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Internet Commerce in the Information Systems Curriculum

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Abstract

This session centers upon curriculum development in the emerging e-commerce area. The design and development of an e-commerce masters degree will be discussed. Panel topics include the demand for Internet Commerce courses and programs, partnering with industry, resources required, and program and course content. In addition, ideas for less extensive and less technical e-commerce programs will be discussed, along with the role of e-commerce in the undergraduate curriculum. Suggestions for blending e-commerce into existing IS curricula will be considered.

Panelist Backgrounds

Susy Chan is the director of the Information Systems Division, and the Institute for Electronic Commerce at DePaul University's School of Computer Science, Telecommunications, and Information Systems (http://www.cti.depaul.edu). She joined the CTI faculty in 1987 and held dual appointments as Vice President for University Planning from 1987 to 1993, and as Vice President for Information Technology from 1993 to 1996. In her CIO role, she led the IT transformation at DePaul, acting as architect for the six-campus infrastructure development. Through these efforts, DePaul used information technology to reposition itself as an educational leader in metropolitan Chicago. Dr. Chan has consulted in the areas of IT planning, IT transformation, Internet strategies, ERP procurement, and IT human resource development. Dr. Chan, whose Ph.D. is from Syracuse University, has written and presented topics in IT planning and transformation, and has served on the Executive Board of the Chicago Chapter of SIM.

Vince Kellen is a partner in the Chicago group for USWeb/CKS. USWeb (http://www.uswebcks.com/) is the largest professional services firm focused entirely on the Internet, and includes Apple Computers, Harley Davidson, Warner Brothers, and 20th Century Fox among its clients. An Internet Data Warehousing specialist, Mr. Kellen works with a variety of Fortune 500 companies to establish enterprise-wide data warehousing strategies. He also directs the process of designing and implementing data warehousing solutions. Mr. Kellen is the author of 4 books on database technologies and more than 20 articles on various database and software engineering topics. In addition, he has been a regular speaker on database and software engineering topics for conferences in the United States, Germany, Ireland and England. Prior to joining USWeb, Mr. Kellen was the Vice President of Kallista, Inc., a database consulting firm.

Helmut Epp is the founding dean of DePaul University’s School of Computer Science, Telecommunications and Information Systems, the largest graduate computer science program in the United States (http://www.cti.depaul.edu). A DePaul faculty member since 1974, he served as Vice President for Information Services at the university from 1996 to 1998. An experienced industrial consultant, Dr. Epp received his MS and Ph.D. degrees from Northwestern University and has served on the faculties of the University of Illinois at Chicago and the Massachusetts Institute of Technology. In 1985, Dr. Epp founded DePaul’s Institute for Professional Development. IPD programs combine the virtues of university-based courses and commercial training in a variety of computer-related areas, including Web development. More than 8,000 computer specialists and business executives are graduates of the institute.

Evidence of Demand

E-commerce is a rapidly growing industry. According to Forrester Research Inc., Internet business reached $43 billion in 1998, and will grow to approximately $109 billion by the end of 1999, and $1.3 trillion in 2003 (Frook and Karpinski 1999). The rapid growth of e-
commerce has resulted in an increased demand for e-commerce IT professionals. According to Christian & Timbers Inc., an executive recruiting firm, during 1996 the demand for Internet software developers almost tripled, while the demand for Internet executives almost doubled (“Price of Popularity” 1997). The upward trend has continued. A recent article in InformationWeek predicts that “Internet skills will be highly sought after;” and quotes RHI Consulting, an IT staffing firm, as saying that Web developers will see some of the largest gains in base compensation of all IT workers in 1999 (McGee 1999). Computerworld includes Manager of Internet / Intranet Technology, with a salary range of $80,000 to $120,000, as one of its seven highest demand IT positions (LaPlante 1998). Computerworld’s jobs survey indicates that “skills related to network and Internet technology remain hot: 40% of hiring managers are looking for people with a background in HTML, the Web programming language, followed by Internet development (38%), Windows NT Server (37%), Java (35%) and TCP/IP (32%).” (Fryer 1999).

Nature of E-Commerce

With the explosive growth of the Internet, industries are increasingly employing Internet and related electronic commerce technologies. E-commerce has expanded beyond its early roots in Electronic Funds Transfer and Electronic Data Interchange to embrace the use of Internet technologies for such applications as Web-based retailing, electronic supply chain management, and Web publishing. In addition, Intranets provide a cost-effective approach to both intra-organizational data sharing and facilitation of collaborative work process.

Goals of DePaul University’s MS in E-Commerce Technology

DePaul University’s MS in e-commerce technology is intended to prepare graduate students to lead e-commerce application divisions in large organizations, support e-commerce based solutions at consulting firms, or establish their own consulting practices.

Current Status of the Program

The degree proposal has received strong industry support, and is unanimously endorsed by the faculty of DePaul’s School of Computer Science, Telecommunications and Information Systems. As of April 1999, the degree proposal is being submitted to the university’s Committee on Curricula and Programs for review. CTI hopes to begin admitting students into the program for the autumn quarter of 1999.

Resource Considerations

With an enrollment growth rate of approximately 30% annually, DePaul University’s School of Computer Science, Telecommunications and Information Systems will be able to meet the human resource needs of its new e-commerce curriculum through a combination of current faculty and normal faculty expansion. For example, three new IS faculty will be joining the School in 1999. As is the case with any new program, this program will require hiring of additional full-time and part-time faculty members, commensurate with enrollment growth.

The program’s location in a school that includes many technical specialists provides it with a broad basis of technical support. In terms of physical resources, students in the new e-commerce program will have ready access to the School’s state-of-the-art computing environment, including multi-media classrooms, student classroom laboratories, and research laboratories suitable for collaborative industry research. Dean Epp has committed to build an e-commerce lab to provide the technology support for this program. This lab will provide application software, tools, student course servers, and technical support. Like current students, e-commerce students will be able to access the Internet from home and from student labs at all campuses.

Underlying Curriculum Design Principles

This program’s design was guided by four curriculum principles:

1. Reflecting the eclectic nature of current Web development, this program does not presuppose any dominant technologies or programming languages. Rather, students will be exposed to a broad and ever-changing mix of technologies, programming languages and tools.
2. The program is designed flexibly to adapt to rapid changes in both technology and industry norms.
3. The program is designed around industry needs and based upon a long-term partnership with e-commerce leaders.
4. The program is designed to provide maximum opportunities for practicums and team projects.

Abbreviated Course Descriptions

Following are course descriptions for e-commerce courses. More detailed descriptions of these courses will be considered at the panel session. Other related courses that appear in the curriculum also will be discussed during the panel presentation. Note that DePaul University is on the quarter system.
Prerequisite Courses

CSC 316 Fundamentals of Web Development. A survey of Internet technology, tools and theory. Introduction to the concepts of Web architecture, Web software development languages and tools, and common e-commerce applications. Students will develop a basic understanding of HTML, create a Web site using an authoring tool and supplement it with a simple Java applet.

ECT 410 Web Application Development with Scripting. Application development for e-commerce. Includes development of small-scale e-commerce transaction applications. Students will design and build a retail Web site that accesses a database for online order processing. Prerequisite: ECT 316 and (CSC 225 or equivalent programming knowledge in another language).

Required Courses

ECT 555 Design and Strategies for Electronic Commerce. An integrated study of strategies, design, and technology issues for consumer oriented electronic commerce. Mercantile models, mass customization, interactive marketing, search engines, and digital payment systems. Web engineering process, requirement analysis, design, usability testing, prototyping, implementation, promotion, and site evaluation. Team projects will develop commercial web sites using authoring tools and scripting. Prerequisite: ECT 410, IS 422, or HCI 430, or DS 420, or advanced standing for other majors.

HCI 441 Usability Issues for Electronic Commerce. Design, prototyping and evaluation of e-commerce web sites. Content of usability in the project development life cycle. User/task analysis with emphasis on the first time and the infrequent user. Content organization. User testing with low fidelity prototypes. Issues of perceived privacy and security. Students’ projects involve design and/or evaluation of actual electronic commerce sites. Prerequisite: (previously HCI 440)

ECT 580 Advanced Web Information Systems. An in-depth study of Intranet applications and their integration with enterprise databases and legacy systems. Internet based business strategies for managing distribution channel, and call centers. Architecture and solutions for leveraging legacy systems and business intelligence through interface with datawarehousing, knowledge management, and decision support. Tools and technologies for client, server, and content management. Web information systems development methods and process. Students will conduct case studies and group projects. Prerequisite: ECT 555


ECT 589: Electronic Commerce Capstone. This capstone course focuses on the development of e-commerce strategies and organization of resources. Planning of digital strategies, technology assessment and forecasting, global market analysis, and implementation plans, marketing, product life cycle, and funding strategies. Organization models for e-commerce application development, staffing, project management, and sourcing options. Students will develop business and organization plans for e-commerce development operations for in-house support, consulting practices, or entrepreneurship. This course should be taken at the conclusion of the ECT program. Prerequisite: Completion of all other required courses.

DS 520 Distributed Systems Practicum. Design and implementation of servers, with emphasis on active control technologies such as ActiveX and JavaBeans for n-tier client/server systems. Network-based software distribution. Distributed data access through LDAP, ODBC, and related technologies. Projects will be done in leading-edge languages and tools such as Visual Basic, Java, Power Builder, and Visual C++.

References