Proceedings

ISECON 2001

18th Annual
Information Systems Education Conference

Information Systems Education -
Technology in the 21st Century:
Where Innovation and Information
Converge

Hyatt Regency Hotel
Cincinnati, Ohio USA
November 1--4, 2001

Editors:
Don Colton, Brigham Young University Hawaii
Susan Feather, Pace University
Michael Payne, Purdue University
William Tastle, Ithaca College

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AITP: The Association of Information Technology Professionals
ISECON 2001 is the eighteenth in an annual series of international conferences devoted to education in the field of Information Technology. Conferences such as this are possible only because of the continuing interest and support of the Information Systems educational community, expressed by their submission of high-quality papers and their attendance at the conference. The ISECON 2000 Conference Committee and sponsors gratefully acknowledge all the authors, session chairs, and other participants for contributing to the success of this conference.

ISECON (the Information Systems Education Conference) is sponsored by the Foundation for Information Technology Education. Additional support is provided by EDSIG (the AITP Special Interest Group for Education) and AITP (the Association for Information Technology Professionals). The conference has also received extensive support from the School of Computer Science and Information Systems at Pace University and the School of Computer and Information Sciences at the University of South Alabama.
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Colophon

The ISECON 2000 Proceedings were produced from author-provided source documents, predominantly in Microsoft Office (Word) format. Title, authorship, and abstract were collected into an Adobe PageMaker document. The predominant font is Times New Roman.

Paper numbering reflects the session number followed by a letter indicating position within the session, a is first, b is second, and so on.

The CD-ROM is the official proceedings, and contains the original author's full text of each paper in .doc format (Microsoft Word). For maximum portability and interoperability across computing platforms, now and in the future, the papers were also converted into .txt format (ascii text), .ps format (PostScript), and .pdf format (Portable Document Format, read by Adobe Acrobat Reader). The CD-ROM was mastered on a Linux (Red Hat 7) workstation using the “cdrecord” suite of tools.
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ISECON History

The first ISECON, titled as the “National Conference on Information Systems Education sponsored by the DPMA Education Foundation” was held from March 22-24, 1982 at the McCormick Inn in Chicago. Below is a complete list of all past ISECON years and locations.

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<td>Cincinnati, OH</td>
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Dear Colleagues:

Welcome to ISECON 2001. This year brings the ISECON Conference to historic Cincinnati, the Queen City, along the Ohio River.

The conference offers over 110 presentations including 96 refereed papers, 5 workshops, and 4 panels. In addition to these activities, there is a program of dynamic and highly interesting invited speakers and “special feature” presentations that exemplify this year’s conference theme: Technology in the 21st Century — Where Innovation and Information Converge. And there are our usual status updates on important educational issues, such as IS program accreditation and IS model curricula.

None of this would have been possible without the outstanding effort put forth by this year’s ISECON 2001 Organizing Committee. Our Proceedings team, Dr. William Tastle, Ithaca College, our Papers Chair, Dr. Susan Feather, Pace University, and Dr. Michael Payne, Purdue University, Associate Papers Chairs, has significantly improved the paper quality through their hard work. And Dr. Don Colton from Brigham Young University – Hawaii Campus, our Proceedings Chair and Editor, has done his usual outstanding job. Also, our Program Co-Chairs, Prof. Neelima Bhatnagar, University of Pittsburgh – Johnstown and Dr. Charles Woratscheck, Robert Morris College, have done a wonderful job under trying circumstances. And once again we have strong vendor participation due to the worthy efforts of Prof. Margaret Thomas, Ohio University and Anne Marie Smith, La Salle University.

And the support and guidance of the Education Foundation through this year’s President, Dr. Brian Reithel, Director, William Reaugh, and President-Elect of AITP, Kevin Jetton, and has been very helpful. Just as instrumental has been the work and support of the EDSIG Board. Finally, the work of the folks at the University of South Alabama under the leadership of EDSIG President, Dr. David Feinstein, has been indispensable.

But most of all, I wish to express my gratitude to you, the conference participants and attendees, who put aside your reluctance to travel during this most stressful time in the nation’s history. I realize that you most likely have undergone inconvenience and some hardship to be here. The ISECON team and I salute you.

Stuart A. Varden, Ed.D.
Pace University
ISECON 2001 Conference Chair
Dear Colleagues:

As I write this welcome six weeks before we meet in the Queen City of Cincinnati, I am still very close to the horrific events of September 11. All of us have been touched by the events of that day. I am convinced that it is through the kind of interactions that we can have at meetings such as ISECON where we learn about the strengths of our diversity that we can, in some small way, make the world a better and safer place for all.

With that said, welcome to ISECON. The theme of this year’s annual conference is “Information Systems Education, Technology in the 21st Century: Where Innovation and Information Converge.” For the eighteenth time we as information systems educators are gathered together to share ideas to help make our teaching better. As you look through the Proceedings you will see a superb set of thoughtful contributions to this year’s conference. Your greatest challenge will be figuring out which sessions to attend. The general sessions have outstanding speakers who I am sure will stimulate much discussion. Possibly more important is the opportunity to network with other IS educators during the breaks and social functions.

EDSIG is pleased to co-sponsor this event with the AITP’s Education Foundation. EDSIG continues to grow and add activities and services. The past few years saw many accomplishments. In addition to ISECON, our journal, Journal of Information Systems Education (JISE) provides a stimulating forum for the publication and exchange of ideas of the community of IS educators. Plans for continued expansion are underway. Contact the editor, Al Harris (harrisal@appstate.edu), for more information.

As part of ISECON EDSIG has the distinct privilege of recognizing an outstanding IS educator each year and awarding that individual the Educator of the Year citation. The list of recipients reads like a “Who’s Who” in IS education. I take particular pleasure this year since the recipient is an individual I have worked closely with for over two decades. Herbert E. Longenecker, Jr. (Bart) certainly is a worthy addition to this highly respected group.

Plans are already being made for the conference in 2002 when we will return to San Antonio. Dave Zolzer (dzolzer@nsula.edu) will chair and I am sure he will be looking for volunteers and contributors. For those of you who were there a few years ago and remember the floods, we have a guarantee that the weather will be sunny and clear.

EDSIG is a volunteer organization. Our strength is in our membership and our volunteers. I encourage all of you to become more acquainted with our organization and help further IS education. Visit our website at www.aitp-edsig.org to learn more about us.

David L. Feinstein
President, EDSIG
Dear Colleague:

The Information Systems Education Conference, better known as ISECON, is unique among the many conferences that a faculty member interested in information technology can attend, because of its long history, its compelling sessions, and the powerful camaraderie shared by those who attend. Each year, we are given the chance to come together and learn from each other.

This week, thanks to Stuart Varden’s capable leadership, we are able to gather together once again to explore the frontiers of information systems education. We are grateful to the large team of folks who have worked so hard to bring this event into being. In particular, we deeply appreciate the efforts of the many authors, reviewers, presenters, panelists, workshop instructors, keynote speakers and the ever-faithful members of the ISECON Committee. We are especially indebted to those who have worked to handle local arrangements, logistics, registration, the ISECON website, and the myriad assortment of other activities needed to make this national conference function so smoothly.

Anyone who has ever worked on the proceedings of a conference of this magnitude can offer powerful testimony regarding the sheer scale of the effort. I would like to offer a special note of thanks to Bill Tastle, Susan Feather, Michael Payne and Don Colton for their willingness to do the hard work needed to attract the scholarly works to be presented at ISECON 2001 and to assemble them into a superb conference and Proceedings.

The Foundation for Information Technology Education exists to advance the state of education and practice in the Information Technology profession. We are fortunate to have the Education Special Interest Group (EDSIG) of the Association of Information Technology Professionals (AITP) as our partner in developing the ISECON meeting each year. Through this meeting, we hope to offer a forum in which information technology educators can come together, learn, and return home to the classroom to shape the skills, knowledge and character of tomorrow’s information technology professionals.

On behalf of the Board of Regents of the Foundation for Information Technology Education, I would like to offer our profound gratitude to those who have participated in our efforts to build on the unique partnership that draws on the combined strengths of EF, EDSIG, and AITP. In particular, a note of thanks goes to EDSIG President David Feinstein, AITP President Nita Adams, AITP Executive Vice President Kevin Jetton, and our fellow EF Regents who worked with the ISECON 2001 team, William Reaugh and William Lackey.

We hope that you find ISECON 2001 to be a valuable networking and professional development experience! We also hope that you will join us in the future at ISECON 2002 and beyond.

Sincerely,

Brian J. Reithel, Ph.D., CDP
President
Foundation for Information Technology Education
Friday Afternoon Keynote Speaker

Don Gotterbarn

Professor
Computer and Information Sciences
East Tennessee State University

Director
Software Engineering Ethics Research Institute

“Next Generation Project Management: A New Process for Avoiding Project Failure”

Educated at the University of Rochester, Dr. Gotterbarn taught for several years at such schools as the University of Southern California and Dickinson College. He also worked as a computer consultant. Among the software projects he was responsible for several database systems for the U.S. Navy and for the Saudi Arabian Navy, and an interactive crime-reporting database. He has also worked on the certification of software for vote counting machines and missile defense systems.

He is currently at East Tennessee State University where he is the director of the Software Engineering Ethics Research Institute and teaches computer ethics, software engineering and software project management. He is also a visiting professor in England at the Centre for Computing and Social Responsibility and during the summer of 1999 was a visiting research fellow in Australia.

He lectures internationally on the impacts of software engineering and related technologies on society. He visits colleges around the United States as an ACM Distinguished National Lecturer. His research has appeared in more than a dozen professional journals and he has written several encyclopedia articles. His technical work includes funded research on performance prediction for a distributed Ada closure, object-oriented testing, software engineering education and computer ethics.

He is the Chair of the ACM Committee on Professional Ethics, was Vice Chair of the ACM Special Interest Group on Computers and Society, chair of the International Advisory Board of the Australian Computer Ethics Institute, chaired the joint IEEE/ACM committee Software Engineering Ethics and Professional Practice, chaired the Software Engineering Ethics Project, is a member of the Australian Computer Society Ethics Task Force and a member of the executive committee of the International Society on Ethics of Information Technology.
Saturday Awards Luncheon Speaker

John A. N. (JAN) Lee

Professor of Computer Science, Virginia Polytechnic
Member, Center for the Study of Science in Society

“The Great Myths of Computer History”

John A. N. (JAN) Lee has had two major careers - in Civil Engineering and in Computer Science. In the 1950’s and 60’s he was a practicing, professional civil engineer, serving on the teams which created the designs for the Medway Bridge, just outside London, England, which (still) holds the record for the longest concrete span, the Firth of Forth Road Bridge, which was the first bridge in the world to span a clear mile, and the now well-known Sydney Opera House in Australia. Based in these experiences which involved the use of computers, he initiated computer center and computer classes at Queen’s University in Kingston Ontario, and, in cooperation with colleagues from the University of Toronto and Du Pont, developed first highly efficient FORTRAN compiling system for IBM 1620 (KINGSTRAN), a system which eventually was modified for the IBM System/360 and named WATFOR. Moving to the USA in 1964 at the University of Massachusetts, he initiated the Computer Science program, was the first department head, and in the meantime developed compiler software for first time-sharing system for CDC machines (BASIC, FORTRAN, APL). He wrote the first US textbook on compiler development - The Anatomy of a Compiler (1967) and first textbook on formal languages Computer Semantics (1971). He moved to Virginia Tech in 1974 to assist in the development of graduate program, and extend the undergraduate program. He has served as the chairman of the Undergraduate Program for many years, and has developed many new courses including “Professionalism in Computing”, the WWW site for which is shared by many institutions.

Throughout these academic appointments he represented the Association for Computing Machinery (ACM) on American National Standards Committee X3 for 20 years, leading the development of Numeric Representation and BASIC standards; he participated in the standardization of PL/I, and oversaw standardization of Ada for the Department of Defense. He received a Certificate of Appreciation from the Computer and Business Equipment Manufacturers Association in October 1971, and a Certificate of Distinguished Service, from the US Department of Defense in October 1983 for his work on the standardization of the programming language Ada. He was designated a “Pioneer of Information Processing Standards”, at the 25th Anniversary Meeting of the Accredited Standards Committee X3, in 1986.

Within ACM he served as the Chair or member of the standards committee for over 20 years, was elected as an ACM Council member, and Vice President. He received the ACM Outstanding Contribution Award in 1981, and Certificates of Recognition of Service in 1980, 1985, 1986, and 1989. In 1993 he was named as the recipient of the Distinguished Service Award by the Association for Computing Machinery for his service to ACM and the computer community through his innovative contributions to computing standards, the history of computing, and the development of professionalism. He was named as a Fellow of the Association for Computing Machinery in 1993.

Always interested in history, he served on the organizing committee for the 1978 History of Programming Languages Conference, and, with support from IBM, organized the 1982 25th Anniversary of the programming language FORTRAN. From its inception Dr. Lee served as an Editor and eventually as the Editor-in-Chief of the Annals of the History of Computing, and was General Chairman of the 1993 Second History of Programming Languages Conference. Taking over as the Editor-in-Chief of the Annals of the History of Computing in 1987 he turned a near bankrupt activity into a strong on-going project, which is very much akin to a distributed Research Center rather than just a journal. The journal was taken over by the IEEE Computer Society in 1992 and he completed two terms as IEEE Editor-in-Chief in 1996. In 1992 he was appointed as the chair of the International Federation for Information Processing Working Group on the History of Information Processing (WG 9.7) and was the chairman of the IEEE Computer Society History Committee (1992-94). He was the US (FOCUS) Representative to, and secretary of, IFIP Technical Committee 9 (Social Impact of Computers) for six years, and subsequently represented the IEEE Computer Society. He served as chair of the Computer Society Pioneer Award Subcommittee (1992-1999), was a member of the Board of Governors (1995-1997) and was the IEEE Computer Society Vice President for Membership (1995-1996). He is currently the IEEE Computer Society Representative to the IFIP General Assembly.
Paul Gray is Professor and Founding Chair of Information Science at Claremont Graduate University. Paul was instrumental in bringing one of the thirteen IBM $2 million grants to Claremont in 1986, which established Claremont as one of the leading academic institutions in information systems.

Starting in 1983, Paul Gray created, developed and built one of the largest PhD producing Information Systems programs in the world. Claremont graduated its first PhD in 1991. Since then, the school has produced 44 PhDs. During the 1990s, Claremont was the largest producer of PhDs in IS in the world, far exceeding the production of both the University of Minnesota and the University of Arizona. The size of the PhD program allows Claremont to offer five required doctoral-only courses in IS each year, which makes the program a true PhD program in IS rather than offering additional masters or MBA courses. At the masters level, Claremont offers one-year and two-year MS in IS degrees as well as an MS in Electronic Commerce. Currently, the Information Science program has 130 graduate students majoring in Information Systems, of whom approximately 50 are PhD students.

By keeping Information Science separate from the Drucker Management Center (Claremont’s Business School) he was able to create a School that concentrates only in IS, and is able to offer specialized courses that reflect current trends. For example, this year, courses in ERP, Knowledge Management, Data Warehousing, and Business Intelligence are being offered.

Professor Paul Gray has made outstanding national-level contributions to the field of Information Systems. Paul was co-chair of the joint ACM-AIS Committee on the MSIS degree. The work of this committee, which was published in January 2000, provided the first revision in eighteen years of the standards for the MS degree in IS. It makes the MS program relevant to the 21st century. He is the first editor of the Communications of AIS and a fellow of the Association for Information Systems. He was president of the Institute of Management Sciences (now INFORMS) for 1992-93, and was formerly president-elect, vice president and secretary of the Institute.

He specializes in decision support systems, knowledge management, electronic commerce and data warehousing. He is on the editorial board of several journals. He is the author of over 115 journal articles and author or editor of 12 books, most recently Decision Support in the Data Warehouse with H.J. Watson.

Professor Gray has both industrial and educational experience. He worked for 18 years in research and development organizations, including nine years at SRI International. He is living proof that you can complete a PhD at Stanford while working full time. Since he completed his PhD in 1968, he has been a professor at a number of Universities including Stanford University, Georgia Institute of Technology, University of Southern California, Southern Methodist University, and, for the last 17 years at Claremont. He served as Department Chair at USC, at SMU, and at Claremont.
Dr. Herbert (Bart) Longenecker, a Professor of Information Systems at the University of South Alabama, has for many years been instrumental in the development and dissemination of Information Systems Model Curricula. His tireless efforts have had a board and lasting positive impact on the quality and direction of Information Systems Education throughout the nation and world. It is with pleasure that we are finally able to honor him as the 2002 Information Systems Educator of the Year.

Abstract
In this paper, we examine implications of definitions of information technology to women's participation in the industry and in academe. This paper is exploratory only, based on a review of selected government and industry reports and data related to IT education and the profession. However, we argue that there is evidence to suggest that the discourse related to information technology has the effect of excluding women and multi-disciplinary perspectives. On the one hand, we argue that there is considerable evidence that the IT industry and skills it demands are multi-disciplinary and that many people working in the industry, particularly women, come from a variety of disciplines. On the other hand, despite the evidence of the multi-dimensional nature of IT, the impact of convergence, the importance of matching IT solutions to user needs and so on, a very narrow definition of IT dominates the discourse. This definition equates IT and IT professionals with computer science and engineering disciplines, which are predominantly male. The result, then, of this narrow definition is to marginalize women and their contributions. This is a pattern that has been observed with the development of other disciplines, such as medicine. Not only does the narrowing of the definition of Information Technology tend to exclude and devalue the contribution of women, but it also results in the marginalization of other disciplines, which would bring more neutral or critical perspectives to bear on technology. Thus, the exclusion of multiple disciplines and women may contribute to poor technology decision making at the societal and organizational level.
Paper: 01a  
Track: Industry/College  

Title: Industry and the University: Partners in Technology Transfer  

Author: David C. Gibbs  
Mathematics and Computing  
University of Wisconsin-Stevens Point  
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dgibbs@uwsp.edu  

Author: Daniel V. Goulet  
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University of Wisconsin-Stevens Point  
Stevens Point, WI 54481, USA  
dgoulet@uwsp.edu  

Abstract  
Linking a university's information systems resources with local businesses provides a win-win scenario for improving the technological life of both. Partners in Technology Transfer, residing at the intersection of several traditional roles of the university, establishes this connection using the ideas of virtual workgroups, workshops/courses, and projects to bring the parties together. The result is an environment for outreach education in technology, professional certification for workers in technology, and information systems consulting to the business community.

Paper: 01b  
Track: Two Year/CC  

Title: Program Issues Facing the Two-Year and Community College  

Author: Kristy Clark  
Department of Information Technology  
Crafton Hills College  
Yucaipa, CA 92399, USA  
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Abstract  
The two-year and community college information technology department faces an environment that is different from the typical four-year school. Our students come to us with widely differing goals and starting skills than do the four-year students who are working towards a bachelor's degree and have relatively close skill levels due to entrance requirements. Furthermore, we often work with lower levels of funding, and various government sponsored economic development and workforce-training programs that limit what we can do. Most current educational literature approaches curriculum and program development from a four-year frame of reference. This session will address some of the issues facing two-year schools, as well as possible approaches that can be taken.

Paper: 02a  
Track: Human Factors  

Title: Interface Design: A Focus on Cognitive Science  

Author: Antonio Drommi  
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Abstract  
This paper studies the issue of cognitive load theory and its implications to teaching interface design principles in a GUI or Interface Design course. The quality of interface design will increase effectiveness of human performance if working memory is emphasized. Cognitive science research in cognitive load raises interesting questions of an individual's memory load and its relevance to computer based models. It describes structures of information processing from long term memory, which stores knowledge and skills to using working memory that enable the individual to perform tasks that are embedded in a computer interface. This review focuses on the concept of cognitive load theory based on research by John Sweller and others in the field that brought this theory to the forefront. The issues of split attention and redundancy effects from information, spatial learning in real life situations versus computer simulation and exploration space control in reference to computer based systems is reviewed for enriching the interface design curriculum. This paper will review the issues of cognitive load theory and its relevance for developing computer based interface systems and models.
Paper: 02b  
Track: Human Factors  
Title: Using Surveillance Software as an HCI Tool  

Author: Blaise W. Liffick  
Department of Computer Science  
Millersville University  
Millersville, PA 17551, USA

Author: Laura K. Yohe  
Department of Computer Science  
Millersville University  
Millersville, PA 17551, USA

Abstract  
Laboratory equipment (both hardware and software) for conducting experiments, usability studies, and field studies in the area of human-computer interaction (HCI) is typically complex, bulky, expensive, and intrusive. Recent strides in the development of surveillance software offer the prospect of a non-invasive, inexpensive, and largely automatic way of capturing data from user activities that could be useful to HCI professionals, researchers, and educators. This project investigates this possibility.

Paper: 03a (Panel)  
Track: Human Factors  
Title: History of Information Systems  

Panelist: John Impagliazzo  
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Hempstead, New York 11549-1030, USA  
cscjzi@Hofstra.edu

Panelist: Elias Awad  
University of Virginia  
Virginia, USA

Panelist: John A. N. Lee  
Virginia Tech  
Virginia, USA

Panelist: Joyce Currie Little  
Towson University

Panelist: George Kasper  
University of Richmond

Panelist: Janice Sipior  
Villanova University

Panelist: Jerry Wagner  
California State Polytechnic at San Bernadino  
San Bernadino, California, USA

Abstract  
Computing history has enjoyed a new resurgence over the past decade. Several organizations such as the Virtual Museum of Computing at Oxford University, the Computer Museum History Center in California, and the History Center and the Annals of the History of Computing of the Institute of Electrical and Electronic Engineers (IEEE) have raised the importance of computing history. Of particular note, the joint task group (TC3 and WG9.7) of the International Federation for Information Processing (IFIP) has developed the work "History in the Computing Curriculum," which was published in the Annals 1999 January.  
There is a need for greater awareness of computing history. In an academic setting, history adds new dimensions to courses, encourages students to reflect on past events, and generates enthusiasm among computing scholars. In an industrial setting, practitioners can benefit from the study of computing history by being aware of past mistakes, misconceptions, and successes. From a cultural standpoint, history broadens one's perspective on the field and allows individuals to explore the inner thinking of people and the results they produced. From a practical standpoint, history enables individuals and enterprises to learn from the events of the past and to improve on experiences. These views are necessary to create a well-informed computing professional. This proposal is to present a 90-minute panel on the historical dynamics that have shaped information systems. The panel at will feature known computing professionals who can bring to light some of the highlights of information systems and some who have been part of that history. Panelists will make presentations on the computing history of their respective areas. Audience participation and interaction are most welcome.

Paper: 04a  
Track: Issues & Trends  
Title: Different Approaches in the Teaching of Information Systems Security  

Author: William Yurcik  
Department of Applied Computer Science  
Illinois State University  
Normal, IL 61790, USA
Abstract
We describe innovative new approaches to teaching information systems security that may be used individually or in combination. Information system security is a difficult course to teach and these approaches provide resources to both novice and experienced educators to enhance their courses. We conclude that more educational development work needs to be done to uniformly improve information systems security education to counterbalance pressures for technical training over fundamental concepts and this paper provides a start by synthesizing the current state-of-the-art.

Paper: 04b
Track: Issues & Trends
Title: The Beginning of a New Discipline: Undergraduate Telecommunications Programs in the USA

Author: William Yurcik
Department of Applied Computer Science
Illinois State University
Normal, IL 61790, USA

Author: David Doss
Department of Applied Computer Science
Illinois State University
Normal, IL 61790, USA

Abstract
A new academic discipline is evolving from within Information Systems Programs. In this paper we present a description and comparison of fledgling undergraduate Telecommunications degree programs in the United States. We conclude that such programs have common characteristics and that this may eventually lead to official accreditation as is currently being studied by ABET.

Paper: 05a
Track: Student/Faculty
Title: A Study of the Proliferation of Computer Crimes

Author: Lauren Smith
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Abstract
The proliferation of computer crimes is a critical management issue for companies and organizations around the globe. This study examines the monetary losses of 13 categories of computer crimes for the period 1997 through 2000 as reported by the Computer Security Institute (CSI) and the Federal Bureau of Investigation (FBI). Specifically, this research examines the trend, magnitude, and direction for each of the different categories of computer crime. In addition, the total cost of computer crime over a four-year period was analyzed. The outcomes of this research should be most helpful to information systems administrators who are responsible for formulating information systems control strategies. Network and security administrators, Webmasters, and law enforcement officers of federal and state agencies such as the Federal Bureau of Investigation (FBI), the Central Intelligence Agency (CIA), and the Telecommunications Commission of the various states will find the analysis contained in this report insightful. Individuals involved with analyzing and securing corporate information resources such as computer consultants, systems analysts, systems developers, software engineers, and security experts will find the results meaningful. Educators and security scholars will find the outcomes reported in this study useful for the development of instructional material as well as the formulation of training strategies.

Paper: 05b
Track: Student/Faculty
Title: A Longitudinal Study Of Gender And Wage Differences Among Computer Technology Professionals

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Abstract
In the second half of the 1990s, the U.S. economy experienced unprecedented growth. With the shortage of qualified workers in the field of computing technology, most of the professionals in this sector were able to obtain substantially higher than average salaries and compensation packages. However, several studies have indicated that despite the unparalleled demand for information technology workers and a rise in the number of women entering the computer field, male professionals in this sector are still receiving higher salaries, bonuses, and raises than their female counterparts. This study examines the effect of gender on the salary earnings of men and women in the information technology sector. Data for this study were obtained from the United States Bureau of Labor Statistics and they cover the period 1991 through 2000. Specifically, this study should be of interest to all categories of information technology professionals, human resource managers, labor attorneys, federal and state policy makers, equity experts, and gender researchers. Educators, placement counselors, and students selecting a program of study or entering the workforce will find this study to be particularly valuable.

Paper: 06a  
Track: Women & Minorities  
Title: Gender and Information Technology: Implications of Definitions  
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Abstract
In this paper, we examine implications of definitions of information technology to women's participation in the industry and in academe. This paper is exploratory only, based on a review of selected government and industry reports and data related to IT education and the profession. However, we argue that there is evidence to suggest that the discourse related to information technology has the effect of excluding women and multi-disciplinary perspectives. On the one hand, we argue that there is considerable evidence that the IT industry and skills it demands are multi-disciplinary and that many people working in the industry, particularly women, come from a variety of disciplines. On the other hand, despite the evidence of the multi-dimensional nature of IT, the impact of convergence, the importance of matching IT solutions to user needs and so on, a very narrow definition of IT dominates the discourse. This definition equates IT and IT professionals with computer science and engineering disciplines, which are predominately male. The result, then, of this narrow definition is to marginalize women and their contributions. This is a pattern that has been observed with the development of other disciplines, such as medicine. Not only does the narrowing of the definition of Information Technology tend to exclude and devalue the contribution of women, but it also results in the marginalization of other disciplines, which would bring more neutral or critical perspectives to bear on technology. Thus, the exclusion of multiple disciplines and women may contribute to poor technology decision making at the societal and organizational level.

Paper: 06b  
Track: Women & Minorities  
Title: Encouraging Undergraduate Women In Computing: A Preliminary Study  
Author: Saralyn Grenga Mathis  
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Abstract
This paper reports the results of a preliminary study that
introduced a first-year general studies seminar designed to encourage interested women to rise above the obstacles to a computing major. The literature informed the design of the course's structure and content. The literature suggests that women need a more realistic perception of computing as an area of study and work. Women need more experience to develop their interest in computing and to enhance their computer skill confidence. Women would benefit from a collaborative learning environment. While the students in this course did not change, significantly, their computer attitudes, they improved their perceptions of their computer skill proficiency in several areas.

**Paper: 06c**  
**Track: Women & Minorities**  
**Title: The Invisible Society of Women in Technology: Young Women's Reluctance to Enter the Technology Field**  
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**Abstract**  
In April of 2000 the American Association of University Women (AAUW) published a startling report about how our young women are not only falling through the cracks of the information superhighway, but are not even interested in the technology field. The worry has been that our girls are computer-phobic. What the Commission on Technology, Gender, and Teacher Education discovered is that girls are computer reticent. The Executive Summary of TECH-SAVVY-Educating Girls in the New Computer Age focused on key themes to investigate and offered suggestions for creating mentorship programs and educational curricula that would address these issues. With the creation of programs that offer different strategies to attract more females to the technology field, the issue of our young women falling through the cracks of the information superhighway will at least be addressed. We need cooperation between academic institutions, middle, high school and university, and our corporate world. Mentorship programs, leadership workshops, and committed leaders need to take action now to stop the trend that’s not only lowering the glass ceiling, but also once again creating an invisible society of women.

**Paper: 07a**  
**Track: Issues & Trends**  
**Title: Computer Literacy**  
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**Abstract**  
Computer literacy continues to be an issue that very much affects Information Systems education. This paper serves as an exploratory study that tries to answer the question as to whether or not business schools, including those with AACSB accreditation, must continue to offer computer literacy courses. Specifically, the paper addresses the question by considering the existence of a comprehensive definition for computer literacy and the relationship between students’ perceptions of their computer skills and demonstrated performance. Finally, the paper sets the stage for future research concerning the curriculum design of an undergraduate introductory course in Information Systems.

**Paper: 07b**  
**Track: Issues & Trends**  
**Title: Critical Success Factors for Studio-based Teaching**  
**Author: Christabel Gonsalvez**  
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Melbourne, Australia

**Author: Martin Atchison**  
School of Information Management and Systems  
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Melbourne, Australia

**Abstract**  
This paper summarizes recent experiences with the use of studio-based teaching in two IT-based courses. We review key aspects of our experience of implementing studios and highlight five areas, which we have found to be crucial to the success of the studio program. For each of these areas we identify the main objectives, which we hoped to achieve and briefly describe the lessons we have learned to date.

**Paper: 07c**  
**Track: Issues & Trends**
Title: What's Wrong with Napster? A Study of Student Attitudes on Downloading Music and Pirating Software

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Abstract
Software piracy is older than the PC and has been the subject of several studies, which have found it to be a widespread phenomenon in general, and among university students in particular. The author replicates an earlier study done by Cohen and Cornwell a decade ago, adding questions about downloading music from the Internet. The survey includes responses from 224 students in entry-level courses at two schools, a nondenominational suburban university and a Catholic urban college with similar student profiles. The study found that students generally felt that copying commercial software and downloading music from the Internet was acceptable and that there was no significant correlation between student attitudes and their school’s religious affiliation or lack thereof. Finally, the reasons for these attitudes are discussed as well as what colleges can do to correct the situation.

Paper: 08a
Track: IS Curriculum

Title: A Web-based Quiz Generation Tool Using Active Server Pages

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Abstract
With the growing popularity of the virtual classroom and student access to computers in the classroom, electronic testing is becoming more common. This paper describes a custom-developed Web-based quiz generation tool that uses Active Server Pages to create multiple-choice exams. The quiz generation tool is proposed as an alternative to assessment products offered with textbook adoptions or as available components of major Web course software. Students take exams using a standard browser. Faculty administer exams and generate reports through a Web browser. The paper describes objectives and procedures for installing and administering the quiz generator.

Paper: 08b
Track: IS Curriculum

Title: Teaching Data Communications Using Cisco Networking Academy's Curriculum

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Abstract
A program that should be considered closely when looking at curriculum for teaching a course in data communications is Cisco's Networking Academy Program. The curriculum is entirely online, web-based, with substantial online support features for both faculty and students. The content of the first semester is basic data communications theory. The content of the subsequent semesters is more Cisco specific. A major strength of the curriculum is the numerous hands-on labs that bring the theory to life through application. It also provides the foundation for students who may wish to continue the Cisco-based training and become a Cisco Certified Network Administrator (CCNA). The curriculum can be effectively used to teach data communications at the university level. A general description of how it is used in an undergraduate, information systems program is provided.

Paper: 08c
Track: IS Curriculum

Title: Web Development in a Server-Centric Environment Using Java Server Pages (JSP)

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Abstract
The development of interactive Web page applications, where data is extracted from a database or a database is updated, can be a tedious process. Several options are available. The preference for this study is Java Server Pages (JSP). The fundamental processes for interactive Web page development are - querying from a database, adding a row to a database table, changing the fields within a row, or deleting a row from a database table. These processes form the foundation for any type of database interaction. The scripting language used for Java Server Pages is Java and the interaction with the database is done with Structured Query Language (SQL) against an Oracle database. In each of these processes a connection must be made to the database. A Java Database Connectivity (JDBC) connection to Open Database Connectivity (ODBC) connection is used since the Jakarta Java Web Server is used which runs on Internet Information Server (IIS) and NT. In the case of the query, where information is extracted from the database and placed into a table on the web page, only one Web page is required. For adding a record, changing a record, or deleting a record two Web pages are required. The first page contains a form with objects, which are posted to the second JSP page. The second JSP page then, by using SQL, inserts a record, modifies a record or deletes a record.

Paper: 09a
Track: Leading Edge
Title: Towards a Learning Organization Model for Knowledge Synthesis: An IS Perspective
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Abstract
This paper investigates the idea of knowledge synthesis appropriate to the context of a learning organization (LO) from an information system (IS) perspective. Specifically, we discuss the process for IS architectures and requirements analysis, applicable in the area of knowledge development and transfer within an organization. We conceive the core of a learning organization as composed of numerous information systems for different functionality, collectively known as the learning organization information system (LOIS). The particular LOIS subsystem supporting specific knowledge resources is constituted by organizational activities characterized through their respective knowledge work. To enable an organization to leverage on the intellectual assets behind those activities, we consider the idea of organizational memory as an important constituent of an organization's knowledge infrastructure. We then trace our conception of IS architectures according to the specific requirements from these learning activities. In particular, we will investigate the case of a university as a learning organization together with its various requirements for knowledge synthesis. The paper concludes by outlining our LOIS organizational components for investigation as an expression of our blueprints for knowledge solutions.

Paper: 10a
Track: Internet Delivery
Title: Online Teaching: A Faculty Perspective
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Abstract
In recent years Internet/Web based online teaching/learning has grown substantially. Institutions of higher learning are eager to offer online classes and are often asking on-ground faculty members to teach online classes even without any proper training. Many faculty members who have never taught online classes are very apprehensive about the possibility of teaching online classes and are sometimes questioning the validity, and the appropriateness of such classes. If a course is well designed and carefully implemented, online instruction can provide an effective educational environment and can be an enjoyable experience for both students and instructor, particularly if the students are motivated and self-disciplined and the instructor maintains continuous interaction with them (Cooper 1999). The author has been teaching online classes for the last three years in various institutions (national, regional, and local) using web-based tools. This paper addresses some of the lessons learned during this period of time and then provides some suggestions to improve online teaching. A web-based online class will be used to discuss the class structure, course delivery, course management, and student assessment.

Paper: 10b
Track: Internet Delivery
Title: Combining Modalities in a Single Distance Education Course
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Abstract
Participants will learn how: to direct instruction around the different learning styles of students; to increase interaction between the instructor and the students; to increase interaction between the students; to maintain the quality of course content in each modality; to navigate a course website in WebCT.

Paper: 11a
Track: e-Commerce

Title: E-Commerce as a Capstone in Information Technology

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Author: Scott Taylor
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Abstract
Universities interested in keeping pace with the rapidly changing field of Information Technology (IT) are often pulled in many directions. Because Information Technology is such a popular field of study and work, educators must manage rising enrollments in an era where the ubiquity of information technology demands an ever-increasing number of specializations. As a result, industry and students expect a wider range of courses and specializations in their upper division coursework. E-commerce, one of the most promising of these maturing Information Technology specializations, affords an excellent opportunity to draw together the fundamentals of the field into a capstone series of courses. E-commerce fulfills a present demand from industry, provides a wonderful project and group-based "studio-style" learning environment, and is quite popular with students. This paper discusses our e-commerce degree specialization as a capstone to undergraduate Information Technology coursework. We also discuss the motivation for, design and execution of, and results from our courses.

Paper: 11b
Track: e-Commerce

Title: An Introductory Course in an Undergraduate E-commerce Technology Degree Program

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Abstract
Despite great demand, undergraduate degrees in electronic commerce technology are just beginning to emerge. In this paper we describe an introductory course in an e-commerce technology bachelor's degree program at DePaul University. "Survey of e-commerce technology" (ECT 250) provides undergraduate e-commerce technology students with an overview of their degree program while it prepares them for the client-side Web application development course that follows. To meet these dual purposes, ECT 250 takes a balanced approach between breadth and depth in its subject matter.

Paper: 11c
Track: e-Commerce

Title: 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.

Paper: 11d
Track: e-Commerce

Title: The Challenges of Team-Teaching Electronic Commerce

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Abstract
Many business schools have developed courses in Electronic Commerce (EC). Because of the nature of the topic, EC courses may include content from various business disciplines. As a result, selected courses may benefit from the use of a collaborative, team-teaching approach. This paper discusses the challenges of developing an EC course that will be team-taught by faculty members from the Information Systems and Marketing areas.

Paper: 12a
Track: IT Education
Title: A Methodology for Incorporating Programming Management Concepts Into a COBOL Course
Author: Earl Chrysler
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Abstract
A student in the first course in COBOL is typically taught the syntax of the language and basic processing logic, e.g., creating and updating files with file maintenance data and transactions and printing accounting and/or management reports. This paper presents a methodology for introducing the student to programming management procedures such as establishing program naming conventions, utilizing source statement library procedures for file definitions, and designing, performing and documenting thorough program tests. These techniques will not only assist students in developing valuable habits and recognizing the value of such programming management techniques, but make them aware that these techniques should be in place in the IS area in which they program or manage programmers. That is, the first COBOL course can be one of those courses that contains concepts of value not only in their entry-level position but in IS positions they hold later in their careers. The specific programming management procedures as they relate to COBOL programs are presented and examples are discussed.

Paper: 12b
Track: IT Education
Title: The Challenge of Plagiarism in Programming Classes
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Abstract
While plagiarism is a challenge in all subjects, it is an especially stubborn problem with programming classes. Programming assignments quickly frustrate students. They are often tempted to take the easy way out by copying a file. This panel discussion will focus on the following topics: Why plagiarism is a problem, How to recognize plagiarism, Can you limit plagiarism, Official school policies on plagiarism. The panelists will discuss these issues based on personal experience grappling with this most difficult issue. Discussion and questions from the audience will be encouraged to solicit ideas on how instructors and schools can manage this problem.

Paper: 12c
Track: IT Education
Title: Using LMC Simulator Assembly Language to Illustrate Major Programming Concepts
Author: William Yurcik
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Author: Larry Brumbaugh
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Abstract
Examples are given that describe how the Little Man Computer (LMC) Model and its associated assembly language code can be used to illustrate a wide variety of core programming topics including a loader program, relocatable and impure code, array processing, function calls, and multitasking. We share this experience as an example "best practice" for incorporating core programming concepts within a computer engineering course.

Paper: 13a
Track: Student/Faculty
Title: A Survey of Assessment Mechanisms for Continuous Process Improvement of IT Curricula

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Abstract
A repeating trend within the Information Technology (IT) community is that every year a new technology approach or technique comes to the forefront. That may be a new programming language or a new method for developing information systems. At any rate, it is becoming increasingly more difficult to stay abreast of these technologies and approaches as they emerge in the workplace. An even more difficult challenge is to find and retain qualified people to teach these new state-of-the-art concepts and technologies. The foundation skills required for IT professionals have and will probably be the same for many years. These include skills such as math, problem solving, logic and interpersonal communications, but within IT there is also another skill set that is more dynamic. These are the demanded technology skills that seem to change every few years. Because of this phenomenon, it is important that the topics being taught by IT instructors be flexible and adaptable to current as well as future needs. Institutions of Higher Learning need to consistently re-evaluate their curriculum and assess whether the material being taught is in the best interest of the students as well as the IT industry. In other words they should resist preparing students to use specific technologies and instead prepare them to use any technology, which may assist the students in solving IT related problems. Institutions must be careful not to be swayed by the market demands of providing "training", rather prepare the students for a "lifetime of learning" and continuous career growth through education. This paper outlines in detail possible approaches and methods for tracking course relevancy information.

Paper: 13b
Track: Student/Faculty
Title: A Comparative Study of the Attributes of Two Popular Internet Recruiting Providers

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Abstract
The Internet has become a very convenient and effective means to access information. Many job seekers are now using the Internet to help them with their job search. Likewise, recruiters are also using the Internet to communicate job openings to prospective candidates around the globe. However, there are hundreds of Internet recruiting providers in the e-recruiting sector. Each Internet recruiting provider has common as well as unique resources and attributes. This study examines the resources and attributes that are provided to job seekers and recruiters of the Internet job databases. In particular, this research investigates how these resources and attributes in the two most popular Internet job databases, Monster.com and HotJobs.com, are meeting the needs of job seekers and recruiters. New graduates looking for jobs, persons interested in advancement opportunities, faculty advisors, and career counselors will find this study useful. Human resource managers, corporate recruiters, software engineers, systems designers, scholars interested in online research, and Internet Service Providers of online services will find the outcomes reported interesting.
Paper: 14a
Track: IS Curriculum

Title: The Model IS Curriculum: Holy Grail or Mirage?

Author: Martin Atchison
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Melbourne, Australia

Abstract
This paper critically analyses the relevance and usefulness of model IS curriculum such as IS’97. It argues that the evolution of IS as a discipline has now rendered model curricula of this type obsolete, and suggests the basis for a new approach to model curriculum development, which is more in keeping with the needs of the discipline.

Paper: 14b
Track: IS Curriculum

Title: The Graduate Capstone Software Project Management Class: A Review and Critique of Selected Designs and Delivery Modalities

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Abstract
Three Masters level courses in Information Technology (IT) Program/Project Management taught on two sister campuses in both classroom and Distance Education (DE) format to two very different student bodies are explained, compared and evaluated for possible application elsewhere. Course foci are: (1) software engineering project management issues, (2) IT program management issues, and (3) Chief Information Officer (CIO) IT resource management issues. Conclusions are: (1) any of these three courses is appropriate for a suitable program, and with tailoring, (2) all three could be in the same program for complementary completion by graduate students. Consideration of the expected placement options of graduates should be paramount in determining which of the three is/are present, required, or an available elective option. Distance education (DE) tailoring is discussed in general and specifically.

Paper: 14c
Track: IS Curriculum

Title: The Value of Research Projects in Undergraduate Information Systems Degrees

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Abstract
The final year research project is often seen as a significant element in the "honors worthiness" of undergraduate degrees and a key indicator of individual student performance. However, from the institution viewpoint, such a project is relatively costly in terms of academic resources and hence, with student numbers increasing, may come into question. The paper discusses the value of the research project to student learning (with the Information Systems domain particularly in view), based on reflection by supervisors and students engaged in IS degrees at Bournemouth University Business School. Some distinctive outcomes are identified and it is noted that the inclusion of final-year research projects is supported by both students and academic staff.

Paper: 15a
Track: Human Factors

Title: Multimodal Slide Shows as Asynchronous Presentation Reviews

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Abstract
This paper describes the design of, and initial results from using, a software application for recording multimodal slide show presentations that was used to create pre-examination reviews of course material in a traditional computer programming class. The results suggest these students found the reviews and software to be useful, and particularly valued well-synchronized speech and pointing when it helped focus attention, but they also found unnecessary pointing to be distracting. More generally, the results
suggest that with appropriately designed software, faculty, often already in the habit of duplicating presented material for students, can recreate a more natural, significant part of the classroom experience, without having to spend a lot of time working with relatively complicated authoring systems.

Paper: 15b
Track: Human Factors
Title: Technological Adoption to Combat Burnout

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Abstract
This study examines issues relating to retention of Information Systems and Technology (IS&T) employees. A survey of over 250 Information Systems and Technology professionals indicates that "loyalty issues" have a higher impact on employee retention than do the traditional constructs of job satisfaction and organizational commitment. Path Analysis was used to investigate the role of job satisfaction, employee commitment, organizational loyalty and job burnout as it impacts employee retention.

Paper: 16a
Track: IS Curriculum
Title: At the Crossroads of Traditional Computing and Applied Computing

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Abstract
For the last two decades the Computer Science Department at Louisiana State University in Shreveport has offered a traditional undergraduate program, producing hundreds of highly qualified graduates who have achieved successful professional careers in the field of computing. During this time, the field of computing has been evolving at a frantic pace. The demand for instruction and training, at several levels in our field, presents an enormous opportunity for universities. Our current programs meet some of this demand, but leave a large part of it unserved. In short, much of the expertise in demand today in the computing field is of a technical and applied nature in such areas as networking and Web-based e-commerce. Our current traditional Computer Science degree, which is focused on the theory and foundations of algorithms and programming, is of a somewhat different nature. We would like to add a new applied computing degree and retain our traditional accredited degree. However, we simply do not have the faculty, or the university resources to obtain needed faculty, to support both programs. In the face of declining state support of public education, we are struggling with our subsequent decision and proposal to our administration to discontinue our current traditional program in favor of a more applied program. We suspect that we are not alone among Computer Science Departments in trying to resolve similar curriculum issues.

Paper: 16b
Track: IS Curriculum
Title: Server-Side Java: A New Direction for Teaching Computer Programming

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Abstract
The current direction in software development clearly favors server-side programming - often using the Java language. Still, many courses today may not yet be updated to keep pace with this trend. This paper explores the design of a new course, Server-Side Java Programming, which we will be offering at our university. The course will be the third in a three-course sequence that we intend to pilot test during spring 2002 with full implementation beginning in that fall. We believe this paper will be of interest to educators, who, much like ourselves, are only now beginning to appreciate this new direction in application software development.

Paper: 16c
Track: IS Curriculum
Title: The Impact of New Programming Languages on University Curriculum

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Abstract
This paper covers the impact that the seemingly continuous introduction of new programming languages has on the computer information systems curriculum in a university. Computer information systems departments are currently implementing changes based on the newest languages, Java and C#. The relationship between universities and the corporations behind these languages, greatly affects how companies interact with these institutions. Before implementing the latest languages, universities must address if they should continue to offer traditional languages such as COBOL. This report provides conclusions and recommendations on the transformation a curriculum must undergo to maintain high levels of enrollment and also demonstrates why it is a challenge for universities to keep an up-to-date language program.

Paper: 17a
Track: Leading Edge
Title: The Effect of Technology Integration on Critical Thinking Skills in a Graduate Introductory Information Systems Course

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Abstract
This investigation was to determine whether, and to what extent, various hardware technologies (specially designed electronic classrooms) and software (Blackboard, Healthlite, Ginormous) support the acquisition of critical thinking skills. One instructor taught three different sections of the same graduate introductory information systems course during a single 14-week semester in this study. The preliminary results obtained from a validated critical thinking tool, the California Critical Thinking Skills Test (CCTST), indicate that technology integration had a positive effect on students' acquisition of these skills. There were noted differences, however, on other higher-order learning skills, problem-solving, research skills, and creative idea generation.

Paper: 17b  
Track: Leading Edge

Title: The Doctor of Professional Studies in Computing: An Innovative Professional Doctoral Program

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Abstract
This innovative degree program addresses the inflexibility of traditional doctoral programs for working professionals. Unlike traditional doctoral programs that are often narrowly focused, this program emphasizes integrated study among the computing disciplines as well as applied research in one or more of them. The Doctor of Professional Studies in Computing (D.P.S.), while advanced in content and rigorous in demands, can be distinguished from the Doctor of Philosophy (Ph.D.) in that its focus is the advancement of the practice of computing through applied research and development. The Doctor of Professional Studies is a professional doctorate that integrates academic and professional cultures. The program enables computing and information technology professionals to earn a doctorate in three years through part-time study while continuing in their professional career. The program uses a team approach to both teaching and learning, and combines monthly face-to-face weekend meetings with asynchronous distance learning via the Internet.
Abstract
What began as a means to offer a course on a new technology has expanded to several courses, a certificate program, an associate's degree program and more options to come. This paper discusses how the expanding Internet Technology field has created a new direction for computer science and computer information systems at CCBC Essex.

Paper: 18a
Track: e-Commerce
Title: The PeopleSoft On Campus Program Implementation Into An Information Systems Curriculum
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Abstract
This paper presents an overview and the ongoing process of the implementation of PeopleSoft and ERP courses into the Information Systems curriculum at Dakota State University. The paper discusses how Dakota State was able to partner with Mutual of Omaha and PeopleSoft to implement PeopleSoft into the Information Systems curriculum with a first year addition of two courses. The objectives and topical outlines for two courses are presented, as is a look into the future implementation plans.

Paper: 18b
Track: e-Commerce
Title: An Advanced Web Java Class's Hardware and Software Needs
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Abstract
After offering a new Web Java course during the Spring 2001 semester, I now realize that this actually needed more thought. This paper will discuss both the hardware and software needs for such a course. It is based on actual experiences and some additional outside research. In addition, I will give some details as to what is available in the marketplace to support such a course.

Paper: 19a
Track: Student/Faculty
Title: An Empirical Study of Computer Anxiety among College Students: Differences between Academic Disciplines

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Abstract
The advent of the Internet has had a profound impact on the traditional two and four year programs in Computer Information Systems (CIS). Purdue University Calumet has recognized this impact and implemented an innovative Internet/Web program and related courses. The program was developed with input from the University's local business/industry advisory committee members. This paper presents new two and four year Internet/Web programs, which give students a strong foundation in basic concepts and a high degree of employability.
Abstract
The ability to interact with computer interfaces requires not only a basic understanding of computer concepts but also a basic familiarity with the most current hardware and software. Taking these factors into consideration, it’s no wonder that a significant number of individuals find themselves anxious at the thought of having to operate a computer and effectively use its software. This computer-related nervousness has become so widespread and, in some cases, acute that it has developed into an impairment commonly known as computer anxiety. With the Internet and e-mail being the most influential factor in booming PC sales, the continued growth of the World Wide Web will only serve to bolster the demand for computers in almost every home in America. Not since television has a medium promised so much change in the way we learn, work, and play. While it may come as no surprise that some of the elder members of our society have failed to receive proper education in computing technologies, the substantial number of individuals from the current generation who fail to stay in tune with the swift pace of PC development certainly does call for alarm and the need to understand the factors that lead to the development of anxiety toward technology, specifically computing.

Paper: 19b
Track: Student/Faculty
Title: Impact and Effectiveness of End-User Developed Information Systems in a Process Control Environment: A Case Study

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Author: Herbert E. Longenecker
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Abstract
Can end-users in a process-oriented organization develop effective information systems? In anticipation of a positive response, management at a major pulp and paper-manufacturing company recently invested in an end-user-centered system at one of its plants. The system consists of a data warehouse and an end-user development environment to access data for process-oriented decision-making. Over time, user-developed systems were in use throughout the plant. In this paper we discuss a synergistic management-developed approach in assessing the effectiveness of the use of the end-user development environment and the implications for use in any organization. Consistently, these end-user developed systems enjoyed a high degree of perceived satisfaction and produced an excellent return on investment.

Paper: 19c
Track: Student/Faculty
Title: Raising the Intellectual Climate in MIS Courses

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Abstract
Many universities are attempting to address problems related to academic standards and the appropriate level of rigor for courses. Related to a university-wide effort to raise the intellectual climate in the classroom, a study was performed to identify the most significant factors for doing so in management information systems (MIS) courses. MIS and other computer-related areas, and technical areas in general, have unique challenges relating to currency of content and relevancy. And these courses have historically been evaluated by students as being "not well taught" or "too boring." This study attempts to identify specific problems and suggests solutions to improve the intellectual climate in MIS courses.
Paper: 20a  
Track: Issues & Trends  
Title: Effect of Reward Expectation on Computer Rapid Application Development Tool Performance in Systems Analysis and Design  

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Abstract  
An earlier study investigated the use of a computer tool in Systems Analysis versus manual analysis techniques. Expected improvement in user performance through the use of the tool versus manual techniques was not realized. Research in multi-tasking environments seems to indicate that the reward or expected reward for the tool user may have more influence on the project outcome than the properties of the development tool. This paper analyzes the results of an experiment that measured the change in skill level in junior and senior level college students in the Systems Analysis and Design classes during the spring 2001 semester. Each student was tested on the use of the tool, provided with instruction on advanced features and given practice exercises to perform.

Paper: 20c  
Track: Issues & Trends  
Title: Wireless LANs in Higher Education  

Author: Harold Palmer  
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Abstract  
This paper gives an overview of the development of wireless technology and identifies a number of higher education institutions that have used, or are in the process of developing wireless LANs. Some suggestions are offered as to how to address the problems and challenges that exist for the implementation of wireless LANs on campus. Most institutions of higher education are not considered leading-edge telecommunication organizations due to their lack of funding, especially when compared to their commercial counterparts. True, there are some major universities that are research oriented and are blessed with adequate funding for research from grants and substantial endowments, but most campuses are just now becoming completely wired and have started to fully use applications like e-mail, distance learning, and Web-based classroom management. The idea of taking these newly established wired networks and replacing them with wireless capability makes no sense. However, the idea of extending wireless capability to classrooms and labs that have not been previously connected has a great deal of merit.

Paper: 21a (Panel)  
Track: Issues & Trends  
Title: Individual Certification: A Complement to Program Accreditation  

Panelist: Lynn J. McKell  
Marriott School  
Brigham Young University  
Provo, UT 84604, USA  

Panelist: John Schoonover  
Nivo International  
American Fork, UT 84003, USA  

Panelist: Kewal Dhariwal  
Northern Alberta Institute of Technology  
Edmonton, Alberta, Canada  

Panelist: Herbert E. Longenecker  
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Abstract  
Recent years have seen an active dialog about the merits of accreditation of IS/IT academic programs. Curriculum committees have produced guidelines for courses and programs; and other committees have been formed to create an accrediting body and to set standards for a recognized and accepted standard of IS/IT program accreditation. This panel will explore the case for Individual Certification as a complement to program accreditation. Program Accreditation focuses on measuring and validating the institution, the faculty and the curriculum which constitute the academic topical content and the pedagogical delivery process; whereas, certification focuses on measuring the output: namely, the competency and skills of the students and graduates. There is a roll for both approaches in satisfying the needs of the IS/IT industry.

Paper: 22b  
Track: IS Curriculum  
Title: Teaching Programming with Lego RCX Robots
Author: Ka-Wing Wong  
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Abstract
A common practice in most programming curricular is for students to learn computer programming in an Integrated Development Environment (IDE). Even though IDEs provide good program development support, very often, what students learn is limited to what an IDE provides. The limitation can be overcome by using additional learning activities in class. LEGO RCX robots can be used to provide additional learning activities that IDEs do not provide. We used the LEGO RCX robots in our programming classes at three different programming skill levels (introductory, intermediate, and advanced) and found that they are very useful in enhancing our curriculum.

Paper: 23a  
Track: Internet Delivery
Title: Integrating a Web-Based Intelligent System into an Accounting Information System Course to Teach the Technique of Internal Control Evaluation

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Abstract
The issue of how to increase teaching effectiveness is a major concern to most educators. Understanding how to encourage a student to learn instead of memorize the presented material is one of the greatest problems faced in teaching. The nature of the topic taught contributes to this difficulty where a need for deep understanding may conflict with the need to understand the breadth of the topic. Evaluation of internal controls is part of an accounting course. For each accounting cycle in an organization, over 100 identifiable weaknesses may occur. Students may feel overwhelmed by this and try to memorize rather than understand the weaknesses and this affects their ability to effectively grasp the topic. This is a major issue in teaching internal control evaluation. This research identifies issues in using a Web-based intelligent system to teach students how to detect weaknesses in an internal control system. Such a system might prove to be highly beneficial to both students and educators.

Paper: 23b  
Track: Internet Delivery
Title: The Use of Internet-based Tools to Support the Delivery of an eBusiness Course

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Author: Wendy Cukier  
School of Information Technology Management  
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Author: Franklyn Prescod  
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Abstract
In recent years considerable attention has been focused on the growing importance of the global Internet to business. Many business schools in Canada, the US and Europe have begun to offer curriculum in various aspects of eBusiness. However, experienced faculty and resources available to design and deliver globally "eBusiness" courses are scarce and many institutions are exploring new modes of delivering eBusiness and other high demand business and IT curriculum. This paper reviews the results of a pilot project using Internet-based materials to deliver an undergraduate elective course in eBusiness.

Paper: 23c  
Track: Internet Delivery
Title: A Three-Track Approach to Teaching Web Development

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Author: Kevin Miller  
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Purdue University Calumet  
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Abstract
This paper describes a series of Web development courses that address what our research identified as three groups of
students, each with a need for a different set of Web development skills. The identifying characteristics of each set of needs are described. The course or courses that provide skills that address the corresponding set of needs are presented. This three-track approach to Web development training offers choices to students with needs for various levels of Web development skills.

**Paper: 23d**  
**Track: Internet Delivery**  
**Title: Issues in Internet Based Education**  
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**Abstract**  
With technology advancements and the use of the Internet, many opportunities exist to enhance the way education is delivered. This paper addresses the issues that an institution will face considering the Internet as an educational delivery method. Our discussion includes the pedagogical issues, student resource concerns, technical hurdles, and political obstacles. We also make suggestions overcoming some of these issues in order to implement and succeed in Internet based education.

**Paper: 24a (Panel)**  
**Track: IT Education**  
**Title: Innovative Ways to Teach Software Skills**  
**Panelist: Laura McManamon**  
MIS Department  
University of Dayton  
Dayton, OH 45424, USA

**Panelist: Barbara Miller**  
Kelley School of Business  
Indiana University  
Columbus, IN 47448, USA

**Panelist: Roger Carlsen**  
Department of Educational Leadership  
Wright State University  
Fairborn, OH 45324, USA

**Abstract**  
Panelists will each discuss a variety of creative ways to teach software skills. The audience will then be asked to share their experiences and comments about software skills learning. Topics include: delivering skills courses to groups in a large state university setting, student teaching involvement with peer tutors, teaching assistants, and MBA Associate Instructors. The Associate Instructor training and the lab files that are tools for learning will also be discussed. Teaching techniques based on personalized project grouping and support teams based on individualized self-determined selection procedures will be explained. Online session strategies, including front-loaded, face-to-face sessions, and post learning curve virtual sessions will be examined. Delivering skills courses to students in a private university setting is the focus of this discussion. Successes and failures for the following learning activities will be highlighted: using students as teachers for Visual Basic 6 and Microsoft Office, using independent study with computer-based training or text only and using computer testing for Microsoft Office software.

**Paper: 24b**  
**Track: IT Education**  
**Title: Teaching Goal-Directed Design as a User Design Tool**  
**Author: Gary B. Randolph**  
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**Abstract**  
Few generally accepted techniques exist for approaching the unstructured problem of user interface design. This lack of tools complicates the teaching of this skill to beginning students. This paper briefly describes one such technique, Goal-Directed Design, (Cooper, 1999) and recounts the experiences and insights gained from using this technique in teaching user design concepts and techniques in an introductory systems analysis and design course.

**Paper: 24c**  
**Track: IT Education**  
**Title: A Hands-On Lab Component to Supplement the First IS Computer Networking Course**
Abstract
A few years ago it was rare to find a required Computer Networking course in the Information Systems (IS) curriculum. Some departments had an elective course in the area at best or the topic was covered in a general MIS class and the details and implementation left to Computer Science and Computer Engineering courses. Today it seems that the opposite is true. It is rare to find an IS curriculum without a required Computer Networking course. Typically it is a sophomore or junior level course, has general IS introductory classes as prerequisites and it is a required course. The typical approach in this course is to review recent and current Networking technologies and fundamentals of Data Communications at some length and depth and emphasize the use of Networks as one of the major components of Analyzing, Designing and Developing Information Systems applications. The students get a very good understanding of how to include Network design in the overall Business computer application system development process.

Paper: 24d
Track: IT Education
Title: The Campus as Learning Laboratory for Systems Analysis and Design
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Abstract
This essay makes the case for using the campus as a teaching/learning laboratory for the Systems Analysis & Design course. The nature of the field of Computer Information Systems is discussed, and the role of the Systems Analysis and Design course is introduced. Resources to support the teaching of the course are noted and the limitations of existing resources are discussed. It is suggested that moving beyond the typical resources to provide for an effective student learning experience should be done in a manner consistent with what we know about good practice in undergraduate education vis-à-vis student learning. The Seven Principles for Good Practice in Undergraduate Education are introduced as guidelines for developing an effective learning environment. Techniques for using the campus as a teaching laboratory are discussed, and it is demonstrated that the use of such a method is consistent with research on effective student learning. In conclusion, this paper suggests that by using such an approach students are provided the opportunity to do analysis and design and effective student learning occurs.

Paper: 25a
Track: Student/ Faculty
Title: A Mapping and Ranking of Selected Database Application to DBMS Models
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Author: Ghasem S. Alijani
Graduate Studies in Computer Information Systems
Southern University at New Orleans
New Orleans, LA 70126, USA
Author: Kai S. Koong
Graduate Studies in Computer Information Systems
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Abstract
Database Management Systems (DBMS) have changed significantly during the last four decades. There are currently six different database models: file processing systems, hierarchical, network, relational, object-oriented, and the object-relational DBMS. Even though all these models share common features, each model can be identified for its unique characteristics. Furthermore, implementation of the common and the unique features can produce a wide variety of database applications. Such a variety calls for a systematic approach for evaluating and selecting a database application. Based upon the six database models, a total of 33 features were identified from the literature. The findings indicate that the database features and the attributes of 28 popular database applications could be mapped into a schematic model and a three-tier logical structure accordingly. One the strengths of this study is inherent in methodology applied, because the technique uses a robust approach for identifying, mapping, and ranking decisions that is replicable. Database vendors, buyers, project managers, systems analysts, software developers, data administrators, and research scholars specializing in data modeling and applications should find this study useful.
Paper: 25b
Track: Student/ Faculty
Title: Developing Embedded Visual Basic 3.0 Applications for Win CE 3.0 and the Pocket PC

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Abstract
With the explosive proliferation of mobile computers, an education in modern computer programming languages and techniques should include exposure to application development for them. This paper's authors chose to do an independent study on eMbedded Visual Basic, a programming language being used with the WinCE operating system. One element of the study was participation in a Pocket PC programming contest sponsored by Microsoft, which concluded April 8, 2001. This paper discusses our experiences researching mobile computing platforms, learning eMbedded Visual Basic, and developing and submitting an application for the contest.

Paper: 25c
Track: Student/ Faculty
Title: A Comparison of Using CBT and Teaching Assistants to Teach Microsoft Office 2000

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Author: Ivan Hoong
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Abstract
An experiment was conducted during the spring 2001 semester to determine the effectiveness of using a computer-based training (CBT) package to cover the basic concepts of Microsoft Office 2000. Two sections were conducted using CBT and 14 sections were conducted using a traditional lecture/lab format. The students in both groups were given the same tests using an on-line assessment package. No significant differences were found between the two delivery methods.

Paper: 26a (Panel)
Track: Student/ Faculty
Title: Encouraging Girls to Consider Computing Careers

Panelist: Gayla Jo Slauson
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Grand Junction, CO 81501, USA

Panelist: Denise R. McGinnis
Mesa State College
Grand Junction, CO 81501, USA

Panelist: Shirley Fedorovich
Embry-Riddle Aeronautical Univ
Florida, USA

Panelist: Jeanine Meyer
Pace Univ & Purchase College, SUNY

Panelist: Connie Wells
Roosevelt University

Abstract
This panel discussion will concentrate on ways to encourage girls to consider careers in computing and information technology (IT). The following topics will be discussed: How can we encourage girls to pursue IT careers? How important is it that women in IT serve as role models for girls? As faculty, what can we do to encourage young women to pursue these careers? Where do girls learn about the stereotypes and barriers that prevent them from aiming for non-traditional careers? How can we influence girls and young women to give them the confidence they need to follow successful role models and to break through the "glass ceilings"? How do we influence boys and young men, so they don't continue to learn or teach the stereotypes? Panelists will respond to these questions from a variety of backgrounds and positions. The topic remains an important one. Only twenty-five percent of the Canadian IT workers are female. Other indications appear to show this percentage, and the percentages of female IT workers in the United States and other parts of the world are shrinking. With high salaries, the IT field should attract females. Various studies
over the years have emphasized that women are making up a smaller percentage of computer science graduates. "Women are mysteriously absenting themselves from computer science courses in high school and college."

**Paper: 27a**  
**Track: IS Curriculum**  
**Title: Teaching A Database Systems Design**  
**Course: Is It Theory Or Practice?**

**Author: Amjad A. Abdullat**  
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**Abstract**
Faculty who teach courses in database systems design are constantly challenged to identify and find the proper mix of theory and practice to be presented in such a course. There is a widespread recognition among information technology educators and industry practitioners that a course in database systems design is considered to be an essential component to any academic curricula in both Information Systems and Computer Science. This paper describes the challenges of identifying and selecting the proper mix of theory and application materials of a database systems design course.

**Paper: 27b**  
**Track: IS Curriculum**  
**Title: It's Broke - Now What Do I Do?**

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**Author: Susan E. Yager**  
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**Abstract**
This paper will focus on the technical computer support specialist in relationship to tasks associated with the faculty member teaching that content. The technical specialist is contrasted with the help desk person and statistics are given for the support field. Elementary computer troubleshooting concepts at a basic level will be described. References to software and manuals to help in the repair of system devices will be noted for faculty examination. A set of steps for problem solving and troubleshooting will be discussed and interspersed with experiences in covering broken devices.

**Paper: 27c**  
**Track: IS Curriculum**  
**Title: Views - The 'other' database object**

**Author: Erick D. Slazinski**  
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**Abstract**
Database views are a powerful and versatile construct that, if used creatively, can solve several commonly occurring business problems. These problems include integration issues and backwards compatibility, location transparency, managing overly complex Structured Query Language (SQL) queries and overcoming some limitations of the SQL language. This paper documents some tips and techniques that the author has found in his many years (12+) in industry. Database (DB) views are basic objects defined in the ANSI SQL-92 standard. As an integral part of the SQL language, which builds upon the select statement, views are easy to teach and generally well understood by students. With the ease of development of views coupled with the expressive power that is contained in the select statement, it is the author's recommendation that views should be included in any intermediate to advanced database course.

**Paper: 28a**  
**Track: IS Curriculum**  
**Title: The Crypto-Word Game For Learning Number Systems**

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**Abstract**
This paper introduces a game which provides a fun way to practice number system manipulations. The game gives practice in using number systems other than base 10, which helps motivate learning the conversion algorithms that appear in many introductory texts and which are given below for reference. The competitive format of a "game" makes the practice more interesting so that the students will
spend more time on task and more time thinking about and using other number systems. The game also gives an example of an encryption / decryption algorithm pair.

**Paper: 28b**  
**Track:** Internet Delivery  
**Title:** Student Preparation: A Key to Learning and Teaching  
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Organizational Leadership & Supervision  
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**Abstract**  
Eighteen students were equally divided: Group A had textbooks while Group B did not have textbooks. "A" learned the course material via the text and lectures. "B" accessed instructor notes, lecture slides, and future probable test items via the instructors' Intranet program called "Blackboard." Prior to each examination, the instructor presented key words that had been thoroughly discussed. The students had to explain each item in one sentence demonstrating understanding. The midterm examination had sixty-two items valued at three points apiece, totaling 186. The average score for Group A was 132 while Group B averaged 164. On the seventy-item, 210-point final examination, Group A averaged 156 while Group B averaged 188 points. Hence, using different approaches for student learning does make a difference. Providing student access via an Intranet to the instructor's material and allowing pre-lecture knowledge of probable examination items significantly improves examination results and student learning.

**Paper: 28c**  
**Track:** Internet Delivery  
**Title:** Effect of learning styles on the navigational needs of Computer-Based Training module learners  
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**Abstract**  
Web-based training with all its potential benefits is growing at a tremendous rate; however, nearly all-current systems provide a "one-size-fits-all" approach to the delivery of the material. Two approaches that try to improve end-user training have emerged in the area of software training research: adaptation of the training material content and adaptation of the training material presentation mode. Here, two modes have been discussed in the literature: learner control vs. system control. So far, no clear answer to the question which presentation mode should be used - and for whom - has been found. However, if the amount of learning is indeed dependent on the training material presentation mode and the learning style of the users, then more effective systems that adapt to this relationship could be developed. This paper analyzes the results of an experiment completed by 58 subjects that first measured their learning style preferences (using the Kolb Learning Style Inventory Tool) and compared it to their actual usage of linked web-pages. The study found that learners classified as "Explorers" tended to "jump" more create their own path of learning, while subjects classified as "Observers" tended to follow the suggested path by clicking on the "Next" button. In addition, test scores for explorers who did jump were higher then explorers who did not jump, while conversely observers who did not jump scored higher then observers who did jump.

**Paper: 29a**  
**Track:** IT Education  
**Title:** Crafting a Hybrid Discipline: Design and Development of a Master of Science Program In Computer Information Technology  
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**Abstract**  
This paper guides the reader through the nascent stages of design, development, and implementation of an inter-school, multi-disciplinary Master of Science program in Computer Information Technology. In an effort to provide the academy with an informative resource for those currently planning or contemplating the offering of similar IT programs, it discusses the origins of the program, describes its conceptual framework and curriculum design, and presents challenges encountered in the process of implementation.
Paper: 29b
Track: IT Education

Title: Launching an Innovative Hybrid Business and Information Technology Program at Ryerson University - A Case Study

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Abstract
The School of Information Technology Management at Ryerson University in Toronto, Canada, founded in 1999, has created an innovative program that combines Information and Communications Technology (ICT) with a solid business education. In this case study, the authors describe the planning and execution of the launch of the School and its first programs in a very short-time scale. Issues in curricular planning and development as well as operational challenges are discussed and lessons learned are summarized.

Paper: 29c
Track: IT Education

Title: An Information Technology Program for a Small Liberal Arts College: An Interdisciplinary Approach

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Abstract
Juniata College, a small liberal arts college, has recently developed an Information Technology program in an interdisciplinary manner. The college encourages students to customize a unique program of study across multiple disciplines called a “Program of Emphasis”. The design of the IT program retains this concept by combining existing courses from cooperating programs. This collaborative approach relies on the support and coordination of three long-standing programs in computer science, business administration and communication, along with ancillary disciplines such as environmental science, biology and criminal justice. The cornerstone component of the program is a three-semester team-based local industry project experience. The result is a program that is attractive to a wide range of student interests.

Paper: 30a
Track: Student/Faculty

Title: Generation of Website Templates Based on UML Modeling

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Abstract
Typically, the Unified Modeling Language (UML) is used for visualizing, specifying, constructing, and documenting
the artifacts of software-intensive systems. However, there have been many projects showing the usefulness of UML modeling of systems in other areas. In this paper we discuss how to model English composition in UML and how to convert its models into well-structured educational websites. First, we examine the kinds of UML models that can be built for the presentation subject of English composition. Once the UML models are built, they can be converted into website templates. We demonstrate this conversion with the example of English composition.

**Paper: 30b**  
**Track: Student/Faculty**  
**Title: Data Communications Concepts-Layer by Layer**

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**Abstract**  
This paper presents an approach to hands-on data communications exercises using the layers of the Open Systems Interconnect model as the organizing mechanism. A greater understanding of the physical, data-link, and network layers of the Open Systems Interconnect model is possible for students as a result of this approach.

**Paper: 30c**  
**Track: Student/Faculty**  
**Title: Client/Server Web Application Development**

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**Abstract**  
Client Side Web Application Development refers to coding in HTML and/or scripting languages. When a user opens a web page, which is stored in a server, the file is transferred from the server computer to the client computer and viewed in the client computer. If it consists of scripts, execution of these programs is done in the client computer. In Server Side Web Application Development, when a program stored in a server is accessed (usually written in some scripting language and/or Java along with HTML code), the program is executed in the server computer; HTML code is generated, which is then transferred to the client computer to be viewed. This tutorial starts with a review of HTML and how scripting languages as JavaScript/VBScript can be used together with HTML code to add interactivity to web pages as Client Side Programming. Server Side Programming is then presented using Microsoft's dynamic document technology, ASP (Active Server Pages). The paper ends with an e-commerce application; Internet shopping center. The objective of the paper is to present client/server web application development not any scripting language, the reader is assumed to have some familiarity with HTML and a modern programming language.

**Paper: 31a**  
**Track: Work-in-progress**  
**Title: Where Are the Models for Students in IS Programs to Learn About the Future?**

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**Abstract**  
Research is being conduct on an appropriate model for students to learn about future planning in a Management of Information Systems or a Telecommunications Management program. This paper describes and contrasts various models, such as scenario planning, creating a competitive advantage, and the link between business strategy and technology strategy. In addition to the search for a relevant
model or combination of models, the authors analyzed current curriculums for the appropriate positioning of such a course in a degree program—an introductory course, an IT strategic planning course, or as the underpinning for an integrated future-oriented capstone course.

Paper: 31b
Track: Work-in-progress

Title: Redesigning an Undergraduate ISM Curriculum to Better Meet the Professional Needs of Working Adults

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Abstract
At ISECON 2000 and Educause 1999, Fisher and Bollinger discussed the Information Systems Management (ISM) Curriculum currently being offered at the College of Professional Studies at the University of San Francisco. As a result of feedback gathered at these two conferences plus that garnered through a continuing dialogue with current students, alumni, and the adjunct faculty who teach 90 percent of the courses in the undergraduate program, it was decided to make several significant changes in the overall curriculum. The major purpose of these changes is to: 1. Strengthen the information technology knowledge base of students throughout the program, especially in the areas of personal productivity technology. 2. Bring the overall program objectives into closer compliance with AITP/ACM/AIS Curriculum Model Guidelines. In addition, precepts, such as incorporating opportunities for community service and support into the program and the exploration of social and ethical issues involved in modern information systems management, needs to be maintained. When all of these factors were combined, a decision was made to both replace 25 percent of the required courses in the program and significantly re-sequence the order in which courses were taught during the final curriculum year. This presentation presents a detailed discussion of the course changes to be made in the curriculum for students entering the program in September of 2001 and subsequent terms and how they will benefit working adults, both personally and professionally.

Paper: 32a
Track: IT Education

Title: Reinforcing Networking Concepts-A Modular Approach

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Abstract
The cost of providing hands-on environments for reinforcing specialized computer concepts forces many educational institutions to prioritize the courses and topics that get computer lab support and specialized topics tend to be at the bottom of the list. A modular solution to this problem provides a dynamic environment that can be used for reinforcing networking concepts and evolves over time, as funding is made available.

Paper: 32b
Track: IT Education

Title: Implementing a Wiring Closet Simulator For a Laboratory Based Local Area Network Course

Author: Dennis O. Owen
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Abstract
Local area networking is currently found throughout business and industry. Many careers require some understanding of the techniques and technology used in computer networking. This is no longer the private realm of the computer professional. If universities are to properly prepare students for these positions, they must provide education in this area to a wide range of graduates. This instruction can and should involve more than students’ listening and writing skills. Students learn quicker and retain more if they actively participate. Laboratory courses are one means of actively engaging students in the topic. In order to present a local area networking laboratory environment that parallels that found in industry, it is necessary to develop apparatus that will present the technology as it appears in industry. Such an apparatus has been created in the Computer Information Systems program at Purdue University’s Anderson campus. The design process, layout considerations, and construction of this apparatus will be
explored. The rationale for use of hands-on teaching methodologies is presented to establish the validity of the device as an instructional tool. A discussion of the integration of the simulator into an existing laboratory course and examples of its use are also presented.

**Paper: 32c**  
**Track: IT Education**  
**Title: Following a Technology Training Workshop: Effects of a Web-based Support System**  
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**Abstract**  
What are the effects on classroom technology integration when teachers who have received formal technology training are further supported with a web-based after-training support system? This ethnographic study explores this question by taking a look some of the teachers who participated in an institution's teaching and technology workshop. Data were collected through interviews and informal conversations with the teachers. The teachers were interviewed twice: once before they were introduced to the support system and again, toward the end of the study, after they had the opportunity to use the support system, in order to determine what effects, if any, the after-training support system had on the teachers' levels of classroom technology integration. Additional data collection methods consisted of the following: observations of the teachers as they taught in their classrooms and document analysis of teaching materials and students' work. Findings suggest that teachers who use an after-training support system increase their instances of high-level classroom technology integration. Further supported by this investigation is that assistance from school administration is critical to the success of classroom technology integration.

**Paper: 33a**  
**Track: IS Curriculum**  
**Title: An Information System Course Model That Emphasizes Non-Technical Skills**  
**Author: Denise R. McGinnis**  
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**Abstract**  
"Change is like the weather: everyone talks about it but there is nothing one can do about it." The only thing constant about Information Technology (IT) is change. Many of the technical skills that IT students learn become obsolete by graduation. This paper will discuss those skills that actually remain constant, and will present two ways to encourage students to improve these skills in an information systems course. Information systems courses are often taught as lecture courses, with some hands-on exercises. Such courses generally precede a Systems Analysis and Design course, and may be taught at the sophomore level (Fundamentals of Information Systems), or at a junior level (Information Systems Theory and Practice or Management Information Systems). Specifically, in this paper we will stress the use of debates and open-ended hands-on projects as a means of emphasizing these unchanging skills.

**Paper: 33b**  
**Track: IS Curriculum**  
**Title: The Constant Evolution of an Introductory Computer Course: A Course in Flux**  
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**Abstract**  
The content of material in the basic computer concepts course in many schools has changed over the years for many reasons. One of the predominant things that has been occurring is the shifting of topics from the university level down to high school and even grade school level. What then should be covered on the university level? What is appropriate? We have found that many of our students have some spreadsheet and data base skills already, but they are lacking some basic knowledge concerning the concept of what is a business process. We have changed the "focus" of the course, and have introduced lectures and software in order to cover this important concept. This article will explain what was done, the models used, and the software used to exemplify what students should know about "the business process."

**Paper: 33c**  
**Track: IS Curriculum**
Title: True Computer Literacy and Core Concepts for Non-majors

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Abstract
Teaching only the tools of computing (i.e. word processing, spreadsheets; databases and Internet topics) and calling it computer literacy is unacceptable. For our students to truly be prepared for the future world of computers they need more than just the tools of today, many of which may not even exist tomorrow. They should understand what data and information consist of and how computers work. It is also important that the student be familiar with the general applications of computers: visual communication, audio communication, network communications, information systems, simulation, artificial intelligence & evolutionary computation and education & training. In other words, students in today’s world must be fluent in information systems and computer science. One way this fluency can be acquired is by introducing concepts in an order that allows concepts introduced earlier to be used as a basis for later conceptual ideas. This paper shows one possible path through a comprehensive set of concepts used in information systems and computer science.

Paper: 34a
Track: IT Education

Title: An Innovative Approach for Developing Multimedia Learning Modules

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Abstract
This paper presents an innovative approach for developing multimedia-learning modules. Using a constructivist approach, this innovative multimedia design model will demonstrate that purposeful content and supplemental instructional materials or Multimedia Learning Modules can be developed within the context of formative evaluation. In addition, I have included a case study that demonstrates that having students develop learning modules builds on previous knowledge and adds to the learning experience. The goal of multimedia in education is to immerse students in a multi-sensory environment. Multimedia has the ability to capture the attention of the learner using visual and auditory stimulus, through sound, text, video, colors, animation and graphics. The goal of developing Multimedia Learning Modules is to engage the designer (and student) in the learning process through entertaining and participative learning. This enables and promotes the transfer and infusion of knowledge while promoting considerable opportunities toward the efficiency and effectiveness of learning.

Paper: 34b
Track: IT Education

Title: Growing Testers: Incorporating Testing Concepts Throughout the CS Curriculum

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Abstract
Traditionally, software testing is introduced to students in Introduction to Programming, and then not treated in depth until an upper level course in Software Engineering. Software testing is often taught as a standalone subject instead of intertwined with all areas of software development. This treatment indicates to students that testing occupies a minor role in the field. This paper proposes an alternative approach of integrating testing methods progressively through the CS curriculum. As students master new CS materials, they will be exposed to the appropriate methods for testing their programs. In addition, this paper makes the claim that appropriate testing should be a distinct component in the grading of assignments.

Paper: 34c
Track: IT Education

Title: An Information Technology Capstone Course: An Assessment Implementation

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Abstract
Many curricula require and implement a capstone experience for graduating students. This course is designed to allow for a final assessment of curriculum learning objectives. Students complete a project as a tangible demonstration of their mastery of the objectives. Our Information Technology program has outlined several additional objectives that are assessed through an Information Technology capstone course.

Paper: 35a
Track: IS Curriculum
Title: An Examination of the Relationship between Active Participation in Test Development (APTD), Student Performance and Student Attitudes

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Abstract
Many advanced courses in computing curricula seek to combine theory and skills through complex projects. Courses of this type may include applications development, database programming, systems analysis and design, senior project, and applied software engineering. These courses present challenges to both student and instructor for maintaining a global view the project while working at the detail level and for developing a higher level of understanding of the project. Previously, one of the authors used an approach called Active Participation in Test Development (APTD) as an attempt to address these challenges. The basic belief underlying APTD is that by providing students with the opportunity to participate in the examination generation process, they are given the chance to reflect on the meaning of in academic terms, to discover a standard by which their understanding might be measured, and to apply that standard in self-assessment. The objective of this paper is to report the results of a study of the influence of the approach on student attitudes and performance in the course.

Paper: 35b
Track: IS Curriculum
Title: A Syllabus in Data Warehousing

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Abstract
Many texts dealing with database management or data mining include one or two short chapters on data warehousing. I believe that the subject is worthy of more thorough attention and have devised a syllabus for a course in data warehousing intended for students who already have a basic knowledge of traditional database functionality. The course includes a laboratory component that allows students to encounter first hand, and solve, some of the problems associated with building and using the warehouse.

Paper: 35c
Track: IS Curriculum
Title: Teaching Effective Methodologies to Design a Data Warehouse

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Abstract
An important component for the students in the advanced database class at the University of North Florida involves the development of a data warehouse that is efficiently designed and effectively optimized for data retrieval and statistical analysis for Decision Support Systems (DSS) and Executive Information Systems (EIS). This paper describes the methods utilized to help students understand the considerations in the design process of a data warehouse. The methodologies involve the commonly used star schema and the snowflake schema as well as other alternative techniques to teach students about the essential factors to consider when designing a data warehouse.

Paper: 36a
Track: Work-in-progress
Title: Developing an Information Security Curriculum for Educational Institutions: An Analysis of Goals, Objectives, and Competencies for the 21st Century

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Title: Intrusion Detection Systems

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Abstract
In recent years, a dramatic shift has occurred in the way computers are used. The advances in computer security have not kept pace with the phenomenal advances in computers and networking. This rapidly evolving information systems environment requires up-to-date information security curriculum. The speed in which the information systems environment changes in regard to security makes it extremely difficult for a university curriculum to prepare students for working in the world of information security. Current engineering and computer science curriculum does not provide students with an understanding of the foundational concepts of information security. Existing undergraduate computer science curriculum focuses on the physical aspect of information security. The goal for developing a comprehensive information security curriculum is to teach the theoretical concepts of information security, and provide a means of applying the concepts to practical applications. This project focuses on rigorous research to define information security and the meaning of a security professional. From this definition, specific knowledge and skill attributes will be determined and a specific curriculum will be developed. This research will consist of three phases: Phase I - Identify Requirements; Phase II - Develop Curriculum Model; and Phase III - Model Implementation, Evaluation, and Review.

Title: IS’2001: Progress Report on Updating IS’97

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Author: David L. Feinstein
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Author: Gordon B. Davis
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Author: John T. Gorgone
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Author: Joe Valacich
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Abstract
We discuss the updating process for the IS’97 IS curriculum guidelines and accreditation, the first pilot visit to occur this fall. Course descriptions for the proposed IS’2001 curriculum are provided with a description of scope and a high-level set of topics for each course. Lastly, the primary
conclusions of a research survey based on IS’97 is pre-
sented. It is noteworthy that IS faculty primarily train IS
analysts who have demonstrated expertise in database
applications, their skill set matches the expectations of the
computing industry, the skill areas of IT programs match the
expectation of IS faculty, and model courses P0, 1 and 2
could be revised.

Paper: 37b
Track: IS Curriculum
Title: General Knowledge Needed by Information Systems Educators in 2001
Author: Randall McCoy
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Abstract
The problem that this study dealt with was the lack of
research conducted to determine the computer competencies
needed by information systems educators in the year 2001.
This study used a Delphi instrument to determine the
general needs for the preparation of computer technology
competencies of information systems educators for the 21st
century. Twenty-three experts nominated by the National
Association for Business Teacher Education (NABTE)
contributed to the data. The study consisted of three rounds
of a Delphi instrument transmitted over the Internet tele-
communications network. An instrument was developed
from the responses generated by the first round, the second
round involved rating the statements, and the third round
was used to determine consensus on items. The findings of
this study present a list of competencies consensus of
experts in business teacher education who identified needs
for the year 2001. Findings and conclusions of the study
include statements about computer competencies that may
be included in business teacher education curriculum related
to information systems. This paper presents one part of the
findings of the study, particularly those dealing with the
"general knowledge" about computers. Of the twenty-three
competencies identified, nine received scores indicating that
the panel judged that these items were very important;
eleven items were rated as important; and one item was
rated as being moderately important.

Paper: 37c
Track: IS Curriculum
Title: Information Systems Draft Accreditation Criteria and Model Curricula
Author: Anthony Scime
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Abstract
Information systems is a discipline that covers both the
technical and managerial aspects of computing. As a
discipline matures it becomes necessary to define it through
the accreditation of undergraduate programs. There are a
number of model curriculums that have been developed for
information systems. This paper is a look at the proposed
curriculum accreditation criteria and the match of these
criteria to existing curriculum models. Recommendations
for modifications to the models are made to assure confor-
mation to accreditation requirements.

Paper: 38a
Track: IT Education
Title: A Projection Model of IT and Computer Personnel Requirements in Thailand
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Abstract
The introduction of technologies to process and transport
data and information has proceeded at exceptional rates for
many decades in the globalization and information technol-
gy era. This trend relates to the rapid diffusion of IT and
computerization in Thailand. The research findings in this
study revealed that the problem associated with a shortage
of IT and computer professionals would probably occur in
the year 2010. Hence, the increasing trend of IT and
computerization should concern the proper planning of
related human resource requirements.

Paper: 38b
Track: Work-in-progress
Title: Learning from Students: A Study Into The Use of Class Web Sites in a Liberal Arts College Environment
Abstract
In today's liberal arts college environment, one can observe a proliferation of web sites associated with faculty members of the various academic departments and their current course offerings. These Class Web Sites, as they are known, are not necessarily tied to what is referred to as a distance education or a computer-mediated class. As a vehicle for delivery of course content, several questions can be raised: Are Class Web Sites useful to the students? How often do the students access their Class Web Site? Do the Class Web Sites serve merely as an alternative information delivery mechanism or can they be used to enhance and enrich student oriented learning processes? It is to the latter question that I conducted an inquiry research project. During the spring, 2000 semester, I created and managed four different Class Web Sites. This paper provides a description of the four Class Web Sites, their purpose and slight variations in uses, some empirical data on the development and maintenance aspects from a faculty perspective and the findings of the student responses. Several conclusions are presented concerning the effectiveness of Class Web Sites for extending student learning beyond the classroom.

Paper: 38c
Track: IT Education

Title: Teaching IT: A Survey of Terminal Degrees, Hiring and Promotion for Information Technology Professors

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Abstract
Information Technology (IT) is a fairly new field, both in academia as well as in the "real world." Both its newness and its unique relationship with industry allow for a variant on the traditional academic terminal degree, which is typically a doctoral degree. Whereas traditional academic fields benefit greatly from the study and research resulting in a Ph.D. degree, the fast-paced field of IT needs to put a higher value on the actual work experience of the professors that are hired and retained with tenure. This is particularly important due to the ever-widening gap between the increasing number of new computer faculty positions and the decreasing number of new computer and technology Ph.D.s. I have conducted an online survey of IT professors to find out current policy standards regarding terminal degrees and work experience, as well as other information pertaining to hiring and promoting information technology professors.

Paper: 39a
Track: IS Curriculum

Title: A Curriculum Development For Information Security Manager Using DACUM

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Abstract
Generally, the Information Security Manager (ISM) is responsible for an organization's information security policy and program support and for the selection and maintenance of specific safeguards/controls for the organization's computer and communications network and application software. In this paper, the authors present, based on a systematic job analysis, the definition, flowchart and description of ISM's job for developing an ISM education and training program for consideration in Korea. The result of this study reveals that there are 4 tasks and 13 works in the job of Information Security Manager, and 18 education contents and 7 education courses in the ISM curriculum.

Paper: 39b
Track: IS Curriculum

Title: Problem Analysis and Program Design: Using Subsystems and Strategies

Author: Robert F. Zant
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Abstract
Although there has been a substantial amount of research on methods for developing computer programs, students new to
the art of programming continue to find it difficult to transform a problem statement into a functional program. This paper reviews the difference between the novice's and the expert's approach to programming, and presents two techniques—the IPO Diagram and Composition Strategies that novices can use to gain a better understanding of problem analysis and its impact on program design.

Workshop 1

Title: Delivering Introductory Programming Courses Online

Author: Ashok Kumar
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Workshop 2

Title: Developing Web Applications

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Abstract
The software development cycle has been used for years as a systematic way to develop application software. The same organized techniques can be used to develop effective web applications. Begin by interfacing with the user and an analysis of the requirements and the site mission. Once major requirements are determined, design the web site including page layout and navigation. Using web development tools, implement the site including usability testing. Finally, after the site is up and running, determine maintenance requirements. An actual case study based on a fictitious company is used to demonstrate the guidelines to follow for this web development.

Workshop 3

Title: Implementing Cisco Networking in the Four-Year College

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Abstract
The Cisco Networking Academy Program is designed to be a comprehensive "8-semester/560-hour course" that trains students and in-transition workers to design, build, and maintain computer networks. Students are also prepared for industry standard certifications including the Cisco Certified Network Associate (CCNA) and the Cisco Certified Network Professional (CCNP). The training provides students valuable Internet technology skills, including networking, Unix, Web design and other IT essentials. The Academy Curriculum covers a broad range of topics from
basics on how to build a network to how to build a website and more complex IT concepts such as applying advanced troubleshooting tools. Cisco is also now partnering with Sun and Adobe to offer additional courses in Unix Fundamentals and Web Design.

Workshop 4

Title: Incorporating Creative Activities into Your Classes-An Active Workshop

Author: Bruce White
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Abstract
This workshop will be an active workshop with the following topics/concepts-with activities and discussion relating to the topic: Creative problem solving and its benefits; Problem solving techniques; Teaching problem solving; Team building, total quality management, and problem solving; Methods to incorporate short problem solving situations into the classroom.

Workshop 5

Title: INFOSEC Made Easy-Incorporating Information Assurance Standards into Undergraduate Courses

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Abstract
The purpose of this workshop is to facilitate the inclusion of NSTISSIC (National Security Telecommunications and Information Systems Security) recommendations into the course content of undergraduate information security courses. This particular workshop will illustrate the process of analyzing one course that will be primarily an INFOSEC course. The standard that will be employed to assess the course content and design is NSTISSIC No. 4011-National Training Standard for Information Systems Security (INFOSEC) Professionals. The participants will address the problems of translating a government-specific training standard into guidance for collegiate education. Workshop participants will simulate the process of mapping the NSTISSIC behavioral outcomes to Bloom’s Taxonomy. The varied NSTISSIC behavioral outcomes will evaluated to establish a correspondence to Bloom’s levels (knowledge, comprehension, application, analysis, synthesis, and evaluation) and the resulting list will be used for other activities in the workshop. Other activities include evaluating textbook contents for coverage of checklist items, determining gaps in the coverage, and developing appropriate supplementary materials. Included in the workshop presentation will be supplementary materials for the Comprehensive INFOSEC Model, OPSEC as related to private sector firms, and TEMPEST requirements. Other topics, such as evaluation materials, references, and student activities, will be covered as time permits.
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