IS 431 – eCommerce
Course Syllabus and Calendar – Fall 2000

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1 Brief Overview

eCommerce has changed the way we entertain ourselves, the way we shop, and even the way we invest. Students with eCommerce experience will be more ready to take an active role in the job market. This class is about learning the ropes of eCommerce.

1.1 The Course

- **Course Number:** IS 431
- **Title:** eCommerce
- **Catalog Course Description:** Student teams build functional eCommerce websites from an empty computer, adding OS, webserver, database, email, etc for dynamic content, order entry, and client/server interaction. (Prerequisites: IS 231, 280, and 350, or permission of instructor.)
- **Class Time:** TTh 7:00–9:50 AM (3 hours)
- **Final Exam:** Tue 12 Dec 7:00–10:00 AM
- **Classroom:** GCB 140
- **Lab Room:** GCB 119

1.2 The Instructor

- **Instructor (me):** Don Colton
- **My email:** don@colton.byuh.edu
- **My Office:** GCB 130 B, Phone: 293-3478
- **Teaching Assistant:** Bong Siu, Alvin Teo
- **T.A. Hours:** Daily 8–10 PM, GCB 140 or 119

1.3 Grading

Half of your grade is based on your individual work. Half is based on the accomplishments of your team. Based on 1000 points, the grading would be as follows:

930+	A	900–929	A-	870–899	B+
830–869	B	800–829	B-	770–799	C+
730–769	C	700–729	C-	670–699	D+
630–669	D	600–629	D-	0–599	F

1.4 Office Hours

Office hours are currently MWF 9–10 and 4–5. Updated office hours are posted outside my office door. Students for whom the posted hours are not convenient can contact me by email to make an appointment.

I also have an open-door policy, posted on my office door as follows: "If my door is open (even just a bit) feel free to knock and come in. – Bro. Colton"

1.5 Students with Special Needs

If you have need for accommodations for special learning needs or physical impairments, please see me as soon as possible.

1.6 Subject to Change

It is possible that I will depart in some way from this syllabus. If any of my changes seems unfair to you, let me know. I will try to correct it.

This is the first time that the course has been taught in this from. It is very likely that there will be some rough edges to be refined. I hope we do not test your patience too much.

2 Now, About the Course

Better Course Description: Capstone experience in which student teams build functional eCommerce web sites for (possibly real) companies. Starting with an empty computer, students add the operating system, web server, database server, email, computer programming, and other components to complete the site. Sites provide dynamic content, such as order entry and customer account detail, and TCP/IP socket-based client/server interaction such as credit card processing.

Real eCommerce businesses must be as bulletproof as possible. Bad guys should not be able to crash your web server. Sloppy programs should not destroy your database. Building that way takes much time and careful attention to detail. We will **not** be that attentive, as our goal is to build "cardboard castles" quickly (i.e., within this semester) and in the process bring all your skills together and let you learn whether you actually might like this kind of work. (If you like doing this, there are plenty of jobs.)

2.1 What is the Course Like?

IS 431 presumes you have completed most or all of your other IS coursework, and it seeks to bring together all your IS skills and talents in a mock-corporate world where you will work in a small team to build a realistic eCommerce business.

2.2 The Team

A typical team will have four members: artist, accountant, and two programmers. The artist and accountant are primarily responsible for what the web site does. The programmers are responsible for how it does it.

2.2.1 Artistic Director

The artist is responsible for the emotional content of the web site. The artist provides insight into the consumers and ensures that the web site meets their needs. Additionally, the artist will test the web site for smooth operation and the ability of a typical customer to navigate the site and make a purchase within five minutes. The artist owns the privacy statement.

2.2.2 Accountant / Businessman

The accountant is responsible for the financial numbers within the site. Transactions must be recorded. Daily results must be computed and reported. Venture capitalists must be kept happy by current, accurate results. The books must balance. The accountant is responsible for designing and testing those aspects of the eCommerce business. The accountant owns the daily reports.

2.2.3 Programmer / System Administrator

The programmers are jointly responsible for running the web server, installing and/or creating the necessary software, and following the instructions of the artist and the accountant, or renegotiating the specifications as needed. The programmers fix bugs. They make things work.

2.2.4 Your Team

That describes a typical team. What will your team do? You are free to shift the responsibilities around any way you can agree on, but your team must take responsibility for each major part of your business.

2.3 Our Private World

Each team represents a corporation. The corporations of our world will play together to create a realistic community. The merchant corporations will use the bank corporations to approve credit card sales, and the delivery service corporations to ship goods, and the manufacturers to supply them. End users (everyone will play this role too) must be able to purchase mock goods from the merchant, view their credit card balances, and track their shipments. Business-to-business and business-to-consumer models will prevail.

Each corporation will be given one computer (a PC capable of running Linux) and a fixed IP address. You will install the system and any needed software, and keep the system running smoothly.

2.4 Typical Businesses

Here are a few businesses that might be appropriate for our little game.

2.4.1 Bank

This corporation is required (but may be played by the Teaching Assistant). All students / players will have checking accounts there, and will receive paychecks by direct deposit. Students will have credit cards issued by this bank, and will be able to use those credit cards at various merchants participating in the game. Sample real businesses include Bank of America and Bank of Hawaii.

2.4.2 Catalog Merchant

Customers look through an extensive catalog of merchandise to select items for purchase. Shipping is handled. Credit cards are used. Sample real businesses include Amazon.com

2.4.3 Special Order Merchant

Products are custom built to order. Products are selected by picking a base product and then adding or removing features. Delivery may be included or not. Sample real businesses include Dell Computer, Ford Motor Company, and Dominoes Pizza.

2.4.4 Shipper

Transportation is provided for goods. Sample real businesses include Federal Express, U.S. Postal Service, UPS, and Kozmo.Com.

2.4.5 Auction House

Sample real businesses include eBay.com.

2.4.6 Downloads

Sample real businesses include Stephen King and his online novels, and virus protection software vendors (providing updates).

2.4.7 Government

Sample real entities include the IRS, the city zoning board, and the Social Security Administration.

2.4.8 Education

Students sign up for classes, check their grades, and review their financial accounts. Sample real businesses include BYU Hawaii.

3 Unusual Aspects

3.1 Is Class Really Six Hours per Week?

Class time is nine hours per week, split between (a) in-class time: lecture, discussion, and presentation where everyone is present, averaging three hours per week, and (b) in-classroom team time, averaging three hours per week, and (c) individual study time, averaging three hours per week.

A key problem I have noticed in team-based courses is that the teams never have time to get together. Always there is some conflict from this class or that job or something else. By scheduling six hours of your week, and then using only an average of three of them for lecture time, I am leaving the other three for teams to meet. No excuses.

3.2 Why So Many Books?

Running an eCommerce site requires many skills. Each team is required to develop enough skills to make a fully operational web site. The required skills include Unix system administration, knowledge of Apache, ability in a programming language such as Perl, ability with a database such as MySQL, and ability with HTML or one of its successors. The recommended books provide this background in a written form. The books go far beyond the knowledge you will need in just this class, and provide information you may want on your first real job.

- **Recommended Textbook:** *Essential System Administration (2e) 1995*, by Frisch ($35)
  ISBN 1-56592-127-5 / O'Reilly

- **Recommended Textbook:** *Running Linux (3e) 1999*, by Welsh and Kaufman ($35)
  ISBN 1-56592-469-X / O'Reilly

- **Recommended Textbook:** *Apache, The Definitive Guide (2e) 1999*, by Laurie and Laurie ($35)
  ISBN 1-56592-528-9 / O'Reilly

- **Recommended Textbook:** *Learning Perl (2e) 1997*, by Schwartz and Christensen ($30)
  ISBN 1-56592-284-0 / O'Reilly
  (also required in IS 231)

- **Recommended Textbook:** *Programming Perl (2e) 1996*, by Wall et al ($40)
  ISBN 1-56592-149-6 / O'Reilly
  (also recommended in IS 231)

- **Recommended Textbook:** *MySQL (1e) 1999*, by Dubois ($50)
  ISBN 0-7357-0921-1 / Other New Riders

- **Recommended Textbook:** *Programming the Perl DBI (1e) 2000*, by Descartes and Bunce ($35)
  ISBN 1-56592-699-4 / O'Reilly

- **Recommended Textbook:** *HTML*, by Reding and Vodnik ($25)
  ISBN 0-7600-5842-3
  (also used in IS 240)

All textbooks are "recommended" and none are "required." Limited quantities (enough for one or two per team) are stocked in the BYUH bookstore. This allows members of each team to get whichever books they feel are needed to do their job. The recommended textbooks are specifically supported by the instructor, meaning that you can ask questions about them, and the instructor will tend to refer to them, but students are free to use additional or different resources.

In general, it is expected that each team will divide up the book purchases, with each person buying and keeping maybe two books. In specific it never works out that way. Do what works best for you. However, it is useful to know that most of these books are the ones I (the instructor) consult when I am trying to solve my own computer problems. Pick carefully the ones you think you want to end up with when the course is over.

4 Course Calendar

- Thu 31 Aug: First day of instruction
- Mon 04 Sep: Labor Day holiday
- Thu 23 Nov: Thanksgiving Day holiday (no class)
- Fri 24 Nov: Thanksgiving holiday
- Thu 07 Dec: Last day of instruction
- Tue 12 Dec: Final exam in class

4.1 Phase I: Introduction

Initially we will discuss this grand scheme and help each class member assess their own interests and potentials with regard to these job positions. We will discover who wants to be what, and how many of each there are. We will steer people into roles where they can contribute, given the competition from other students. (Not everyone can be the artistic director.) Based on the skills available, we will modify the overall assignment as needed.

The instructor will assign people to corporations based on (1) their choices of what role they want to

play, (2) their statements of whom they would prefer to avoid working with, and (3) their preference for a particular industry (banking, merchandise, shipping, manufacture, service, etc). We will also take into account individual personalities as measured by the MBTI (Myers Briggs Type Indicator). The MBTI is administered at the BYUH testing center.

Team assignments are permanent for the semester, and half of your grade depends on making your team a success. Within a team the instructor will not assign roles. The instructor will however work to create functional teams where all necessary skills are present. Some time will be devoted to teamwork issues.

Each corporation must then create an appropriate and functional web presence, including company name (youpick.byuh.edu), home page, and online forms to do whatever the business does.

I intend to base part of the grade on an end-of-semester dog and pony show, where outside people will be invited to see demonstrations by the corporations, and those outside people will evaluate what they see on the basis of (1) realism: could such a corporation survive, (2) functionality: do the forms work, and can the user achieve his goals in a reasonable amount of time, (3) customer appeal: is it interesting enough to hold customers until they actually make a purchase.

4.2 Phase II: get up and running

- develop a business plan to make money
- write a business proposal / venture capital request
- install Linux: format drives, install stock software including Apache and email
- establish email addresses for sales, customer service, etc
- develop a simple, information-only website using email for contact

4.3 Phase III: add CGI

- install a privacy statement on your web site
- write some CGI and install it: simple order entry, account access
- implement a database to track single transactions
- confirm orders entered and/or shipped by email to the customer
- show account status on demand via web
- implement CreditCard.pm first-line checking

4.4 Phase IV: additional programming

- write client or server for CreditCard authorizations
- implement a shopping cart
- implement a sitemap; maybe update nightly
- implement a CGI-based document or product search

4.5 Phase V: contingency preparedness

- hacking: watch your ports; generate alerts when you are scanned
- reboot cleanly without human intervention
- hacking: implement ssh: ttssh, ssh1, ssh2; turn off telnet
- develop a disaster recovery plan
- build and install Apache with SSL
- operate on explorer and netscape
- discuss cookies, web bugs, other alternatives, and privacy
- rebuild whole system on a new machine, given backups

4.6 Class Time

Class time will typically be used for student presentations, instructor demonstrations of how to do things, answering questions, and discussing assignments.

5 Grading (Again)

As I mentioned, half the grade is based on individual performance and half on team performance. I regret that I do not know the exact points to be assigned to each activity, but I can give you a very rough and preliminary list of the assignments that I am planning to grade.

5.1 Individual Performance

- Completion of MBTI on time
- Résumé
- Completion of various other assignments on time
- Install a working server on an empty machine
- Various tests and quizzes

5.2 Team Performance

- Approved business plan
- Emotional appeal of the site
- Mathematical accuracy of the site
- Dog and pony show at end of semester
- Response of site visitors to a feedback survey