COMPUTER SCIENCE 250
ELECTRONIC COMMERCE

I. Introduction

A. Catalog Description

An introduction to the technological issues in electronic commerce. Topics include networks, the Internet and World Wide Web, web page design, web page programming, transaction processing, HTTP, network and e-commerce security, electronic payment systems. Students will program using markup languages and JavaScript. *Prerequisite: CSci 161*

B. Objectives

This course is designed to introduce students to the technology of electronic commerce. This course will give students the ability to design, implement, maintain and manage World Wide Web sites for online commercial transactions. This course is part of the Computer Science/Business curriculum.

By the end of this course, the student will:
- be familiar with the basics of networks, the Internet and the World Wide Web
- be able to design World Wide Web pages using markup languages and scripting languages
- be familiar with several models of electronic business
- be familiar with Electronic Data Interchange (EDI), Business to Consumer (B2C) and Business to Business (B2B) forms of e-commerce
- understand e-commerce security issues, including confidentiality, authentication, integrity and nonrepudiation
- be able to create and maintain an online store
- understand electronic payment systems
- be familiar with ethical and legal issues, including privacy, minor protection, copyright and intellectual property.

C. Prerequisites

Computer Science: CSci 161

II. Required Topics

A. The Internet and the World Wide Web

1. TCP/IP Internet protocol
2. HTTP Internet protocol

B. Networks
1. Client/server architecture

C. Web server hardware and software

D. Electronic commerce models

1. Shopping cart
2. Auction
3. Portals
4. Financial services
5. Cooperative advertising

II. Required Topics (cont.)

    E. Electronic commerce software

        1. Hosting services
        2. In-house hosting

    F. Security in Electronic Commerce

        1. Confidentiality
        2. Authentication
        3. Integrity
        4. Nonrepudiation

    G. Electronic Payment Systems

        1. Electronic cash
        2. Electronic wallets
        3. Smart cards
        4. Credit transactions

    H. Purchasing and support systems

        1. Electronic Data Interchange (EDI)
        2. Business to business e-commerce (B2B)

    I. Web page design

        1. Markup and scripting languages: HTML/Dynamic HTML/ XML, JavaScript
        2. Web page design tools
        3. Active server pages
        4. Database access

    J. Ethical and legal issues

Student Requirements

Students will be required to read text materials. Currently, I am considering the Amor or Schneider together with the Stallings text from the bibliography below. Students will also be required to read technical and marketing materials from online sources. These will include readings in e-commerce security (e.g. RSA Associates and Verisign sites), e-commerce packaged solutions (e.g. Microsoft, Yahoo and OpenMarket sites), and technical references on Web page design and languages (e.g. NCSA and World Wide Web Consortium sites).

Student will be required to write papers on such topics as:

        comparisons of e-commerce sites
        comparisons of e-commerce packages
        descriptions of encryption, certification, authentication algorithms
        comparisons of electronic payment systems

Students will complete a group project that involves designing, creating and maintaining an online store. This project will require substantial research and time. A written report will be part of the project.

Assignments

Assignments will include both written work and programming (Web page creation). I expect that the majority of smaller assignments will be written analyses and comparisons of algorithms, techniques, and commercial offerings. Other assignments will include Web page creation and active server page programming.

Students will create an online store as a semester project. This will be done in small groups over a period of several weeks. Students will decide what products to offer, how to handle electronic payments and how to handle security issues. They will create an actual store. At least one commercial service (Yahoo!) allows students to create a working store for a limited time and we will take advantage of this opportunity. As part of the project, students will visit stores created by other groups and write a critical review.

Evaluation Criteria and Grading Structure

Evaluation will be based on graded assignments, exams and the group project. I would estimate 2 or 3 exams (30-40% of the final grade), 4 to 6 written assignments (40-50% of the final grade) and the group project (10-20% of the final grade).

Bibliography

Amor, Daniel. **The E-business (R)evolution.** Prentice-Hall. Upper Saddle River, N.J. 2000. ISBN 013085123X.

Baron, John P. et al. *Web-based E-catalog Systems in B2B Procurement.* **Communications of the ACM**. May 2000. 43:5. pp. 93-100.

Deitel, H. M., et al. **e-Business & e-Commerce: How to Program**. Prentice-Hall. Upper Saddle River. N.J. 2001. ISBN 013028419x.

Greenstein, Marilyn and Todd M. Feinman. Electronic Commerce: Security, Management and Control. McGraw-Hill. Boston. 2000. ISBN 007229289X.

Hannon, Neal J. **The Business of the Internet**. CTI. Cambridge, MA. 1998. 0760049572.

Huff, Sid, et al. **Cases in Electronic Commerce.** Irwin McGraw Hill. Boston. 2000. ISBN 0072375167.

Kalota, Ravi and Andrew B. Whinston. **Electronic Commerce: A Manager's Guide**. Addison Wesley Longman. Reading Massachussetts. 1997. 0201880679.

Minoli, Daniel and Emma Minoli. **Web Commerce Technology Handbook**. McGraw Hill, New York, 1998. ISBN 0070429782.

Stallings, William. **Network Security Essentials. Applications and Standards**. Prentice-Hall. 2000. Upper Saddle River, New Jersey. ISBN 0130160938.

Schneider, Gary P. and James T. Perry. **Electronic Commerce.** CTI, Cambridge, MA. 2000 ISBN 0760011796.

Treese, Winfield and Lawrence C. Stewart. **Designing Systems for Internet Commerce**. Addison Wesley. Reading Mass. 1998. ISBN 0201571676.

Web Sites

Adbility: Welcome to Adbility. http://www.adbility.com/.

Amazon.Com: Earth's Biggest Selection. http://www.amazon.com.

CERT coordination Center. http://www.cert.org.

Child On-Line Protection Act. http://www.epic.org/free_speech/censorship/copa.html.

Cisco Connection Online by Cisco Systems, Inc. http://www.cisco.com/.

The Computer Security Institute. http://www.gocsi.com/.

Cookie Central. http://www.cookiecentral.com/.

CyberCash, Inc. - The E-Commerce Leader in Payment Solutions.
        http://www.cybercash.com/.

eCash - Safe. Simple. Secure. http://www.digicash.com/.

EFF - The Electronic Frontier Foundation. http://www.eff.org/.

GE Information Sevices - Client Support Home. http://www.support.geis.com/.

Hill Associates Information Technology Technical Training and On-site Education Classes
        and Consultants for Telecommunications and Datacommunications.
        http://www.hill.com/library/staffpubs/index.html.

IBM Global Services - IBM EDI Services Overview. http://edi.services.ibm.com/edi/.

ICSA.net is the worldwide leader in Internet security assurance services.
        http://www.icsa.net/.

Introduction - Introduction to EDI - A Primer.
        http://www.support.geis.com/edi/edipindx.html.

Mastercard International. http://www.mastercard.com/shoponline/e-wallets/.

NCSA: A Beginner's Guide to HTML Home Page.
        http://www.ncsa.uiuc.edu/General/Internet/WWW/HTMLPrimer.html

Netcenter. http://www.netscape.com/.

Open Market: Shop Site. http://www.openmarket.com/.

SET Secure Electronic Transaction LLC. http://www.setco.org.

TRUSTe - Building a Web You Can Believe In. http://www.truste.org/.

Verisign. http://www.verisign.com/.

Visa - New Technologies. http://www.visa.com/nt/main.html.

Welcome to Microsoft's Home Page. http://www.microsoft.com/.

Welcome to RSA Security Inc. http://www.rsasecurity.com/.

The World Wide Web Consortium. http://www.w3.org/.