

# IS 431 – eCommerce Web Development

## Course Syllabus and Calendar – Winter 2001

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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. Graduates with eCommerce web development 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 Web Development
- **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:** Thu 19 Apr 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

#### 1.3 Grading

Grading is based on points earned for various individual and team activities. Each assignment will be graded on a percentage basis. The table in section 5 gives the possible points. Percentage times points gives the score for each team member. Based on a nominal 1000 points, the grading is 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 require 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 course is still undergoing substantial changes in grading and assignments. 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 be attentive, but not **that** attentive, as our goal is to build 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 well-paying 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: CEO, marketing, database programmer, and system administrator. The CEO and marketing (and content developers) are the business staff, and are primarily responsible for “what” the web site does. The database programmer and the system administrator are the technical staff, and are responsible for “how” it does it.

### 2.2.1 CEO (and President)

Also known as the “president” or the “chief executive officer,” the CEO is responsible for the overall operation of the team.

### 2.2.2 Marketing (and Vice President)

Marketing (also known as the artist, or the artistic director) is responsible for the emotional content and the static content of the web site. Marketing also serves as the vice president of the company. In our case, Marketing is also responsible for testing the work of the technical staff. Marketing provides insight into the consumers and ensures that the web site meets their needs. Marketing tests the web site for smooth operation and the ability of a typical customer to navigate the site and make a purchase within five minutes. Marketing owns the privacy statement.

### 2.2.3 Content Developers

Working under the direction of Marketing, the Content Developers write the text and secure the artwork (including pictures) that make up the body of the web site. They would provide pictures of the products, descriptive information, and pricing, as appropriate. In addition, they may be tasked with testing the system and may be involved in creative planning for the website.

### 2.2.4 DBA: the Database Programmer

The database programmer (also known as the Database Administrator, or DBA) is responsible for creating the database tables, administering the database (rights management), and converting the prototype web pages (provided by marketing) into functioning CGI programs

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

### 2.2.5 System Administrator

The System Administrator (also known as the sysadmin or SysAdmin) is responsible for running the web server, installing (or sometimes creating) necessary software, and protecting the system from hackers and other hazards. This includes disaster recovery planning and implementation. The SysAdmin will also figure prominently in the hacker-wars phase of the class.

## 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 Stock Broker

Create stock prices (or pull them from public sources) and maintain accounts for your customers. Charge fees for buying and selling stock. Keep track of the stock owned by a customer, and the value of their portfolio. Sample real businesses include Datek and Schwab.

### 2.4.7 Downloads

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

### 2.4.8 Government

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

### 2.4.9 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.

### 3.2.1 Everybody Books

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

### 3.2.2 System Administrator Books

- *Essential System Administration (2e) 1995*, by Frisch (\$35)  
ISBN 1-56592-127-5 / O'Reilly
- *Apache, The Definitive Guide (2e) 1999*, by Laurie and Laurie (\$35)  
ISBN 1-56592-528-9 / O'Reilly

### 3.2.3 DBA / Programmer Books

- *Learning Perl (2e) 1997*, by Schwartz and Christensen (\$30)  
ISBN 1-56592-284-0 / O'Reilly  
(also required in IS 231)
- *Programming Perl (2e) 1996*, by Wall et al (\$40)  
ISBN 1-56592-149-6 / O'Reilly  
(also recommended in IS 231)
- *MySQL (1e) 1999*, by Dubois (\$50)  
ISBN 0-7357-0921-1 / Other New Riders
- *Programming the Perl DBI (1e) 2000*, by Descartes and Bunce (\$35)  
ISBN 1-56592-699-4 / O'Reilly
- *HTML*, by Reding and Vodnik (\$25)  
ISBN 0-7600-5842-3  
(also used in IS 240)

### 3.2.4 Recommended versus Required

All textbooks are “recommended” and none are “required.” Limited quantities are stocked in the BYUH bookstore. You are free to use additional or different resources. 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

The course calendar is divided into five phases totaling fourteen weeks.

### 4.1 Phase 1: Pre-team Activities (3w)

Team work is a key aspect of this course. Before I assign the students to teams, I must assess their strengths and ability to be successful in various roles.

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 or should 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 performance on pre-team activities such as programming assignments, (2) their choices of what role they want to play, (3) their statements of whom they would prefer to avoid working with, and (4) 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 intended to be permanent for the semester, and a substantial part of your grade depends on making your team a success. The instructor will work to create functional teams where all necessary skills are present. Some class time will be devoted to teamwork issues.

The major result for this phase is that teams are assigned.

### 4.2 Phase 2: Launch Activities (2w)

Teams will be assigned and then challenged to create a business plan suitable to their web commerce company. Team adjustments, if any, will occur during this phase.

To maximize your learning, the business plan should be as realistic as you can make it.

The major result for this phase is that the business plan is approved.

### 4.3 Phase 3: Foundation Building (3w)

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

Evaluate yourself 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.

The major result for this phase is that a full scripted demo is presented. The demo must cover all major parts of the website.

### 4.4 Phase 4: Extending (4w)

The major result for this phase is a completely functional website, meaning that sufficient content is present, pages link smoothly to one another, CGI and DB work properly, and Credit Card transactions are handled properly.

During this phase (only), system administrators and others will be invited to hack into and attempt to crash each other’s web sites. This may also involve students from outside of the class. The goal is to create a motivational awareness of what hacking is, how it happens, and what can be done about it.

### 4.5 Phase 5: Concluding (2w)

The major result for this phase is the completion of all coursework.

### 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 Preliminary Grading Matrix (points possible)

Week	Assignment Title (milestones, deliverables)	CEO	VP/Mkt	Content	DBAdm	SysAd	
1	Programming: hello	10	10	10	10	10	
1	Programming: cgi1	15	15	15	15	15	
2	Programming: cgi2	15	15	15	15	15	
2	MBTI (taken: 10, on time: 20)	20	20	20	20	20	
3	Linux Install and send me email from it	20	20	20	20	20	
3	Programming: qbigoh	20	20	20	20	20	
3	Programming: href1	20	20	20	20	20	
3	Job Application	10	10	10	10	10	
3	Phase 1 Total	130	130	130	130	130	
4	Programming: href2	.	.	.	50	50	
5	Business Plan (initial draft)	80	60	40	20	20	
5	Peer Attitude (contribution to team)	10	30	50	20	20	
5	Phase 2 Total	90	90	90	90	90	
6	Email Accounts, demo	.	.	.	.	20	
7	SSH Installed, telnet off, demo	10	.	.	.	40	
7	mySQL Installed, demo	.	.	.	20	40	
7	Privacy Statement	10	20	20	.	.	
8	Scripted Demos (static content, emot appeal)	10	70	80	.	.	
8	CGI demos (two pgms, 40 pts each)	10	.	.	80	.	
8	Business Plan (final draft)	80	20	10	10	10	
8	Peer Attitude (contribution to team)	10	20	20	20	20	
8	Phase 3 Total	130	130	130	130	130	
10	Privacy Research Paper, Debate	.	35	35	.	.	
10	Convenience Research Paper, Debate	.	35	35	.	.	
10	CGI, DB demos	20	.	.	40	.	
10	Hacking Sources Research Paper	10	.	.	.	20	
10	Apache SSL Installed	10	.	.	.	20	
10	Disaster Recovery Plan	20	.	.	20	20	
10	Peer Attitude (contribution to team)	25	15	15	25	25	
10	Phase 4a Total	85	85	85	85	85	
12	Substantial Content	15	35	35	.	.	
12	Client/Server demo	10	.	.	35	.	
12	Hacking, Defense, and Recovery Report	10	.	.	.	35	
12	Hacking Extra Credit (10/conquest, 3 max)	.	.	.	.	30	
12	Non-Scripted Demo	30	30	30	30	30	
12	Peer Attitude (contribution to team)	20	20	20	20	20	
12	Phase 4b Total	85	85	85	85	85	
13	Performance Review	40	40	40	40	40	
13	Résumé	25	25	25	25	25	
14	Peer Attitude (contribution to team)	20	20	20	20	20	
14	Phase 5 Total	85	85	85	85	85	
all	Attendance (present: 5, on time: 7) x 28	196	196	196	196	196	
15	Final Exam (essay, in class, Thu Apr 19)	200	200	200	200	200	
	Grand Total	1001	1001	1001	1001	1001	