Organizational & End-user Information Systems

Curriculum Model for Undergraduate Education in Information Technology

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THE ORGANIZATIONAL SYSTEMS RESEARCH ASSOCIATION

ORGANIZATIONAL & END-USER INFORMATION SYSTEMS MODEL CURRICULUM

Editor:

Dr. C. Steven Hunt
Morehead State University

Prepared by the National Organizational & End-User Information Systems Curriculum Committee Task Force

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ORGANIZATIONAL AND END-USER INFORMATION SYSTEMS
MODEL CURRICULUM

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Morehead State University
Editor

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From the Editor . . .

In the two decades that I have been involved with Organizational and End-user Information Systems (OEIS) curricula, the field has not only undergone an evolution, but also a revolution of unbridled growth in IT innovations. Certainly, the challenges of CHANGE in this Knowledge Era are upon us as OEIS academicians. Introducing this change into academic curricula is an exciting, rewarding and formidable venture. A recurring thread or theme that was a daunting challenge for the committee was HOW to change what is working well and how to take what has been successful and re-engineer it to remain well positioned for the future without losing the essence of what has made the curriculum succeed to date.

Our students, whose lives and careers are affected by our leadership, must be equipped to enter a global workforce with a new skill set that includes knowledge beyond a mere conceptual understanding of end-user information systems. These future knowledge workers will be competing for IT positions in global enterprises of the 21st century that are more web-based in performance technologies at the desktop and incorporate a wide array of web collaboration tools for decision making. Other indicators reveal that our OEIS undergraduates will become employed in learning organizations that will require an understanding of knowledge management, e-business transformation, information systems security, mobile commerce, wireless communications, and enterprise resource planning.

The revised OEIS curriculum is armed with the wisdom of hindsight by many scholars and educators who developed the initial curriculum in the early 1980s. The updates and new course designs have emerged through many asynchronous collaboration sessions of email messaging and Blackboard discussion forums, as well as web-based, electronic brainstorming and voting sessions. Facilitate.com—a web-based collaboration software—allowed the committee to accelerate brainstorming, prioritizing and action planning for more productive and cost-effective collaboration. As chair, I wish to extend a sincere thanks to Julia Young, Vice President of Facilitate.com, who assisted the committee in generating, capturing, categorizing, surveying and building instant documentation of our input. The groupware technology provided geographically-dispersed experts a powerful venue for unleashing creativity and taking decisive action.

As undergraduate program designers review the OEIS curriculum, the 2003 National Curriculum Committee Task Force is hopeful that this guide will serve as a valuable resource in maintaining currency and relevance in OEIS education. The materials come from OEIS scholars and professionals like you who work in the field as information systems practitioners, trainers, consultants, and educators. As you address the demands of an increasingly competitive and turbulent IT environment, the OEIS Curriculum Committee and OSRA are eager to provide on-going support and serve as resource personnel to you as future adopters and implementers of end-user information systems curricula. Also, an online, special issue of the Information Technology Learning and Performance Journal is forthcoming that will address design, delivery, implementation, and instructional strategies associated with the model curriculum.

Dr. C. Steven Hunt
Professor of Information Systems
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ORGANIZATIONAL AND END-USER INFORMATION SYSTEMS (OEIS) MODEL CURRICULUM

INTRODUCTION

Developing the design and focus of undergraduate curricula is always an evolutionary process. This is especially the case in the field of end user information systems, which has undergone tremendous change since 1986 when the first OEIS Model Curriculum was released. Since that time, not only has the technology evolved exponentially, but workplace requirements have changed also with the shift from the information era into today’s global, knowledge economy. The second edition of the OEIS Curriculum in 1996 brought major updates in content coverage and technology and represented a certain maturity of the OEIS field. However, it is time once again to re-examine the curriculum for currency.

To assist collegiate educators in updating curricula and programs in end-user information systems, the new 2004 Model Curriculum is provided as a framework. The goal of the undergraduate curriculum model is to help collegiate educators design a program that produces information technology professionals who have the skills and knowledge necessary to make quality decisions regarding the effective use of technology in the workplace. The Organizational & End-user Information Systems (OEIS) Model Curriculum emphasizes the need to view technology as an enabler for achieving organizational goals and maximizing individual employee performance. In addition, the curriculum design gives great attention to not only the technical, but also the managerial, and the organizational issues that knowledge workers will need to address in the global workplace. Earlier versions of this framework have been used as a guide by many university faculty to design programs that prepare end-user support personnel for non-programming related IT positions. This reengineered version continues to incorporate many of the foundational components of OEIS that were in both the original (1986) and revised (1996) model. However, additional course modules and content have been included that reflect changing trends of a digital, knowledge-based economy—including work processes, customer expectations, work styles, and work group requirements.

The reengineered curriculum, is designed to prepare graduates for entry-level non-programming related positions in end-user information systems, i.e. technology coordinator, knowledge management specialist, PC support, help desk administrator, software trainer, performance support, network administrator, technographer, and other emerging IT positions.

The major objectives of the OEIS model curriculum are to prepare students with a foundation in information management and end-user information systems including software acquisition, installation, training, and end-user support for multiple occupations in an information intensive, technological workplace. Specific objectives of the curriculum content are to developed graduates and future knowledge workers with the competencies to:

- Assess the need for, implement, and evaluate information technologies for the desktop environment to meet changing workplace requirements in a knowledge-based economy.
• Assess the need for, design, implement, and evaluate technical training programs for business professionals and knowledge workers in organizations.

• Analyze the needs of end-users in a variety of business functions and recommend OEIS solutions to improve performance.

• Assess the need for, implement, support and evaluate networking environments.

• Apply information technology to support workplace performance at all organizational levels.

• Analyze comprehensive IT cases related to problems and issues associated with organizational and end-user information systems.

As shown in the model, the curriculum provides a modular framework of core, optional, and recommended course(s) for the upper division level of undergraduate course work. The model assumes a general education component as well as the standard common body of knowledge courses, typically required by colleges of business, including management information systems, organizational behavior, and business communication. An understanding of global and ethical issues, as well the influence of political, social, and legal issues are essential elements that should be integrated into the curriculum framework. Recognizing that course titles, content, and levels will differ somewhat from one institution to another, the OEIS Model provides a framework and outline for each course, which institutions can adapt to their own missions and needs. The model’s developers stressed the need for flexibility in applying the model and the need to emphasize program outcomes over specific casings or course titles.

The Organizational and End-user Information Systems (OEIS) Model Curriculum is sponsored by the Organizational Systems Research Association (OSRA), an international research association that desires to advance research and education in information technologies, learning and performance. The curriculum was developed by a national task force comprised of university educators and IT professionals (who hold OEIS related degrees).
ORGANIZATIONAL & END-USER INFORMATION SYSTEMS CURRICULUM MODEL

Advancing Education in Information Technologies, Learning, and Performance

General Education
College of Business Prerequisite Courses

College of Business
Professional Core

End-User Application Development

**CORE**

OEIS 1
Organizational & End-user Information Systems

OEIS 2
Computer User Support

OEIS 3
Assessment Design Implementation and Evaluation

OEIS 4
Technical Training & Delivery Methods

OEIS 5
Telecommunications & Networking Foundations

OEIS 6
Cases in Information Technology

OEIS 7
Internship

**OPTIONAL COURSES**

OEIS 8
eBusiness & Web Technologies

OEIS 9
Collaborative Technologies & Knowledge Management

OEIS 10
Network Administration

OEIS 11
Operating Systems

OEIS 12
Information Systems Security

OEIS 13
Special Topics

Legend:

- Core Course
- Optional Course
- Highly Recommended Course
OEIS 1- Organizational and End-User Information Systems

Course Description
An overview of organizational and end-user information systems (OEIS)—technologies, business processes, and worker performance. This course emphasizes methods used to plan for and implement information technologies in the workplace. Advances in information systems hardware and software, emphasizing applications designed for technology end users are discussed. Emphasis is on understanding end-user needs and how to select or design systems to address those needs. Work flow and systems analysis methodology, work (re)design, organizational change, systems implementation, and management issues are covered. Basic computer literacy is assumed. As an introduction to the OEIS curriculum, this course provides an overview of course content covered in depth in future courses.

Course Outcomes
Upon completion of this course, students should be able to:
- Explain the concept of system and how systems concepts are applied to planning, designing, and implementing information systems that support technology end users
- Identify OEIS technologies and differentiate the types of systems skills required to develop and implement OEIS in comparison to transaction processing systems
- Describe characteristics of end-user work environments and the impact of information technology on work performance
- Cite examples of specific business needs and how information technologies can be used to address these needs
- Identify human factor issues associated with the use of OEIS technologies
- Define business process redesign and describe how enterprises use it in conjunction with information technologies to improve business results
- Troubleshoot and solve basic hardware and software problems, particularly personal computer problems, likely to be encountered by end users
- Summarize the role of training and support in OEIS implementation and describe approaches to meeting these needs
- Identify organizational and management issues related to the use of technology in the workplace and explain how enterprises can address them
- Describe the concept of end user technology support and differentiate possible approaches for providing such support to end users in various types of organizations
- Find information regarding end-user technologies in the trade press, journals, and other reference sources

Course Approach
This course is designed to provide current thinking about information systems and the changing role of systems analysts, managers, and end users with regard to information system use, planning, implementation, and management at the desktop. To provide appropriate background and a solid foundation of
understanding, instructors may find it helpful to arrange tours, bring experienced business people into the classroom, and/or arrange appropriate demonstrations of technology. Methods of instruction could include lectures, guest interviews, videos, case studies, and hands-on laboratory experiences. Students participate in all class discussions by sharing experiences and commenting on assigned readings. Hands-on experience with technology requiring basic hardware and software installation and trouble-shooting is strongly encouraged.

Although a basic text could be used for a foundation, students should also use and analyze information available in appropriate trade journals, videos, World Wide Web sites, and other reference sources. Field and library-based research projects are recommended. Oral and written reports help to develop students’ communication skills.

**COURSE CONTENT**

1. **Overview of systems concepts and the current status of end-user and networking technologies (5%)**  
   Material covered: Overview of current directions in OEIS technologies, the impact of information technology on worker performance, and foundations for understanding end-user work environments. Introduction to basic systems concepts. How OEIS fits into the typical enterprise information systems organization and how OEIS differ from transaction processing systems. Career opportunities.

2. **End-user technology support concepts (5%)**  
   Materials covered: Concept of *end user*, as differentiated from information technology professionals. Levels and categories of workers needing support (managers of non-technical disciplines, non-technical professional specialists, and employees who provide clerical and administrative services to managers and professionals). Arrangements for providing support to an organization’s end users. Tools for documenting and assisting the support process. The nature of support provided by manufacturers, software developers, and vendors. Advantages and disadvantages of certification for support professionals.

3. **Identifying business applications (20%)**  
   Material covered: Improving workplace performance and supporting core business processes. Understanding requirements of the workplace and selecting appropriate hardware and software to meet performance needs. Applying technology to support knowledge workers in a wide variety of enterprises, including managers, professionals, technicians, and administrative assistants.

4. **Problems faced by end users of information technologies (20%)**  
   Material covered: Installing and configuring operating systems and applications software. Troubleshooting hardware and software problems. Using utilities software packages to identify and repair problems.
5. **Workplace performance and productivity (15%)**  
Material covered: The impact of information technology on work performance; organizational and behavioral issues related to the use of new technologies. Topics include business process redesign, job design, organizational change, human factors, and environmental issues.

6. **Planning and implementing OEIS (20%)**  
Material covered: Concepts, methodologies, and tools to assess how work is currently accomplished. Designing new ways to accomplish work and improve business processes. Implementation and evaluation strategies for new systems. Managing end-user computing. Adoption, infusion and assimilation of technology and organizational innovation. Introduction to project management.

7. **OEIS employee training, development, and support (10%)**  

8. **Organizational and managerial issues (5%)**  
Material covered: Managing technology in the workplace from a business perspective. Contribution of technology in achieving organizational objectives and improving productivity. Establishing policies for end-user computing, controlling access to information, storing and accessing information resources, protecting the integrity and confidentiality of data, disaster recovery plans, and legal issues.

**RESOURCES**

Resources should include a basic text plus current trade journals and publications. Because this is such a fast-paced field, instructors must keep up to date with the best resources and arrange for their availability to students. This will pose a constant challenge as new resources become available and others are outdated. Vendor videos demonstrating technologies are recommended.


Web Resources:
http://www.techweb.com/encyclopedia
Online dictionary for more than 20,000 IT terms

http://www.webopedia.com
Online dictionary and search engine for computer and Internet technology

http://www.techrepublic.com
Providing information and tools for IT decision support and professional advice by job function

http://www.informationweek.com/
The online component of InformationWeek magazine

http://www.prenhall.com/regan
This is a supplemental website for the Regan/O’Connor textbook

Other Publications:
COURSE DESCRIPTION
This course introduces the responsibilities of a computer user support specialist and develops skills for microcomputer troubleshooting. Students develop skills necessary to work with help desk and support center operations to better fulfill end user support needs. Students examine how to support and communicate with non-computer professionals; use a variety of software, remote management tools to evaluate support applications, call tracking, and statistical analysis of calls/issues. Students develop problem-solving skills and install, configure and troubleshoot microcomputer hardware and software. Prerequisites: computer literacy, demonstrated skills in using hardware and application software.

COURSE OUTCOMES
Upon completion of this course, students should be able to
• setup, install, configure and troubleshoot hardware
• install, configure, upgrade and maintain software
• prepare for certification in one or more areas
• describe excellence in customer service
• identify and prescribe solutions for commonly occurring problems related to microcomputers via Helpdesk phone conversations
• assess user needs and recommend computer solutions
• use print and non-print media to find information related to troubleshooting specific hardware and software problems
• write and evaluate reports generated through multiple Helpdesk reporting solutions

COURSE APPROACH
This course takes a student-centered approach, emphasizing the application of OEIS concepts to address end user needs. The instructor could identify real or simulated help desk scenarios and have students work both individually and in teams to solve them. Students could prepare formal reports and present the reports orally in class. Guest speakers and/or tours of companies’ helpdesk and support centers could provide corporate/industry perspectives on computer user support.

Students will need access to computers to complete assignments. Ideally, instructor and class would have access to a computer laboratory where students could actually install/upgrade and test hardware, operating systems, software applications, and remotely login to a server to shutdown/restart services and applications without physical interaction with the server. An assortment of computer software and hardware (printers, notebook computers, fax machines, desktop, personal digital assistants, docking stations, server, scanner, and digital camera etc.) for hands-on work in the computer laboratory is needed. This lab would also simulate a helpdesk operation center.
COURSE CONTENT

1. Education/Review of technical hardware/software
   Material covered: common configurations of hardware used in business environments, commonly used software applications, remote management tools

2. Product evaluation strategies and standards

3. User needs analysis and assessment
   Material covered: interview users with computer problems/issues, create a helpdesk/support environment

4. Install end user computer systems
   Material covered: remote logins to servers and workstations, implement new call tracking software

5. Help desk operation and common support problems
   Material covered: address status of issues, types of call tracking, use of ticketing and tiers, ticket tracking services and implementation, documentation of issue resolution

6. Customer service skills for user support

7. Troubleshoot computer problems

8. Information resources for user support

RESOURCES


Periodicals/Web Sites

Call Center Magazine [www.callcentermagazine.com](http://www.callcentermagazine.com)
Contact Professional [www.contactprofessional.com](http://www.contactprofessional.com)
Microsoft Knowledge Base –
http://support.microsoft.com/default.aspx?scid=fh;rid;kbin
Symantec Service and Support http://www.symantec.com/techsupp/
Annoyances Troubleshooting - http://annoyances.org/exec/show/category07
Infinisource Tech Files – http://www.infinisource.com/techfiles/
PC World - http://www.pcmag.com/default/
ZDNet - http://www.zdnet.com/
www.howstuffworks.com
Help Desk Institute www.helpdeskinst.com
Service & Support Professionals Association www.thesspa.com

Software
Support Magic
GWI (lotus notes database)
VNC—remote workstation logins
NetOp—remote server software (free download)
SMS (System Management Server)—remote control/repair
COURSE DESCRIPTION
This course covers the four stages of OEIS development: assessment, design, implementation, and evaluation. Students learn methods and procedures that empower them to define and solve large-scale OEIS problems or address new opportunities. In studying the integration of hardware/software into jobs and the work environment, the course will give attention to various organizational development and management factors including strategic planning, techniques for developing ROI, planned change strategies, human factors, and job redesign. Students will complete a systems analysis and design proposal with special attention given to inter-organizational goals. Prerequisite: OEIS-1 OEIS Concepts.

COURSE OUTCOMES
Upon completion of this course, students should be able to:

• Justify the desirability of strategic planning and how OEIS solutions can drive organizational goals
• Summarize how OEIS development is systematic and cyclical in nature
• Apply project management methodology and tools to the development of an OEIS systems analysis and design project
• Choose appropriate methods for data collection design needs assessment and evaluation tools such as observation guides, interview guides, or questionnaires
• Develop, assess, and pilot OEIS solutions
• Create an evaluation strategy
• Prepare a project proposal, complete with ROI calculations, and discuss it in an oral presentation
• Demonstrate one-on-one interviewing skills as well as group facilitation skills
• Synthesize the arguments for how Lewin’s force field analysis can be used to understand resistance to technological innovations and ways in which the OEIS analyst can avoid them
• Differentiate between task analysis and job analysis
• Apply techniques for redesigning jobs
• Evaluate software interface design
• Create approaches to evaluating computer hardware (including the monitor, the keyboard, and the mouse) for ergonomic and safety considerations
• Create workplace design solutions to ensure worker comfort, safety, and productivity

COURSE APPROACH
This course is designed to provide students with theoretical foundations and practical experience in OEIS development methods. The conceptual foundations include change management and job redesign. Students learn standard project methodology and systems concepts. They develop assessment tools, and collect
and analyze data in an actual field project. Students could present the results of their study in oral presentations followed by open class discussion, and where necessary, modify their results. Study teams and work group methods could be used in this course both as learning and project completion techniques. Work groups could prepare a final written report of their field project. This course could be designed with the teacher functioning as a facilitator rather than as a lecturer. The class itself could serve as a learning laboratory where a variety of learning strategies are applied. Students could be encouraged to enter into discussions and present some of the concepts identified. The development of a proposal for an end-user application is one focus of this course. Critical reviews of appropriate articles in OEIS-related journals are suggested. Prerequisite: OEIS 1.

**Course Content**

1. **Strategic Planning for OEIS (10% of course)**
   Material covered: Frameworks for strategic planning, models of technological change, discussion of the value of work culture and diversity; critical success factors, and systems objectives; an examination of change management, functional relationships of the organization and organizational structure employed in accomplishing the goals of the business enterprise.

2. **Working with End-users (10% of course)**
   Material covered: work groups/teams, job (re)design considerations; analysis of intergroup and interdepartmental relationships (stresses the interconnectedness of the business organization as a system).

3. **Project Methodology for OEIS (30% of course)**
   Material covered: Defining the scope of the project; identifying stakeholders; defining the objectives of the system; measurement of productivity and tangible benefits vs. soft system costs; assembling a project team; documenting the current system; introduction to structured analysis and related techniques; internal development; responses to request for proposals; analysis of system requirements; selecting or developing solutions; design considerations.

4. **Planning Tools Tactics, and Activities (20% of course)**
   Material covered: The construction of data collection instruments such as interview guides, questionnaires, observation guides, time or document logs, and work sampling; data collection and evaluation; use of PERT and Gantt charts, flow charts and data flow diagrams; group field study, project management tools such as Microsoft Project (OEIS course project).

5. **Designing OEIS Solutions (10% of course)**
   Material covered: Selecting and evaluating off-the-shelf solutions; determination of need for internal development/costs. Development of RFP.

6. **Implementing OEIS Solutions (10%)**
   Material covered: Developing training programs, developing and documenting new procedures, creating implementation strategies based on change
management principles, preparing the physical site with consideration to ergonomic needs.

6. **Evaluating OEIS Solutions (10%)**

**RESOURCES**


*Harris (2003)*, Systems Analysis and Design for the Small Enterprise, 3E, Course Technology.

**Project Management Tools**: Microsoft Project Manager, Paradox for Windows Information Engineering Workbench (Knowledge Ware), Excelerator (Index Technologies), Design Aid (Nastec), FlowChart 3, and SmartDraw are only a few of the many tools available to use a software resources for this course.
OEIS 4- OEIS Technical Training & Delivery Methods

COURSE DESCRIPTION
This core course builds upon skills and knowledge acquired in OEIS 1, 2, and 3. Students briefly overview change management, learning, and training theory in conjunction with technical training practices which are supportive of and conducive to organizational and end-user information systems implementation where OEIS tools are to be integrated into the work environment. Students focus on the design, development, and delivery of technical training. Students investigate and apply delivery methods including both traditional and state-of-the-art techniques. Planned change strategies (including addressing resistance to change) for technology implementation are also addressed, along with the application of relevant theories and evaluation of technical training effectiveness.

COURSE OUTCOMES
Upon completion of this course, students should be able to:

• Recommend strategies for technology implementation (e.g. Web-based training) based on considerations such as theories related to planned technological change, and strategies for assessing the effectiveness of new technologies and technical training
• Recommend learning and performance measures (assessment and evaluation strategy) for the appropriate delivery type
• Design cost-effective technical training including new training and upgraded training
• Differentiate course delivery systems
• Apply the prevalent models for developing training
• Develop cost-effective technical training including new training and upgraded training
• Develop course delivery systems including
  o Web-based training (WBT),
  o Computer-based training (CBT),
  o Structured on-the-job-training (OJT),
  o Lecture/lab-based training, and
  o Self-paced training (including print-based self-study)
• Understand the prevalent models for developing training

COURSE APPROACH
Integrative lessons learned in OEIS 1, 2, and 3 could provide valuable input for learners taking OEIS-4. Use of case studies and field-based projects will enable learners to (a) simulate and actually experience training related client interaction and (b) participate, as appropriate in value-adding technical training design, development, and delivery. Student developed training plans, modules, materials, and media could be documented via a digital portfolio. Collaborative learning and training design team experience are encouraged. Involvement of technical training specialists as guest speakers will enrich content coverage in OEIS 4.
COURSE CONTENT

1. Change Management, Learning, and Training (10%)
   Material covered: Introduction to change theory and organizational development, adult learning theory and training theory, motivation, learning styles and preferences, technical skills and complex cognitive skills which include technical skills

2. Technical Training Design and Development (50%)
   Material covered: Instructional design models; needs assessment and analysis; language requirements; performance consulting; subject matter experts (SMEs) as design/development resources; formulation of training strategy, objectives and resources; use of authoring tools; adherence to development standards (ADL, SCORM, AICC, ADA); content alternatives (using vendor- or partner-supplied training, accessing academic support; using external consultants)

3. Technical Training Delivery (30%)
   Material covered: Facilitation, OJT/mentoring; classroom and blended delivery systems; asynchronous and synchronous delivery tools; eclassrooms; IP video, corporate/academic learning portals (global, local, customer); job aids; EPSS performance support tools; training support and maintenance

4. Change Strategy Planning (10%)
   Material covered: Change by design, organizational culture considerations, role of communication and executive support and encouragement, planned return on investment (ROI) and return on expectations (ROE) associated with technical training

RESOURCES

Books


**Certifications**
- Certified Performance Technologist - American Society for Training & Development in collaboration with the International Society for Performance Improvement, [http://www.astd.org](http://www.astd.org) or [http://www.ispi.org](http://www.ispi.org)
- Certified Technical Trainer (CTT+) - CompTIA Certification, [http://www.comptia.org](http://www.comptia.org)

**Journals**
- *Performance Improvement Quarterly*—Silver Spring, Maryland: International Society for Performance Improvement
- *T&D*—Alexandria, VA: American Society for Training & Development
- *Training*—Minneapolis, MN: VNU Business Publications

**Organizations**
- American Society for Training & Development, [http://www.astd.org](http://www.astd.org)
- International Board of Standards for Training and Performance Instruction, [http://www.ibstpi.org](http://www.ibstpi.org)
- International Society for Performance Improvement, [http://www.ispi.org](http://www.ispi.org)
- Society for Technical Communication, [http://www.stc.org](http://www.stc.org)

**Research**
- A theoretical extension of the technology acceptance model: Four longitudinal field studies (*Management Science*, 2000).

**Software**

*ASTD Training Management Software, version 3.0.,* (n.d.). American Society for Training & Development


*CBTMaster.* (n.d.). SPI, Inc.

*Digital artware software – Volume 1,* (1999), by M/One

*Digital artware software – Volume 2,* (1999), by M/One

*Trainer’s toolbox,* (2002), by Marastar Communications

**Web Sites**

http://www.astd.org/learningcircuits

http://www.brandonhall.com


http://www.eric.ed.gov/

http://www.webbasedtraining.com
OEIS 5- Telecommunications & Networking Foundations

COURSE DESCRIPTION
This course provides foundation information and skills relating to telecommunications and networking in the business environment including conceptual information, telecommunication applications, networking fundamentals, and the use the Internet/intranets. Management issues and practical applications are an integral part of this course.

COURSE OUTCOMES
Upon completion of this course, students should be able to:
• Demonstrate an understanding of the vocabulary and theory of telecommunications and networking
• Identify problems and formulate solutions related to telecommunications and networking
• Demonstrate effective use of telecommunications technology applications
• Demonstrate effective use of on-line telecommunications services
• Discuss effective application of emerging communication technologies

COURSE APPROACH
While conceptual components of the course will be taught through lecture and discussion formats, hands-on experiences are vital. It is suggested that a field-based project be assigned in which groups of students are asked to conduct an analysis of a selected organization’s existing telecommunications and networking systems and applications, identify problems, and make recommendations for improvements.

COURSE CONTENT
1. Conceptual Information (5%)
Material covered: An introduction to the role of telecommunications and networking in the business environment. Topics will include: History of telecommunications, technology’s role in communication, and the role of telecommunications in business.

2. Telecommunication Systems and Applications (45%)
Material covered: Coverage of the various types of telecommunications systems and applications being used in business today. Topics will include: telephony, electronic messaging, voice processing, wireless communications, electronic data interchange, facsimile, voice processing, telecommuting, and Internet/intranets.

3. Networking Theory and Management (40%)
Material covered: An introduction of theoretical concepts, methodologies, and tools needed to effectively support and manage a network. Topics will include, but are not be limited to: protocols and standards, data signals,
communication media, communications hardware, local area networks and topologies, wide area networks, and security/legal techniques and issues.

4. **Use of Emerging Technologies and Their Applications (10%)**
   Material covered: Evaluation of the effective use of new and emerging technologies in telecommunications as they relate to the end-user environment, (i.e. voice recognition, wireless services, cellular PC technology, and satellite services).

**RESOURCES**


Dean (2003), Guide to Telecommunications Technologies, Course Technology.
OEIS 6- Cases in Information Technology

**Course Description**

As a capstone course, this class involves the analysis, synthesis, evaluation and application of advanced concepts, theories, principles, and skills associated with information technologies (IT) or other comprehensive OEIS capstone experience through case studies for developing the solution to business problems and redesigning business processes. The course is ideally taken in the student's last term before graduation. Prerequisites: OEIS 1-5

**Course Outcomes**

Upon completion of this course, students should be able to:

- Articulate the relationships among end-user information systems, organization-wide information systems, and inter-enterprise information systems from both business and technical perspectives.
- Identify and formulate structured and unstructured problems associated with OEIS in qualitative and quantitative measures through analysis of cases.
- Conduct strategic opportunity assessment, feasibility analysis, scenario analysis, and OEIS requirements determination in the context of real-world business problems.
- Develop alternative solution models to address the identified problems.
- Evaluate the alternative solution models from both the end-user and technical perspectives and recommend an optimal one among the solution models.
- Defend their arguments to support the recommended solution.
- Report the results of problem solving and decision making activities through documentation, oral presentations, design of supporting media (presentation graphics, printed graphics, statistical reports, etc.).
- Perform effectively as a team member in a problem solving activity.

**Course Approach**

The introductory portions of this course may be devoted to lectures, discussions, and class projects that review basic management concepts and IT components, integrate the content of previous courses, and establish end-user information systems as component of organization-wide information systems and business processes. An early segment should be devoted to a thorough orientation to case study and other methodologies to be used, including a practice case analysis with a written report. If other learning experiences (computer simulations, group decision support systems, field studies) are to be used, they should be introduced. While comprehensive cases and computer simulations are likely to be the primary sources of material for the course, the course may include real-world observation, data gathering, problem analysis and problem solution. Such experiences should be comprehensive in their design so that the impact of OEIS and technologies upon the entire organization is emphasized.

Students may be broken up into discussion groups in exploring the potential applications of essential IT to the assigned cases. To practice cross-disciplinary problem-solving, each person in the team may play different roles (e.g., system end-users or technical people such as database designers, system analysts, etc.) to acquire pragmatic experience in practicing cross-organizational collaboration. In practice, each member in the group can help others refine, adjust, inspire,
stimulate, or fill out his/her own ideas and thinking. Alternatively, some of the discussion groups may role-play technical teams responsible for analyzing and proposing IT solutions while other groups may put themselves in the position of end-users or business managers to provide critique and assessment on the proposed solutions from end-user or business point of view. This role-play exercises can help students conceive the bigger picture of the case, identify the broader problem context, and, in turn, to develop a comprehensive solution to solving possible conflicts among technical people and end-users.

**COURSE CONTENT**

The course is primarily a problem analysis and solution development course. Both individual and team activities should be included. Both written and oral presentations of case solutions could be required. Case analyses could involve a variety of arrangements (whole class/same case, teams/same case, teams/different cases, and the like).

1. **The Environment For Managing End-User Information Systems (10%)**
   Material covered: Framework for analyzing OEIS as components of business processes; identifying and evaluation business functions and business processes; developing end-user information systems as components of business processes; integrating end-user information systems with enterprise information systems as well as cross-enterprise information systems. Models of organizational change, end-user technology support, and business process reengineering. Integrating human factors components and technology components of OEIS. Introduction to the case approach to classroom study--analyzing cases and reporting results including models for attacking cases analyses, expectations for required written and oral reporting, (i.e. requests for proposals), practice cases, and preview software

2. **Analyzing Problems—Technologies and Issues (20%)**
   Material covered: Cases involving implementation of technologies. Cases representing multinational and global operations. Cases representing human factors considerations and ergonomics. Cases that explore emerging technologies (document imaging, multimedia, group systems software, global information communication, virtual reality, human/machine interfaces) for supporting business processes and end users

3. **Analyzing Problems—Comprehensive (30%)**
   Material covered: Cases involving the role of end-user information systems as a component of organization-wide and cross-enterprise information systems technologies. Cases representing strategic planning and implementation of end-user information systems in the private sector, the public sector, and a variety of industry sizes and types. Cases that relate end-user information systems to organizational change, business process reengineering, corporate culture, competitive strategies, and end-user support

4. **Developing Solutions (20%)**
   Material covered: Cases involving involves the analysis, synthesis, evaluation and application of information technology for developing the solution to business problems and redesigning business processes.
5. **Evaluating and Proposing Solutions (20%)**
   Material covered: Determination of whether the results from IT implementation efforts match the goals and objectives established. Attention to identification of problem areas and opportunities for additional improvement should be investigated.

**RESOURCES**


Harvard Business School Case Collections.
http://harvardbusinessonline.hbsp.harvard.edu/b02/en/cases/cases_home.jhtml

The HBSP Interactive Simulation series
http://harvardbusinessonline.hbsp.harvard.edu/b02/en/academic/edu_interactive.jhtml


OEIS 7- Internship

COURSE DESCRIPTION
This course is designed to provide the senior-level student an experiential learning arrangement related to information technology in an approved on-campus site or an approved off-campus site. Students may perform information systems trainer/consultant and/or end-user support duties. Students will meet periodically with the instructor to discuss problems and issues relevant to the area of organizational and end-user information systems. Compensation may or may not be granted for the internship/practicum.

Prerequisites: Senior standing and prior permission of instructor.

COURSE OUTCOMES
Upon completion of this course, students should be able to:

• Develop career goals and specific objectives in chosen profession and relate these goals to the internship outcome experience
• Understand and delineate the roles of IT employees and how each role fits into the intern’s organization
• Compile an internship portfolio that includes the following items: current resume, literature from the employing company, an organizational chart of the company or department, published goals of the internship by the organization, a picture of the physical setting, any diplomas, certificates, or awards earned, two letters of reference, examples of completed work such as a self-designed computer printout, training manual, PowerPoint or digital presentation, as well as any other on-going evaluations or documents that would enhance the portfolio
• Maintain a written journal of the knowledge/practice gained in the work-related environment, citing specific experiences as they relate to conceptual, technical, and human skills, and include these in a section of the internship portfolio

COURSE APPROACH
An internship or cooperative work experience could be offered toward the end of the undergraduates' program of study. Supervised by a faculty member, this work experience provides an opportunity for students to gain practical experience in OEIS environments. Ideally, student interns will be assigned special projects or work as interns under the direction of professionals in the OEIS area. The nature of the internship should be outlined at the outset of the students' employment. No specific topics/modules are included here; however, to provide a quality experiential learning arrangement, the following guidelines are suggested:

• Students should work in an approved setting during the regular semester and during the summer term
• Students should work under the immediate supervision of a person who is familiar with the area of information technology, end-user computing support, training, technology management, and/or other related information system areas
• Periodic class meetings--on campus--should be scheduled for information exchange. Students should be evaluated by both their supervisor and a faculty member during the semester in which they are enrolled. The performance evaluation should be based upon planned experiences, job responsibilities, expected results and established measurement criteria.

**Resources**

Links for additional internship information:

www.rutgers.edu/html/0207  
www.bu.edu/abroad/  
www.butler.edu/academics/aca_prog_internships.asp  
www.samford.edu/schools/business/intern.htm  
www.anderson.edu/falls/up/internships.html  
http://uocareer.uoregon.edu/internship/interlst.asp  
www.clarku.edu/offices/career/students/jobs.shtml  
http://www.morehead-st.edu/colleges/business/bis/internships.html
This course (or course stream—foundation and advanced) is dedicated to investigating principle aspects of implementing and administering Web-based applications for both non-profit and for-profit organizations, where the e-business aspect has gradually become an integral part of the entire business model. It will provide the students with a foundation in the fundamentals of evolving Internet technologies and Web authoring using currently popular Web development software. E-Business models and strategies, Intermediate and advanced HTML, design principles of hypermedia, Website hosting and setup procedures, Web server administration, information security, Internet protocols, XML, dynamic PHP/MySQL Web content driven by back-end databases, and streaming media are among the topics covered. The students will apply the knowledge and skills learned to create or redesign an actual e-business Website as the group project that utilizes recommended Website development practices. The students are required to publish their Website projects on the Internet and ensure that all features and functions are properly working.

Upon completion of this course (or course stream), students should be able to:

**FOUNDATION**

- Understand the e-business models and strategies, and how do they match the best interest and needs of a business
- Reflect the impact of e-business implementations to the economy at individual, home, regional, and global levels
- Critique and identify winning and losing factors of business Websites
- Construct and process Web image files (JPGs and GIFs) for maximum efficiency and effectiveness
- Write advanced HTML to create WebPages
- Use dynamic HTML to control the browser
- Use JavaScript to perform client side scripting

**ADVANCED**

- Understand and manage the full-cycle of implementing e-business applications
- Understand and manage accessibility issues
- Understand and manage browser compatibility issues
- Use XML and associated markup languages for data exchange
- Understand the mechanism of PHP/MySQL in back-end database management and its relationship with business functions
- Understand the mechanism of various security and assurance issues of Web transactions
- Install, manage, and troubleshoot various Web server related issues (i.e., Webmastering)
• Create a rich media environment (e.g., streaming media content, sights and sounds, etc.) to enhance customers sensational interest and involvement

COURSE APPROACH

The structure of this course would be like running an e-business consulting firm. The instructor will serve as the principle consultant, and the students will be situated in the role as junior consultants or interns. The semester-long experience should cover problem-posing praxis in reflecting upon both hands-on technical skills and interpersonal/project management skills. While the students are designing and implementing a real-world Web application, they will also be looking at current topics and trends in e-business through e-journals—so that they could keep a log of information gathering and communicate with others in layperson’s language. This situated learning approach will encourage them to follow guided instructions as well as self-motivated exploration to complete the entire process of creating a Web presence from beginning to end.

Students will work in teams that will last the entire semester. The instructor will provide a solid foundation of technical skills to students—more importantly, s/he will be a role model who leads and facilitates team efforts as a participants in all team projects. There will be a focus on creativity, entrepreneurship, and using a team approach to develop creative ideas and observe the processes and factors crucial to a successful e-business operation. The topics and trends section of this course is expected to change as the e-business environment develops and changes itself—hence a deepened understanding of change management for businesses to survive and succeed.

COURSE CONTENT

FOUNDATION

1. The Basics of E-Business

Materials covered: Internet and e-business concepts. The instructor will illustrate the scope of e-business through a series of real-world cases. Module participants will learn about basic technological issues, barriers and challenges to success, and the electronic value chain. This module provides a foundation and common understanding for all the material that follows.

2. Making E-Business Work for You

Businesses that rely on websites cannot hope to attain their full potential without considering the marketing aspects of the website. Marketing is covered keeping in mind the global concerns related to both business-to-business (B2B) and Business-to-Consumer (B2C) marketplaces. Business forces pertaining to selling-chain management, managing the order acquisition process, selling-chain infrastructure, and online sourcing are all covered in this important module. Clearly, a consumer’s willingness to buy online hinges on a sound understanding and implementation of an effective marketing plan. Topics covered include: Branding, including strategies and costs (trade-offs); Acquiring and retaining customers; Establishing an effective business presence on the web; Meeting the needs of website
visitors; Identifying and reaching potential customers; Marketing strategies for the web as contrasted to traditional marketing methods; Distribution channels.

3. **E-Business Strategy Formulation**

The module starts with the introduction of an organization-wide framework for e-business. The overall question addressed is - how does e-business fit into the organizational business plan? The role of e-business goes beyond the realm of information technology and requires involvement across all business functions. The objective of this module is to prepare participants for online business, to reorganize business processes, to analyze competitors, to decompose the value chain, to prepare content, to test and deploy an e-business model.

4. **Creating an Effective Web Presence**

The focus of this module is to involve participants in designing meaningful websites. Website features that captivate customers and provide a high degree of usability are discussed. Designing user-friendly web interfaces and meaningful content based on business needs are emphasized. Topics covered include HTML editors, web navigation and search issues, multimedia, creating dynamic content, and interactivity. Current trends in disabled and multilingual accommodations are also covered.

**ADVANCED**

5. **E-Business Investment and Risk Management**

This module covers the economic and financial aspects of e-business. Returns on investment, fixed/variable cost structure, and infrastructure costs are considered for traditional and e-business models. Challenges associated with managing operational, economic and legal risks of e-business are considered. Participants will have a realistic assessment of risk and the financial and economic implications of committing to an e-business strategy.

6. **E-Business Applications, Infrastructure and Databases**

An essential part of e-business is to effectively manage the data resources of an organization. This module starts with business issues related to planning for data, including data needs for decision-making and supporting customers. Technology issues such as databases, data models, data warehousing, data mining, storage, security, and recovery are covered. Business cases will also be introduced in conjunction with some powerful tools that will clearly demonstrate the need and importance of data resource management for organizations involved in e-business.
7. Privacy, Security, and Legal Issues

This topic has continued to be of major importance for all vendors who are involved in e-business. How can a business ensure safe transactions with customers, suppliers and partners over the web? Topics include firewalls, encryption algorithms, access policies, network security, and disaster recovery systems. Global contracts, jurisdiction on the Internet, secure transactions, online disclaimers, digital signatures, and intellectual property are part of the legal segment of this module. On the completion of this module, participants will have a clear understanding of the components of an effective security strategy and of the legal ramifications of doing business on the Internet.

8. Making the Transition to E-business

This module will provide students with some initial assistance with their organization’s e-business needs. The content and structure of this module will focus on the development and design of a basic e-business blueprint for each participant. Content from previous modules will be integrated in this culminating final project.

RESOURCES

In Print


Zak et. al. (2003), Web Warrior Guide to Web Programming, Course Technology 0619064587

Schneider (2003), Electronic Commerce 4E, Course Technology, 0619159553

Napier/Judd (2003), E-Business Technologies, Course Technology, 061906319X

On the Web

NIAP (http://niap.nist.gov/)
ZDnet (http://www.zdnet.com)
Business 2.0 (http://www.business2.com/)
CIO (http://www.cio.com)
COURSE DESCRIPTION

This course is designed to provide the senior-level OEIS student with an introduction to group decision support systems (GDSS), electronic meeting management, desktop video conferencing, as well as other web-based, groupware applications. Students will be introduced to concepts fundamental to an understanding of groupware tools and various collaborative technologies for enhancing group processes and computer-mediated communication in today’s digital economy. The course addresses a wide range of topics including implementation, design, electronic facilitation, as well as GDSS as an enabling technology for business process reengineering, strategic planning, risk analysis, knowledge management and other collaborative work processes. Special emphasis will be placed on using groupware technologies and collaborative systems to create, store, and distribute explicit and tacit knowledge within contemporary organizations.

Prerequisites: Undergraduate course in Information Systems and Senior Standing.

COURSE OUTCOMES

Upon completion of this course, students will be able to:

• Discriminate among alternative collaborative tools and methods
• Describe the various collaborative technologies using specific terms in the GDSS and groupware literature
• Relate human factors concepts and theories to the effective use of collaborative technologies
• Relate organizational and instructional theories to the effective use of collaborative technologies
• Develop and implement a cogent meeting agenda using a web-based collaboration tool such as Web IQ, Facilitate.com, Meetingworks, or Cognito
• Become aware of the essentials for planning, design, and implementation of a GDSS facility and computer-mediated meeting management
• Become more cognizant of the research literature related to group support systems
• Identify best practices of GDSS uses in today’s new digital and virtual organizations
• Analyze case studies associated with group support systems and knowledge management
• Identify the essential skills necessary for successful electronic facilitation
• Apply groupware technology principles as they pertain to the best practices and emerging needs for managing knowledge in contemporary organizations
• Logically understand how knowledge management (KM) has evolved.
• Understand KM theory and KM's potential future impact on organizational behavior
• Define KM in terms of its properties, resources, strategies and outcomes
• Assess cultural indicators of organizational readiness for KM initiatives
COURSE CONTENT

1. Communication, Organizational, & Instructional Factors (30%)
   Material covered: Students will learn interpersonal, group, and organizational factors that have converged to promote technology-based collaboration and will apply concepts and theories to address organizational needs. The method of instruction will employ three general types of activities. (1) The instructor will present topical lectures. (2) Students will research & present information about specific collaborative tools &/or theories. (3) Students will facilitate a team performance activity using a current groupware technology.

2. Business Process Analysis & Meeting Facilitation (30%)
   Material covered: Students will learn to plan and facilitate meetings to analyze existing and needed business processes, set goals and objectives, make decisions, and devise plans for implementing instructional and business decisions.

3. Technology Implementation (20%)
   Material covered: Students will learn to participate effectively in group activities using collaborative technologies, to identify contexts for optimal use of various collaborative technologies, to plan and establish an electronic, web-based meeting agenda, and to facilitate a meeting using groupware technology tools.

4. Knowledge Management (20%)
   Material covered: As companies engage in developing knowledge repositories, students will need to become more cognizant of knowledge management trends and issues, what it is and how to use it for competitive advantage. Attention should be given to the challenges in building KM systems, the knowledge management system life cycle, knowledge creation, transformation, and knowledge architecture.

COURSE APPROACH

Method of instruction will employ three general types of activities. (1) The instructor will present topical groupware related lectures. (2) Students will research & present information about specific collaborative tools and/or theories and (3) Students will facilitate an in-class activity using a current, web-based form of groupware technology that could be used to enhance a group process—i.e. desktop video conferencing, computer-mediated meetings, group support systems session, web-based survey tools, or a discussion board forum.

RESOURCES


Collaboration Software Websites:

www.facilitate.com
www.groupsystems.com
www.meetingworks.com
www.optiontechnologies.com
www.webiq.net
OEIS 10--Network Administration

COURSE DESCRIPTION

This course is designed to develop senior-level OEIS students’ advanced network administration skills. Both client and server applications will be dealt with and a strong emphasis will be placed on network operating system software. The students will also be exposed to multi-vendor networking topics and specific course topics will include: Setting up and configuring a Working Web Server, Web Site Security using SSL, DNS (Domain Name System), DHCP (Dynamic Host Configuration Protocol), WINS (Windows Internet Naming Service), Remote Access, IP (Internet Protocol) Routing, IP Security, NAT (Network Address Translators), and other core networking/internetwork applications.

COURSE OUTCOMES

Upon completion of this course the student will:

1. Install Server Operating Systems.
2. Install, configure, and troubleshoot access to resources.
3. Configure and troubleshoot hardware devices and drivers.
4. Manage, monitor, and optimize system performance, reliability, and availability.
5. Manage, configure, and troubleshoot network connections.
6. Implement, monitor, and troubleshoot security.
7. Develop a working vocabulary of technical terms in networking.
8. Identify advanced networking components.
9. Configure advanced networking components.
10. Apply SSL security services.
11. Establish and configure an Internet Information Server (IIS) web server.
12. Be able to configure multiple “virtual” web servers on one ISS system.
13. Articulate how other Internet services interact with a web server (such as DNS).
14. Install and configure DNS.
15. Install and configure DHCP and WINS.
16. Establish a working FTP site.
17. Install and configure necessary server extensions for web page software.

COURSE APPROACH

Method of instruction will employ two general types of activities. (1) The instructor will present information as well as demonstrate necessary techniques. (2) Students will incorporate what they have learned into a hands-on environment in a lab situation. Students will work both individually and collaboratively on assignments. Case studies may also be presented to have students analyze business multi-vendor internetwork settings. Testing will be provided in both objective and performance modes.

COURSE CONTENT

Network Understanding and Troubleshooting (30%)

Students will learn individually and in groups through instructor lecture and demonstration. Web sites will be visited to provide up-to-date information on network design and troubleshooting techniques.

Client/Server Applications and Network Operating Systems (30%)

Students will participate in discussion and hands-on labs in which they will learn specific operating systems. The particular applications and operating systems will vary depending on up-to-date equipment, funding, and software.
Technology Implementation (40%)

Students will not only participate in hands-on labs but be able to explain how the technology is implemented. Activities in this unit are initially self-paced, to a degree, and they are learning as they are progressing through the activities. However, at the end of the unit, technology implementation will be a culminating activity in which the students demonstrate their skills in all areas of the course objectives.

RESOURCES

When searching for current network administration information, topics that continually emerge are: Windows, Unix, Linux, Novell, Security, TCP/IP, Multi-vendor Networks, NOS, Protocols, Wireless Networks, Cisco, certification, etc. Some general references include:


**COURSE DESCRIPTION**

This course will provide the theoretical foundation and skills required to install, troubleshoot, maintain, and support operating systems. A thorough survey of personal computer and intermediate server operating systems available today will be provided, including Windows, UNIX, Macintosh, and DOS. Topics include their functional similarities and differences, file management distinctions, installation procedures, printer and other peripheral device management, interoperation with legacy systems, maintenance, backup operations, and troubleshooting methods.

**COURSE OUTCOMES**

Upon completion of this course, students should be able to:

- **Demonstrate an understanding of basic operating system theory:**
  
  Discuss the evolution of operating systems  
  Explain the purpose of an operating system  
  Explain the differences between the major operating systems in use today  
  Explain how hardware components interact with operating systems

- **Demonstrate an understanding of operating system fundamentals:**
  
  Discuss the concept of a hierarchical file system, Design a directory structure, Discuss the main features of primary operating system components, Provide an overview of major system files (what they are, where they are located, how they are used, and what they contain), Explain and perform the procedures for basic disk management

- **Demonstrate an understanding of operating system installation and upgrading:**
  
  Discuss the pre-installation procedures that one should complete prior to installing an operating system, Explain some of the processes that the installation procedure will encompass, Perform a successful installation of a Windows-variety operating system and a Linux-variety UNIX operating system and explain the differences between the installations, Explain how operating systems interface with I/O devices such as display consoles, printers, and storage devices, Explain software driver installation within major operating systems, Prepare for and perform a successful operating system upgrade.

- **Demonstrate an understanding of operating system maintenance and troubleshooting:**
  
  Discuss and perform file system maintenance techniques for different operating systems
Explain and perform disk maintenance that includes defragmenting, relocating, files and folders, repairing lost chains and clusters, using disk and file repair utilities, and selecting RAID options. Set up and perform disk, directory, and file backups. Explain how to install software for best performance. Explain how to tune operating systems for optimal performance. Recognize and interpret the meaning of common error codes and startup messages from the boot sequence. Recognize common problems and determine how to correct them.

**COURSE APPROACH**

This course is designed to provide a thorough survey of operating systems and exposure to sound maintenance, installation, and troubleshooting procedures, as well as a high degree of familiarity with techniques used to achieve maximal O/S efficiency. The principles and theory of operating systems will be taught through lecture and discussion and case studies. Students will also complete a series of hands-on projects in a computer laboratory.

**COURSE CONTENT**

1. **Operating system theory (15%)**
   Material covered: Evolution of operating systems; the purpose of the operating system; types of operating systems; input and output functions; single-user and multi-user systems; single-tasking and multitasking systems.

2. **Operating system fundamentals (30%)**
   Material covered: DOS command line functions; creating, viewing, and managing files, directories and disks; operating system functions, structure, and major systems files; getting needed technical information.

3. **Operating systems installation and upgrading (15%)**
   Material covered: Preparing for installation, checking hardware compatibility and drivers; performing a successful installation of Windows and Linux operating systems; preparing for an upgrade; making backups; performing a successful upgrade.

4. **Operating systems maintenance and troubleshooting (40%)**
   Material covered: Disk management: ScanDisk, IDE/SCSI, Defragmenting, utilities, partitioning/formatting/file system (FAT, NTFS4, HPFS); file management: file attributes, file naming conventions, COMPRESS, ENCRYPT, directories; system, configuration, and user interface files; memory management; error codes and startup messages: safe mode, no operating system found, bad or mission COMMAND.COM, HIMEM.SYS not loaded, Windows protection error; common problems and their resolution: eliciting problem symptoms from user, reproducing problem, identifying changes to computer environment, Windows-specific printer problems, General Protection Faults, illegal operation, TSR programs and virus.
RESOURCES


OEIS 12- Information Systems Security

**COURSE DESCRIPTION**

Information Systems Security is an introduction to end-user systems security from a management aspect. The course emphasizes the methods for the management of information security through the development of policies, procedures, audits, and logs. It also provides an understanding of the methods used for identifying threats and vulnerabilities, as well as analyses of the legal, ethical, and privacy issues in information systems and discusses emerging technologies related to systems security.

**COURSE OUTCOMES**

- Understand and apply the concepts and theories underlying the administration of information systems security
- Examine and use current methodologies for information systems security design, implementation, and monitoring
- Undertake review of information systems security practices, techniques, and methods for securing an organizations information assets
- Consider and analyze the impact of information systems security on organizations and society

**COURSE APPROACH**

This course is designed to provide current thinking about information systems security and the changing role of managers and end-users with regard to information system security planning, implementation, and management. To provide appropriate background and a solid foundation of understanding, instructors may find it helpful to arrange tours, bring experienced business people into the classroom, and/or arrange appropriate demonstrations of technology. Methods of instruction could include lectures, guest interviews, videos, and selected cases. Students participate in all class discussions by sharing experiences and commenting on assigned readings. Hands-on experience with technology could be included.

**COURSE CONTENT**

1. **Introduction: Definitions, history of IS security, current concerns, and implications of IS security (15%)**
   Material Covered: Overview of the history and concepts of information security. The course is a survey and overview of the history of information security to include definitions, the field, context, and environment. This section introduces intrusions, crimes, laws, and business concerns. It provides an awareness of information security software and hardware products.

2. **Information Systems Security Management: Key principles, management’s role, standards, policies, procedures and risk management (25%)**
   Material covered: Introduces the policy development process. This section provides an overview of management’s responsibilities regarding the key principles of information systems security management. It introduces the
concepts of standards and policy development, implementation, and risk management.

3. **Systems Security: Exposures and threats, approaches to attack and penetration, exploitation, audits, and logs (25%)**

Material covered: Introduces threats and vulnerabilities. The section defines classes of attacks and attackers and introduces hardware and software intrusion protection. The course describes various systems logs and audit techniques and their relationship to information systems security management, standards, policies, and procedures.

4. **Legal and ethical issues: protection of computer assets, copyright, computer abuse, and legal aspects of privacy (20%)**

Material covered: Introduces the legal issues of privacy, intellectual property, computer abuse, and appropriate use as defined by policies, procedures, and standards. It describes cultural, societal, and ethical implications of information security.

5. **Emerging Trends in IS Security: Biometrics, smart cards, digital signatures, and digital cash (15%)**

Material covered: This section introduces emerging technologies in information security. In particular it identifies the technologies, the issues in implementation, and evaluation for use in an information security environment. Topics could include biometrics, digital cash, wearable computers, wireless, and smart card technology.

**RESOURCES**


OEIS 13- Special Topics

COURSE DESCRIPTION
This course is the study of advanced concepts and issues relevant to OEIS. Content will vary according to the needs and interests of the students and the interests and expertise of the faculty. Selected topics should emphasize current technological advancements and OEIS management concerns. Prerequisites: Generally, students should have completed the core OEIS courses. Specific prerequisites should be established by the instructor(s) when the course is designed.

COURSE OUTCOMES
General outcomes provide students with up-to-date information on special contemporary topics relating to end-user information systems. Specific outcomes will vary with the topics and modules selected.

Special contemporary topics of particular interest and value to the OEIS student are explored at various skill levels, depending on the topic. Using a student-oriented approach, the instructor may use special exhibits, conferences, speakers, or equipment available for a particular time period. Students may also take an active part in the course design by researching and presenting topics of interest.

COURSE APPROACH
This course may be taught in a highly condensed format, such as a workshop, or as part of the normal school year curriculum. Modules may be taught separately or related modules may be joined together. Team teaching is encouraged to maximize individual instructor expertise. This course may be offered for variable credit and may be repeatable, depending on the topics offered.

COURSE CONTENT
The following modules are offered only as examples; they are not meant to be an exhaustive list of topics, which may be included in the course.

1. Certification

Material covered: A course may be designed to prepare students for review and in depth study for a specific certification examination such as Microsoft Certified Systems Engineer (MCSE), Microsoft Certified Professional (MCP), Certified Network Engineer (CNE), Certified Network Administrator (CNA), A+, Network+, Cisco Certified Network Administration (CCNA), Certified Computer Professional (CCP), Certified Knowledge Manager, Project Management certifications, or Systems Security certification examinations.

2. Application Development:

Material covered: The use of computer-assisted system engineering (CASE) tools, prototyping, rapid application design, and joint application design. May
include other topics such as Advanced Project Management—Tools and Techniques, Enterprise Resource Management, or Data Mining.

3. **IT and Change Management**

   Material covered: The course could emphasize problem solving skills for people-oriented/human factor issues, job redesign, negotiating and facilitating skills, or team building skills as well as ethical and societal issues relating to information technology.

4. **Human Factors Engineering (Ergonomics)**

   Material covered: Students analyze the physical components of a workplace that affect the worker: e.g., workstations, lighting, special layout, noise, color schemes, health and safety issues, and the impact of technology on knowledge workers in a digital economy.

5. **OEIS Project**

   Material covered: Students actually analyze, design, and build a working prototype of an OEIS to solve a real business problem. Students could elicit practical problems from local businesses and then prepare a working solution to those problems using information technology.

**RESOURCES**

Resources will vary based upon topic and modules selected. However, every effort should be made to include the latest material available that is relevant to the subject matter. Other external resources such as business practitioners and experts from other disciplines should be considered as guest lecturers. Also, numerous webinars which can enhance students understanding of IT are available and archived at different websites.
Acknowledgements

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