IRLS 571: Introduction to Information Technology
(SUBJECT TO CHANGE)

Instructor:
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Prerequisites
IRLS 504 or permission of the instruction

Course Description
Information technology has dramatically transformed the world. We rely more and more on computers and the Internet in many aspects of our life, from information retrieval, to interactions with others, to the delivery of services and products. The roles of information professionals have dramatically expanded, and they work more and more like consultants to provide guidance and services to people. This requires information professionals to have a basic understanding of information technology and its relationship with people, organization, and society. This course introduces fundamental concepts and applications of Internet-related information technology and its impact on individual users, groups, organizations, and society. The topics in this survey course include computing basics, network applications, human computer interactions, computer-support cooperative work, social aspects of information systems, and some economic and legal issues related to digital services and products.

Course Objectives
Students who successfully complete this course will be able to

- Understand the basic concepts, terminology, methods, and issues related to networked applications and services;
- Have a basic understanding of how information technology can contribute to resources and services in the library and information professions;
- Have a basic understanding of the role of information technology in facilitating human information processing, group collaboration, and organization business;
- Have a basic understanding of the technical foundations and arguments related to some legal and economic issues in the digital society; and
- Have the capability to identify potential social-technical problems in the planning, management, and evaluation of information services.

Required Course Materials

- Robert E. Molyneux: The Internet Under the Hood: An Introduction to Network Technologies for Information Professionals Greenwood Publishing, 2003
- John R. Anderson: Cognitive Psychology and Its Implications, Worth Publishing; (This book just got its 6th edition out. For this class, any edition after the 3rd is fine.)
- Redmond Kathleen Molz, Phyllis Dain, Kathleen Molz: Civic Space/Cyberspace: The American Public Library in the Information Age, Publisher: MIT Press, 1999.
- Carl Shapiro, Hal R. Varian: Information Rules: A Strategic Guide to the Network Economy, 1998.

- Additional readings will be provided in the course website.

Course Schedule

Week 1: Introduction to the course; Computing basics

Reading

Molyneux: Chapter 1, Lab 1(pp. 55- 60), and Chapter 17

Homework 1: Data representation

Week 2: Operating systems, programming languages, networks;

Reading

Howstuffworks.com: How Operating Systems Work
Molyneux: Chapter 2, 14-16,
Joel Spolsky: Biculturalism
Evolution of High-Level Languages
Internet Structure
Internet History

Homework 2: Operating systems and programming languages

Due: Homework 1 and project team forms

Week 3: Architecture: infrastructure, hierarchy, modularity, and layering

Reading

Molyneux: Chapter 3;
Messerschmitt: Chapter 5, 6.2

Homework 3: Architecture and layering

Due: Homework 2

Week 4: Communication links and protocols

Reading

Molyneux: Chapter 7-11

Homework 4: Communication links and network protocols

Due: Homework 3

Week 5: Information retrieval and presentation, database, and security

Reading

Molyneux: Chapter 18,19;
XML basics
Database basics
Computer Viruses

Homework 5: XML and security

Due: Homework 4 and Project proposal

Week 6 User interface technologies and human perception

Reading

Anderson: Chapter 2,3

Due: Homework 5

Week 7 : User interface technologies and knowledge representation

Reading

Anderson Chapter 4-7

Homework 6: Write a short paper (less than 2 pages) to

- Identify a problem in a user interface;
- Draw on readings to explain why it does not work well;
- Suggest new designs to address the issue

Week 8: Information retrieval and online services

Reading

Furnas, G.W., et al. (1987) The vocabulary problem in human-system communication. Communications of the Association for Computing Machinery, 30 (11), Nov 1987: 964-971.

Bates, Marcia J. (1989) The Design of Browsing and Berrypicking Techniques for the Online Search Interface. Online Review 13 (5):409-424

Pirolli, Peter, and Card, Stuart, (1995) Information foraging in information access environments. Proceedings of the Conference on Human Factors in Computing Systems. CHI'95.

Robertson, G. G., et al. (1993) Information visualization using 3D interactive animation. Communications of the ACM.

Mackinlay, J. D., et al. (1995) An organic user interface for searching citation links Human Factors in Computing Systems. Proceedings of the Conference on Human Factors in Computing Systems. CHI'95.

Take-home midterm

Due: Homework 6 and project progress report on the analysis of the target system and users

Week 9: Computer-supported cooperation work (CSCW)

Reading

Bush, V.: As We May Think. Atlantic Monthy, July 1945

Engelbart's demo

Olson, G., and Olson, J. Groupware and Computer-Supported Cooperative Work.

Ackerman, M. The Intellectual Challenge of CSCW: The Gap Between Social Requirements and Technical Feasibility. Human-Computer Interaction, 15 (2-3). 181-205.

Week 10 CSCW applications and its implication for information services

Reading

Kiesler, S., et al. (1984) Social psychological aspects of computer-mediated communication. American Psychologist, 39, 1123-1134.

Herbsleb, J.D., et al. Introducing Instant Messaging and Chat in the Workplace. CHI' 02.

Paul Dourish, John Lamping and Tom Rodden. "Building Bridges: Customisation and Mutual Intelligibility in Shared Category Management." In Proceedings of the ACM Conference on Supporting Group Work, GROUP '99

Olson, G.M., & Olson, J.S. (2000) Distance matters. Human-Computer Interaction, 15, 139-179.

Benford, S., et al. VR-VIBE: A Virtual Environment for Co-operative Information Retrieval, Eurographics'95.

Homework 7: A short paper on the use of groupware in information services

Week 11: Information systems in organizations: Conceptual foundations

Reading

Kling, R., "What is Social Informatics and Why Does it Matter?," D-Lib Magazine

Eason, K. (1997) Understanding the organizational ramifications of implementing information technology systems. In M. Helander, T.K. Landauer & P. Prabhu (Eds.), Handbook of HCI. Elsevier. Pp. 1475-1495

Due: Group project report on data collection

Week 12: Information systems in organizations: co-evolution

Reading

Orlikowskim W. J.: Evolving with Notes: Organizational Change around Groupware Technology, Internet.

Molz & Dain: Chapter 4-5 HW8: Short paper: Information, About the change of information technologies and libraries

Due: Homework 7

Week 13: Information goods, privacy and security

Reading

Shapiro & Varian: Chapter 1-3, 5, 7

How Internet Cookies Work

Week 14: Information society: privacy, security, and digital divide; Conclusion

Reading

The USA Patriot Act in the Library

The USA PATRIOT Act

Intellectual Freedom Principles for Academic Libraries: An Interpretation of the Library Bill of Rights

Make Sure You Are Privacy Literate

Privacy: An Interpretation of the Library Bill of Rights

Resolution on the USA Patriot Act and Related Measures That Infringe on the Rights of Library Users

In Defense of Freedom at a Time of Crisis

New Encroachments Recall Old Ones

The ideological librarians

Falling Through the Net: Defining the Digital Divide (Executive Summary)

Furnas, G. W.: Design in MoRAS

Brown & Duguid: reface, Introduction, Chapter 1, 7, 8.

Homework 8: Short paper on the change of information technologies and libraries

Week 15 Project presentation and final exam

Due: Final project report Homework 8

Class Requirements

Class Participation

Attending class is required. If you cannot come, please let the instructor know beforehand. You will be expected to engage in class discussion actively and to participate in asynchronous discussions through class website. Since this is a course surveying information technology and their interactions with social systems, students are encouraged to read various resources, such as information technology trade press or technology section in newspaper, to know the current issues. Students are also encouraged to use weblogs, or blogs, to keep personal journals of your readings and share your journals with others.

The instructor reserves the right to make subjective judgments about the quality of student participation and products

Course Policies

Assignments and Projects

Assignments/Projects: Assignments and projects are due at the end of each class. Submission should be made through class website electronically, unless the instructor specifies other submission methods. Late submission can be accepted with prior authorization on the basis of good reasons.

Individual assignments must be completed independently. Students are strongly encouraged to form study groups and to learn from peer students. However, discussion on homework questions in study group should be limited to general approaches to solutions. Specific answers should never be discussed. Standards of professional and academic ethics must be respected.

The group project will involve analyzing existing information systems or software applications. The purpose behind the project is to help you understand the concepts of the course and apply them in real-life situations. Each group will have 3 to 4 members, and three progress reports are required. Each group will give a short presentation at the end of the semester and hand in the final report.

This course is open to both graduate and undergraduate students. Graduate students must do the group project, but undergraduate students have an option of not doing it. The grading scheme for students doing the project is:

Exams

There will be a take-home midterm exam and final exam. Midterm is open-book and open-net. You will have one week to finish the exam. In the last class, there will be a close-book final exam. The questions in the final largely focus on the fundamental concepts discussed in the class.

Grading

Your course evaluation will be based on the quality of your participation in each of the stated course requirements. A final course grade will be calculated considering each graded requirement, mid-term exam, group project, final, and your class participation. A student's project grade will be based on the quality of the project (all group members receive the same

score) and the contribution to the project, which is based on the peer-evaluation submitted by each group member.

Homework	30%
Project	30%
Midterm	20%
Final	15%
Class participation	5%
Total	100%

The grading scheme for undergraduate students who opt out the project is:

Homework	60%
Midterm	20%
Final	15%
Class participation	5%
Total	100%

Final Letter Grades

A=90-100
B=80-89
C=70-79
D=60-69
F=59 and below