyneux: Chapters 9, 12, 17

Creating web graphics: <http://www.widearea.co.uk/designer/>

Week 5 – 2/6, 2/8 **PROJECT 1 DUE**

Web Publishing and Design Issues

Evaluation of web resources

Readings:

Yale site - Design Issues and Concerns:

<http://www.webstyleguide.com/index.html?/contents.html>

Font choices and readability <http://psychology.wichita.edu/optimalweb/text.htm>

<http://developer.apple.com/internet/webcontent/bestwebdev.html> best practices
<http://www.makoa.org/web-design.htm> Many links to design sites
http://www.netmechanic.com/news/vol6/design_no10.htm color and emotion
<http://www.vischeck.com/vischeck/> check for color blind
http://www.netmechanic.com/news/vol3/design_no14.htm annoying design
http://www.firstmonday.org/issues/issue3_5/sowards/index.html libraries and design
<http://www.webaim.org/simulations/screenreader> screen reader simulation
<http://validator.w3.org/> markup validator and <http://www.w3.org/WAI/> from w3c
<http://webxact.watchfire.com/> and Bobby for site analysis

Readings on Internet Resource Evaluation:

<http://school.discovery.com/schrockguide/eval.html>
<http://www.ala.org/parentspage/greatsites/criteria.html>

Week 6 –2/13, 2/15

HTML Document Structure; tags and elements

Tables, links (local and remote), inline images, relative and absolute references, named anchors and targeted links

Readings:

W3 on HTML: <http://www.w3.org/TR/REC-html40-971218/intro/intro.html>

HTML at W3 schools: <http://www.w3schools.com/>

Week 7 –2/20, 2/22

HTML Authoring Continued: frames and image maps (clickable images)

Framesets and floating frames (iframes)

Escape sequences and character entities

Forms and form scripts

Netscape on Frames: http://wp.netscape.com/assist/net_sites/frames.html

Netscape on Targets: <http://wp.netscape.com/eng/mozilla/2.0/relnotes/demo/target.html>

Week 8 – 2/27, 3/1 **Project 2 Due**

HTTP protocol

Text

Molyneux Chapter 15, 18

Week 9– 3/6, 3/8

Review

Midterm exam

Week 10 – SPRING BREAK 3/12 – 3/17

Week 11 – 3/20, 3/22

Exam discussion

JavaScript and PHP

Readings:

<http://www.w3schools.com/>

<http://members.tripod.com/~SSHETTY/>

<http://www.javascript.com/>

Week 12– 3/27, 3/29

ASP, DHTML

Style sheets

Readings:

<http://www.w3schools.com/>

Week 13 – 4/3, 4/5

PROJECT 3 DUE

Internet information retrieval

How search engines create an index

Retrieval issues and strategies

Search engines and directory services comparison

Relevance ranking

Readings:

Search Engine Stats: <http://searchengineshowdown.com/>

Search Engine Watch: <http://searchenginewatch.com/>

The Spider's Apprentice: How to Use Web Search Engines <http://www.monash.com/spidap.html>

Week 14– 4/10, 4/12

PROJECT 4 DUE

Metadata, Dublin Core, and search engines

Cataloging Internet resources and Local assisted access systems

PURLs

Link resolvers

Cookies and other server-side issues

Dublin Core Metadata Initiative. "The Dublin Core: A Simple Content Description Model for Electronic Resource," April 28, 1999 (<http://dublincore.org/>).

On Cookies: http://wp.netscape.com/newsref/std/cookie_spec.html

and <http://www.cookiecentral.com/faq.htm>

Week 15 – 4/17, 4/19

XML, XSL, and XSLT

Text:

Molyneux Chapter 18

Supplemental:

<http://www.ibiblio.org/pub/sun-info/standards/xml/why/xmlapps.htm>

Week 16 – 4/24, 4/26

XML DTD and schema examples

Readings:

<http://www.w3schools.com>

Review

COURSE PROJECT DUE

Week 17 Finals week

FINAL EXAM Thursday May 3 at 8:00 AM