

A Study of Undergraduate E-Commerce Syllabi

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Abstract

This paper reports on a study of 100 syllabi of undergraduate, introductory-level e-commerce courses offered by different four-year institutions in the United States. The syllabi were collected through a search using Google.com. The data analyses show when the courses were taught, the textbooks and other course materials used, the departments most likely to offer an e-commerce course, the key areas of emphasis across the courses offered, the comparison of course emphasis across the departments, and the key course assignments and requirements expected of the students.

Keywords: e-commerce, introductory-level, syllabi, undergraduate

1. INTRODUCTION

Forrester Research predicts that by 2004, 49 million United States (US) households will spend \$184 billion online. The Yankee Group estimates that 10 million households across the US will be networked by 2003. Also by 2003, 47 million European households are expected to have Internet access. Furthermore, American City Business Journal reports that small businesses that use the Internet have grown 46 percent faster than those that do not (www.Internetindicators.com 2001).

With the rapid growth of the Internet and e-commerce, e-commerce courses have become very popular in many campuses for the last few years (Associated Press 1999). For example, Wharton created a major in managing e-commerce in 1999, Harvard Business School was emphasizing entrepreneurship and adding many "new-economy" case studies, and Stanford's new e-commerce elective "was the hottest thing on the business school's campus" (Harrington 2001). A study by Sendall in 1999 found that 21 percent of e-commerce courses were offered at the undergraduate level. Texas Christian University (TCU) actually developed an e-business course required of all business majors and TCU also developed the first bachelor's degree program in E-Business (Jacobs 2000).

With the growth in the number of institutions offering e-commerce courses, what commonality or lack of can we observe across these courses and the departments offering them? What are the e-commerce courses emphasizing and what knowledge and skills are the students ex-

posed to and/or gaining? The following discussion presents an analysis and discussion of 100 syllabi gathered on-line of various undergraduate, introductory-level e-commerce courses.

2. DATA COLLECTION METHOD

An online search using the Google.com's search engine yielded over a thousand links to e-commerce syllabi of various graduate schools, undergraduate programs, and companies offering on-line e-commerce training in and outside the US. The focus of our investigation was to examine introductory-level courses offered by four-year undergraduate institutions in the US only. In determining the level of the course, we examined the information on course objectives, content, assignments and requirements, and/or target audience.

In selecting the syllabi for our study, each syllabus should include as much information as possible on when the course was offered, the course materials used, the key objectives of the course, and the assignments to be completed by the students. The time frame we used for our selection was the academic year 1998 through 2001.

Much time was spent over several days previewing the links from the Google.com search, followed by the content of each syllabus and any relevant links. We were careful not to include more than one syllabus from any instructor. If an instructor has more than one e-commerce syllabi on-line, we selected the most recent one. As expected, some links were no longer valid. For other links, we were unable to access any course infor-

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mation because only the students enrolled in the course were allowed access to the course materials. Some syllabi were not selected because they lacked some of the information we needed. We also came across work-in-progress type syllabi.

The first 100 syllabi from different four-year undergraduate institutions in the US meeting our selection criteria were selected for the study.

3. DATA ANALYSES

Our analyses below show distribution of the syllabi by academic year, a compilation of the textbooks used, the key areas of emphasis across the courses, the different emphasis according to the departments most likely to offer e-commerce courses, and the major course assignments and requirements to be fulfilled by the students.

Syllabi Distribution

The breakdown of the 100 syllabi according to academic year is shown in Table 1 below. Not surprisingly, the majority of our syllabi fall under the past academic year. For the 2000-2001 academic year, slightly less than two-thirds of the 78 percent of the syllabi are from the spring semester. We did not come across any syllabus earlier than the 1998 academic year.

Table 1

Academic Year	Percent of Syllabi
2000-2001	78
1999-2000	20
1998-1999	2

The time frame we have chosen enables us to have a more up-to-date look at the current emphasis in the various e-commerce offerings. Those colleagues who chose to leave "older" syllabi online also listed their most recent ones. This enables any visitor to compare the changes made to the course. Our informal observation suggests that more and more undergraduate institutions are offering e-commerce courses.

E-Commerce Course Materials

As reported in Sendall's study in 1999, there was no one favorite textbook adopted by the e-commerce instructors. Our analyses also confirms that observation. Appendix A lists 73 different books compiled from the 100 syllabi. Some of the books are trade books rather than conventional textbooks. Many instructors require one main textbook and one or more supplemental textbooks. Although there is no one favorite textbook, we observed that the following textbooks, not listed in order of popularity, were mentioned in 10 to 15 percent of the syllabi:

- Kalakota and Bobinson's *E-business: Roadmap for Success*, (1999), Addison Wesley
- Schneider and Perry's *New Perspectives on Electronic Commerce*, (2000), Course Technology

- Turban, Lee, King, and Chung's *Electronic Commerce: A Managerial Perspective*, (2000), Prentice-Hall

Furthermore, at least 10 percent of the courses did not require a textbook; a reading packet was prepared by the instructor and available for purchase by the students at the campus bookstore. We believe that the ever-changing nature of e-commerce might have encouraged those colleagues to seek out the most up-to-date course materials for their students rather than using a textbook.

Most of the courses also use on-line sources and other publications to supplement the course materials. Appendix B shows a representative listing of the common on-line and traditional publications compiled from the syllabi. The key limitation of on-line sources is the longevity of the source because links may no longer be valid. We observed many out-of-date links during our search process.

Key Emphasis of E-commerce Courses

After selecting the syllabi, we looked through each syllabus to create a list of the areas of emphasis. Then we tabulated the number of times each area of emphasis was included in the 100 syllabi. Our tabulation derived three distinct categories: the first category consists of the areas of emphasis included in 40 or more percent of the syllabi, the second category consists of areas included in 25 to 35 percent of the syllabi, and the third category consists of areas included in less than 20 percent of the syllabi. The items under each category are not arranged in any order of importance.

Category 1:

- Survey of e-commerce technologies (e.g., e-catalog, e-transactions, e-payment, online shopping carts)
- Forms of e-commerce (e.g., B2B, B2C)
- Privacy and Internet security (e.g., data encryption, digital certificates, security of customer's financial data, Computer Emergency Response Team)
- E-marketing, advertising, and retailing (e.g., customer acquisition, banner ads, consumer research)
- Web site development and programming (e.g., HTML, XML, VBScript, JavaScript, ASP)

Category 2:

- History, terminology, and concepts of e-commerce
- Legal and intellectual property issues (e.g., copyrights, jurisdictions, tax issues)
- E-commerce strategies, opportunities, threats, and trends
- Design and implementation issues (e.g., business plan, Web site design criteria)
- Internet and Client/Server infrastructure (e.g., ISP, hardware and software configurations, protocols, standards)

Category 3:

- Introduction to the Internet (e.g., terminology, Web surfing, history, user demographics)
- Social, political, and ethical implications
- Online customer service (e.g., CRM technology, customer retention)
- Supply chain management (e.g., EDI, Exchange)
- Database technologies (e.g., database basics, MS Access, data-mining)
- Intranet and Extranet (e.g., knowledge management)
- International and global issues (e.g., cultural, legal, economic trends)
- Value chain management (e.g., impact of e-commerce on internal processes)
- Impact of e-commerce on functional areas of business (e.g., brick-and-mortar to click-and-mortar)
- Network and telecommunications standards and protocols (e.g., TCP/IP, LAN, WAN)
- Managing the business aspects of an e-business
- Taxation
- E-commerce funding (e.g., venture capital)

Realistically, even covering categories 1 and 2 would neither be feasible nor desirable in any e-commerce course. However, the listing serves to highlight the vast scope of e-commerce topics.

Home Departments and Emphasis

The departments most likely to offer an e-commerce course are shown in Table 2 below; they represent almost 90 percent of the syllabi in our data pool. As shown, CIS/MIS and CS departments account for almost 50 percent of the e-commerce course offerings. The business-type departments, management and marketing, account for 40 percent of the course offerings. Other departments in our data pool included Economics, Finance, Accounting, and Engineering, for example.

Table 2

Department	Percent of Syllabi
CIS/MIS	36
Business/Management	33
Computer Science	13
Marketing	7

It is impossible for any course to cover the wide range of topics presented in the previous section. So, what is the difference in emphasis across departments?

Tables 3, 4, and 5 highlight the key areas of emphasis of three department types. As expected, e-commerce courses offered by our CS colleagues are more technical in nature; they involve more Web-based programming, exploration of encryption technology, network infrastructure, projects on Internet security, and less on business-related topics. The "Business" colleagues are more likely to focus their courses on discussing broader Internet concepts, e-commerce management, and business

strategies, and less on technical aspects of e-commerce, such as the e-commerce infrastructure. Their hands-on assignments usually involved creating a simple web site with less emphasis on programming.

Table 3

Category 1:	CIS/MIS	CS	Business
Survey of e-commerce technologies	✓	✓	✓
Forms of e-commerce	✓		✓
Privacy and Internet security	✓	✓	✓
E-marketing, advertising, and retailing	✓	✓	✓
Web site development and programming	✓	✓	✓

Table 4

Category 2:	CIS/MIS	CS	Business
History, terminology, and concepts of e-commerce			✓
Legal and intellectual property issues	✓		✓
E-commerce strategies, opportunities, threats, and trends	✓		✓
Design and implementation issues	✓	✓	✓
Internet and Client/Server infrastructure	✓	✓	

The CIS/MIS courses consist of a good mix of business-related topics and hands-on projects. Similar to CS courses, they are less likely to devote much time to introductory Internet concepts and coverage of the historical aspects of e-commerce. The hands-on assignments usually include creating an e-store but require less intensive programming than the CS courses.

Table 5

Category 3:	CIS/MIS	CS	Business
Introduction to the Internet			✓

What we derived above suggests the probable scope of an e-commerce course that would provide the necessary coverage of knowledge and skills for three different department types. On a side note, only a very small number of syllabi indicated a team-teaching arrangement. Most of instructors also have their own Web presence and their Web sites are linked to the course syllabi.

The following discussion addresses the main learning tools compiled from the syllabi. It is important to note

the percentages of syllabi that indicate the inclusion of each learning tool. For example, not all e-commerce courses have a hands-on component and some courses are more case driven than others. Finally, do the percentages seem low, about right, or high for each learning tool?

Hands-on Experience

At least 31 percent of the courses have a Web page building component in the course requirements. This usually requires a student to create a personal Web page and include creating links to appropriate sites of his/her choice. Some require the students to include a resume or post their solutions to assignments on the Web site, for example. Microsoft FrontPage and the Dreamweaver software are commonly used for such activities.

A third of the courses also require students to do a group project. This usually involves creating an e-business storefront of the group's choice. Often, presentation of the online store and its business strategy is required of the group at the end of the semester. This type of hands-on assignment normally requires students to engage in some level of Web-based programming. Some courses, not many, do provide tutorial support to the students in gaining the skills and knowledge needed to engage the project.

Another common assignment, seen in 25 percent of the syllabi, requires either a student or a group of students to either evaluate various Web sites using specific criteria, research hosting services, compare online purchasing experience, or research different Internet portals. The deliverable is usually a report to be presented in class or be submitted without an oral presentation.

Case Analyses

Many courses also use case studies to complement the textbooks. Case analysis requirement is seen in 34 percent of the syllabi. These are cases that require a written and/or oral report. Most courses assign at least two cases and these cases could represent well-known e-commerce enterprises, success stories, and/or failures. Examples include Amazon.com and Charles Schwab. Cases highlighting e-commerce strategies and best practices are also common. A majority of the rest of the courses only use cases to supplement the readings and concepts presented but no case report is required.

Term Papers

Almost 50 percent of the courses require a term paper to be submitted near the end of the semester. The topics are either pre-determined by the instructor or selected by the students with prior consultation with the instructor. For example, some courses require students to develop a business plan for an e-business over the course of the semester. This type of assignment is usually done by a group of students. Another common requirement is for the students to present an e-commerce solution after

analyzing a brick-and-mortar company or the business unit of one.

About 10 percent of the courses also require the students to investigate and document one or more e-commerce technologies, such as digital payments, XML, and e-transactions. Other topics include best practices in e-commerce, web auctions, security, and legal issues.

Guest Speakers

Whenever possible, many instructors reserve time during the semester for guest speakers to visit with the students. These include professionals who are either venture capitalists, bankers, pure play dot com executives, executives from brick-and-mortar and click-and-mortar companies, consultants to e-commerce companies, or fellow colleagues who have written about e-commerce issues.

4. LIMITATIONS OF STUDY

One limitation of our study is that the number of syllabi we used to draw our observations is small. However, we believe that the 100 syllabi were sufficient in giving us an initial glimpse of the current state of e-commerce education at the undergraduate, introductory level.

Also, the syllabi were obtained solely from a search performed using Google.com's search engine; no attempt was made to solicit syllabi by other means.

However, due to the nature of the course, we surmised that most e-commerce courses would have their syllabi and course materials on-line and so we concentrated on syllabi that were available on the Web. Also, Google.com's search engine was considered reliable by many IT professionals and other users and we felt it did a good job in searching and presenting to us valid links for our consideration.

Another limitation is that we did not include syllabi from institutions outside the US. We found several posted by colleges in Australia, Denmark, and the United Kingdom, for example.

We decided to limit our scope to courses offered in the US so that we do not have to deal with variables, such as the length of the course and country-specific policies regarding e-commerce activities, that we might not be aware of in foreign institutions. Besides, we have sufficient syllabi from US institutions to choose from. A future study comparing US syllabi and syllabi from non-US institutions might be an interesting project to undertake.

The final limitation is the exclusion of graduate e-commerce courses. The study by Jacobs (2000) indicated that as far as e-commerce programs are concerned, "there are ten times more graduate programs as undergraduate programs." All major graduate programs, such

as those of Harvard Business Schools, University of Chicago, and Pennsylvania's Wharton, have devoted sufficient resources to develop graduate e-commerce programs. Many "have weaved e-commerce throughout the curriculum" (Lord, 2000). We concluded that since e-commerce programs in the undergraduate level are less developed than the graduate ones, it would be better to focus only on undergraduate courses for our study.

5. CONCLUSION

From our study, we observe that more e-commerce courses are offered by undergraduate institutions in the US nowadays. The nature and content of the course are very much influenced by the type of department offering it; some are more technically oriented and others emphasize more business-related concepts, for example. However, even many non-CS courses expose their students to some hands-on Web-building experience, with some requiring the building of an e-business store. The hands-on Web-based activities and the development of a business plan for an e-business can be challenging requirements for students who may not have sufficient business and/or programming experience.

Although many textbooks are used across the courses, none is a clear favorite. Maybe this reflects the infancy of this area of study and also the eagerness of the different publishers to put their publications in the market as soon as possible for our consideration. The abundance of textbooks and trade books in the last few years indicates the great interest in supporting e-commerce education. Some of our colleagues use one textbook, some require multiple, and some created their own reading packet instead. Many also compiled on-line readings for their students.

In terms of e-commerce topics, categories 1, 2, and 3 highlight the vast array of topics that an instructor could select from for an e-commerce course. The first two categories seem to include the key topics for someone considering pondering about offering an e-commerce course. Our study also presents the similarities and differences in course content of the CS/MIS, CS, and Business-type courses.

Analyses of real e-commerce-related cases and other writing assignments relating to e-commerce technologies, for example, help to reinforce the concepts presented in class. Furthermore, many instructors also provide opportunities for their students to learn from and exchange ideas with professionals working in the e-commerce arena. Since e-commerce is evolving so fast, up-to-date resources are crucial to the success of the course.

Though limited in scope, we believe that our study highlights some interesting observations about the undergraduate, introductory-level e-commerce courses offered by various US institutions. We hope that our analyses

and observations will assist other colleagues in their enhancement, formulation, and/or development of their e-commerce courses and programs.

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