Information Technology & Management

Center for Professional Development
Daniel F. and Ada L. Rice Campus
201 E. Loop Road
Wheaton, IL 60187
www.cpd.iit.edu

Program Director:
C. Robert Carlson
630.682.6008
carlson@iit.edu

The Master of Information Technology & Management is designed primarily for working professionals who seek a hands-on, laboratory based program that broadens and deepens their knowledge of new and emerging information technologies, the application and integration of these technologies, and the administrative practices used in the effective management of these technologies. For some areas of study, it is possible to complete the entire MITM degree online.

The Master of Information Security Technologies & Management is designed for experienced information technology professionals who desire to focus on the area of information security though a hands-on, technically-oriented curriculum that also provides the necessary management knowledge and expertise to allow them to advance in the field to fill the Chief Information Security Officer and related management positions.

Degrees Offered

Master of Information Technology & Management

Master of Information Security Technologies & Management

Certificate Program

Computer and Network Security Technologies

Faculty

IIT faculty from the information technology program and computer science department provide the nucleus of the information technology and management faculty. Adjunct faculty with significant industrial, academic and teaching experiences form the remainder of the information technology and management faculty.

Admission Requirements

Applicants for admission must have earned a four-year bachelors degree from an accredited institution with a minimum cumulative undergraduate GPA of 3.0/4.0. International applicants are required to submit a GRE score with a minimum score of 1200 (combined score for tests taken prior to Oct. 1, 2002) or 900 (quantitative + verbal) and 2.5 (analytical writing) (for tests taken on or after Oct. 1, 2002) and may be required to submit a TOEFL score (see page 26). Admission as a non-degree student follows the university policy set forth in this bulletin. Applicants for admission to the Information Security Technologies & Management program should have an undergraduate degree in a computer-related area, and additionally must have experience as information technology or computer science professionals and should be prepared to provide a work history and references to confirm this experience.

Information Technology & Management students whose undergraduate degree is not in a computer-related area or who do not have significant experience or certifications in the information technology field will be required to demonstrate proficiency in the undergraduate courses that are prerequisites for the graduate program. Proficiency may he demonstrated by taking and passing a written exam or taking and passing, with a grade of "B" or better, the prerequisite undergraduate courses at IIT. Current prerequisites for the Master of Information Technology & Management include computer hardware and operating system literacy (ITM 301 or ITM 302 or equivalent coursework, certification or experience) and an ability to program at a basic level using a contemporary programming language (ITM 311 or ITM 312 or equivalent coursework, certification or experience).

Information Security Technologies & Management students who are deficient in knowledge or experience in certain areas of information technology will be required to demonstrate proficiency in undergraduate courses that are prerequisites for this graduate program. Proficiency may be demonstrated by taking and passing a written exam or taking and passing, with a grade of "B" or better, the prerequisite courses at IIT. Current prerequisites for the Master of Information Security Technologies & Management include an ability to program at a basic level using a contemporary object-oriented programming language (ITM 311 or ITM 312 or equivalent coursework, certification or experience) and knowledge and experience in computer networking (ITM 440 or ITM 540 or equivalent coursework, certification or experience; MISTM students may take ITM 540 for credit as a degree elective).

Master of Information Technology & Management

30 credit hours (Courses may be selected from 400- and 500-level courses: a minimum of 18 credit hours must be at the 500-level or higher.)
GPA of 3.0/4.0 or better

Students whose undergraduate degree is not in a computer-related area or who do not have significant experience or certifications in the information technology field will be required to complete core courses or demonstrate their knowledge through equivalent coursework, certification or experience. These core courses will ensure basic knowledge of networking concepts, protocols and methods (ITM 540); knowledge of the Internet, including the ability to build Web pages in HTML (ITM 561); and the ability to create and administer databases using a modern database management system (ITM 421).

The following course groupings are meant to guide students in their course selection, allowing them to focus on a particular area of information technology, depending on their interests, background and career goals; other ITM courses may be substituted for courses in each specialization with advisor approval. Students are not required to choose a specialization for degree completion and can mix courses from different specializations; a general program of study is also available.

Core Courses (9 hours)

Required courses

ITM 421 Data Modeling and Applications
ITM 561 Internet Technologies
ITM 540 Introduction to Data Networks and the Internet

Note: Core courses may be waived upon presentation of evidence of equivalent coursework, certification or experience.

Computer and Information Security (18 hours)

Recommended courses (9 hours)

ITM 528 Database Security
ITM 548 System and Network Security
ITM 578 Information Systems Security Management

Plus 9 hours chosen from the following:

ITM 538 Computer & Network Forensics
ITM 549 System and Network Security: Projects & Advanced Methods
ITM 551 Distributed Workstation System Administration
OR
ITM 552 Client-Server System Administration
ITM 558 Operating System Security

Healthcare Information Technology (18.6 hours)

Recommended courses (9.6 hours)

HM 500 Management of Healthcare
HM 510 Healthcare Systems and Technology
HM 520 Health Informatics
HM 530 Organization, Policy and Strategic Health Systems

Plus three courses chosen from the following:

ITM 4XX Bioinformatics
ITM 521 Client Server Technologies and Applications
ITM 531 Object Oriented System Analysis, Modeling and Design
ITM 571 Project Management for Information Technology Management
ITM 574 Strategic Information Technology Management
ITM 578 Information Systems Security Management

IT Management and Entrepreneurship (18 hours)

Recommended courses (9 hours)

ITM 571 Project Management for Information Technology
ITM 574 Strategic Information Technology Management
ITM 581 IT Entrepreneurship

Plus three courses chosen from the following:

ITM 531 Object Oriented System Analysis, Modeling and Design
ITM 532 UML Based Software Development
ITM 572 Process Engineering for Information Technology Managers
ITM 575 Networking and Telecommunications Management
ITM 578 Information Systems Security Management
ITM 585 Legal and Ethical Issues in Information Technology

Voice and Data Communication Technology (18 hours)

Recommended courses (9 hours)

ITM 540 Introduction to Data Networks and the Internet
ITM 545 Telecommunications Technology
ITM 546 Digital Voice Communications

Plus three courses chosen from the following:

ITM 541 Network Administration and Operations
ITM 542 Wireless Technologies and Applications
ITM 548 System and Network Security
ITM 549 System and Network Security: Projects & Advanced Methods
ITM 571 Project Management for Information Technology Management
ITM 575 Networking and Telecommunications Management
ITM 594 Special Project in Digital Voice and Data Communication

Data Management (18 hours)

Recommended courses (9 hours)

ITM 421 Data Modeling and Applications
ITM 422 Advanced Database Management

Plus three courses chosen from the following:

ITM 521 Client Server Technologies and Applications
ITM 528 Database Security
ITM 531 Object Oriented System Analysis, Modeling and Design
ITM 534 Human Computer Interaction
ITM 574 Strategic Information Technology Management
ITM 578 Information Systems Security Management
ITM 594 Special Project in Data Management

Internet Development and Electronic Commerce (18 hours)

Recommended courses (9 hours)

ITM 561 Internet Technologies & Web Site Design
ITM 562 Web Application Development
ITM 571 Project Management for Information Technology Management

Plus three courses chosen from the following:

ITM 411 Intermediate Object Oriented Programming
ITM 414 Human Factors in Visual Programming Environments
ITM 415 Advanced Object Oriented Programming
ITM 541 Network Administration and Operations
ITM 563 Internet Application Development
ITM 564 Electronic Commerce Applications and Management
ITM 565 Dynamic Web Page Development
ITM 566 Web Services & Service-Oriented Architectures
ITM 567 Enterprise Web Application Development
COM 525 Research and Usability Testing

Software Development (18 hours)

Recommended courses (9 hours)

ITM 521 Client Server Technologies and Applications
ITM 531 Object Oriented System Analysis, Modeling and Design
ITM 571 Project Management for Information Technology

Plus three courses chosen from the following:

ITM 411 Intermediate Object Oriented Programming
ITM 412 Advanced Structured and Object Oriented Programming
ITM 415 Advanced Object Oriented Programming
ITM 511 Application Development Methodologies
ITM 532 UML Based Software Development
ITM 536 Software Testing and Maintenance
ITM 567 Enterprise Web Application Development
ITM 571 Project Management for Information Technology Management
ITM 572 Process Engineering for Information Technology Managers

Systems Administration (18 hours)

Recommended courses (9 hours)

ITM 541 Network Administration and Operations
ITM 551 Distributed Workstation System Administration
OR
ITM 552 Client-Server System Administration

Plus three courses chosen from the following:

ITM 456 Introduction to Open Source Operating Systems
ITM 558 Operating System Security
ITM 571 Project Management for Information Technology Management
ITM 575 Networking and Telecommunications Management
ITM 574 Strategic Information Technology Management

Master of Information Technology & Management: General Course of Study

These are selected groupings of courses allowing students enrolled in the Master of Information Technology & Management degree to develop a broad overview knowledge of information technology. Suggested courses in each area are marked with an asterisk (*) with at least one alternative course listed for each area; more alternatives may be possible at the discretion of the student's advisor.

Internet Development and Electronic Commerce

* ITM 561 Internet Technologies & Web Design
ITM 562 Web Site Application Development
ITM 574 Strategic Information Technology Management

Data Management

* ITM 421 Data Modeling and Applications
* ITM 521 Client Server Technologies and Applications
ITM 531 Object Oriented System Analysis, Modeling and Design

Networking and Communications

* ITM 540 Introduction to Data Networks and the Internet
* ITM 548 System and Network Security
ITM 541 Network Administration and Operations

Systems Administration

* ITM 551 Distributed Workstation System Administration
OR
* ITM 552 Client-Server System Administration

Software Development

* ITM 411 Intermediate Object Oriented Programming
* ITM 532 UML Based Software Development
ITM 571 Project Management for Information Technology Management

Computer & Information Security

* ITM 578 Information Systems Security Management
ITM 528 Database Security
ITM 548 System and Network Security

Master of Information Security Technologies & Management

30 credit hours (Courses may be selected from 400- and 500-level courses: a minimum of 18 credit hours must be at the 500-level or higher.)
GPA of 3.0/4.0 or better

Students are required to complete six hours of core courses and another twelve hours selected from Information Security Technologies & Management electives. The final twelve hours of electives may be selected from any courses in the Information Technology & Management program or (with the advisor's consent) other IIT academic units and should be additional MISTM courses, prerequisites for MISTM courses, or courses that complement specific areas of security focus selected by the student.

Information Security Technologies & Management Core Courses (6 hours)

ITM 548 System and Network Security
ITM 578 Information Systems Security Management

Information Security Technologies & Management Electives (12 hours)

ITM 528 Database Security
ITM 538 Computer & Network Forensics
ITM 543 Digital Voice Communication Security
ITM 549 System and Network Security: Projects & Advanced Methods
ITM 558 Operating System Security
ITM 574 Strategic Information Technology Management
ITM 585 Legal and Ethical Issues in Information Technology
ITM 588 Disaster Recovery & Business Continuity
ITM 589 Information Security Risk Assessment and Analysis

Certificate Programs

Certificate programs offer working professionals an opportunity to increase their knowledge and skills in the specific areas of information technology. A certificate representing proven academic performance is presented after the required coursework is completed with a GPA of 3.0/4.0.

Courses taken may be later applied toward a degree program. Applicants should have a bachelor's degree from an accredited college or university; the degree need not be in an information technology or computer related field.

Computer and Network Security Technologies

This program is designed for students seeking knowledge that will prepare them for careers in computer and network security and to deal with the challenging computer and network security problems facing society. All courses may be later applied toward the Master of Information Technology and Management degree for those who apply and are accepted to the degree program.

Students in this program must select nine hours of coursework from the following:

ITM 540 Introduction to Data Networks and the Internet
OR
ITM 421 Data Modeling and Applications

and any two of the following six courses

ITM 528 Database Security
ITM 538 Computer & Network Forensics
ITM 548 System and Network Security
ITM 549 System and Network Security: Projects & Advanced Methods
ITM 558 Operating System Security
ITM 578 Information System Security Management

Students who have already completed coursework or certification equivalent to ITM 540 and/or ITM 421 may substitute a third course from the above list.

Accelerated Courses

The program may offer accelerated courses for credit in several areas of information technology & management. (Students should see the definition of accelerated courses on page 39.)

Accelerated courses provide an opportunity for degree-seeking students at IIT to complete graduate degree requirements in a shorter time period. If taken by non-degree seeking students, all courses may be later applied toward the Master of Information Technology and Management degree for those who apply and are accepted to the degree program.

Course Descriptions

Numbers in parentheses indicate class, lab and credit hours, respectively.

ITM 511
Application Development Methodologies
Students learn concepts in a systematic approach to the analysis, design, implementation and maintenance of software. Includes studies of the various models of the software life-cycle, software development project management, system requirements analysis, and methodologies for practical application of these models to software development, including the use of CASE (Computer Aided Software Engineering) tools. Students apply these principles in projects to improve the quality of their development process and final products. Prerequisite: ITM 412 or significant software development experience (2-2-3)

ITM 521
Client/ Server Technologies and Applications
This course covers both concepts and practical applications of client server systems, a common form of distributed system in which software is split between server tasks and client tasks. Both central and distributed server models will be studied, with particular focus on middleware, systems planning, and data access. The course includes hands-on development of client-server applications in database systems. Prerequisite: ITM 421 (2-2-3)

ITM 528
Database Security
Students will engage in an in-depth examination of topics in data security including security considerations in applications & systems development, encryption methods, cryptography law and security architecture & models. Prerequisite: ITM 421 (3-0-3)

ITM 531
Object-Oriented System Analysis, Modeling and Design
This course will cover object oriented approaches to system analysis, data modeling and design that combine both process and data views of systems. Emphasis is given to practical problems and the techniques needed to create solutions in systems design. (3-0-3)

ITM 532
UML-Based Software Development
Study of software development using the Unified Modeling Language (UML). Covers architecture-driven and component based techniques for modeling object-oriented applications.

Particular emphasis is placed on the hands on application of tools and components used for object oriented systems modeling. Prerequisite: ITM 412 or significant object-oriented programming experience (3-0-3)

ITM 534
Human/Computer Interaction
Introduction to human-computer interaction, a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use. Emphasis is given to the structure of communication between people and computers, capabilities of people to use computers, concerns that arise in designing and building interfaces, design trade-offs, and the process of specification, design, and implementation of user interfaces. Particular emphasis is placed on practical design and usability of computer system user interfaces. (3-0-3)

ITM 535
Systems Architectures
The course deals with building integrated information infrastructures, including both hardware, software and network components, as a solutions to particular information management needs and requirements. Students should be able to recognize major architectural styles in existing systems, understand how architecture influences long-term system evolution, describe and document an architecture effectively, and design suitable architectural solutions for a problem. Software integration and security issues are addressed. Prerequisite: ITM 531 (3-0-3)

ITM 536
Software Testing and Maintenance
This course covers the basic concepts of software testing and maintenance. The Testing Maturity Model provides a framework for developing a more mature test process. Testing techniques, test metrics and test plan management concepts are described within this framework. Prerequisites: ITM 471 or ITM 571. (3-0-3)

ITM 538
Computer & Network Forensics (draft)
This course will address methods to properly conduct a computer and/or network forensics investigation including digital evidence collection and evaluation and legal issues involved in network forensics. Technical issues in acquiring court-admissible chains-of-evidence using various forensic tools that reconstruct criminally liable actions at the physical and logical levels are also addressed. Prerequisite: ITM 548 (2-2-3)

ITM 540
Introduction to Data Networks and the Internet
This course covers current and evolving data network technologies, protocols, network components, and the networks that use them, focusing on the Internet and related LANs. The state of worldwide networking and its evolution will be discussed. This course covers the Internet architecture, organization, and protocols including Ethernet, 802.11, routing, the TCP/UDP/IP suite, DNS, SNMP, DHCP, and more. Students will be presented with Internet-specific networking tools for searching, testing, debugging, and configuring networks and network-connected host computers. There will be opportunities for network configuration and hands-on use of tools. (2-2-3)

ITM 541
Network Administration nd Operations
Students learn the details, use, and configuration of network applications. Currently protocols and application technologies considered include SNMP, SMTP, IMAP, POP, MIME, BOOTP, DHCP, SAMBA, NFS, AFS, X, HTTP, DNS, NetBIOS, and CIFS/SMB. Windows 2000 workgroups and domains: file and printer sharing, remote access, and the Windows Network Neighborhood are addressed. A research paper in the above topic areas is required. Prerequisite: ITM 540 (2-2-3)

ITM 542
Wireless Technologies and Applications
This course will present the foundation of wireless technologies and examine state-of-the-art wireless systems and services, including digital cellular systems (DCS), wireless asynchronous transfer mode (ATM), infrared data transfer (IrDA), wireless local area network technologies including 802.11a/b/g (wireless Ethernet) and Bluetooth, and third-generation (3G) systems such as wireless code division multiple access (W-CDMA) and cdma2000. Security for wireless systems including encryption and authentication issues will also be addressed. Prerequisite: ITM 441 or ITM 541 (3-0-3)

ITM 543
Digital Voice Communications Security (draft)
Addresses security issues inherent in Voice over IP and other digital voice transport implementations, including hands-on laboratory experience in the technical management of security for digital voice. Security protocols, encryption, identity and authentication will all be covered. Students will complete a team project. Prerequisites: ITM 546, ITM 548 (2-2-3)

ITM 545
Telecommunications Technology
Introduction to voice and data communications infrastructure design and implementation. Current infrastructure including components of voice networks (such as carrier switches, PBXs, SS7, T1 trunks, and switched versus dedicated circuits), the Public Switched Telephone Network (PSTN), communications industry structure, telephone-data system interfaces and interaction, and convergence of voice and data communications systems will be examined, along with possible alternative approaches. Also examined will be components of data networks such as modems, multiplexers, virtual circuits, hubs, bridges, and routers and their relationships to voice communication systems. Future directions in the evolution of voice and data communications technology will be highlighted. (3-0-3)

ITM 546
Digital Voice Communications
This course covers a suite of application protocols known as Voice over IP (VoIP). It describes important protocols within that suite including RTP, SDP, MGCP and SIP and the architecture of various VoIP installations including on-net to on-net, on-net to PSTN and Inter-domain scenarios. The functions of the Network Elements that play significant roles in this architecture will be defined. Examples of network elements that are currently available as products will be examined. Prerequisite: ITM 440/540 (3-0-3)

ITM 548
System and Network Security
Prepares students for a role as a network security administrator and analyst. Topics include viruses, worms, other attack mechanisms, vulnerabilities and countermeasures, network security protocols, encryption, identity and authentication, scanning, firewalls, security tools, and organizations addressing security. A component of this course is a self-contained team project that, if the student wishes, can be extended into a fully operational security system in a follow-on course. Prerequisite: ITM 540 (2-2-3)

ITM 549
System and Network Security: Projects & Advanced Methods
Prepares students for a role as a network security analyst and developer and give the student experience in developing a production security system. Topics may include computer and network forensics, advances in cryptography and security protocols and systems; operating system security, analysis of recent security attacks, vulnerability and intrusion detection, incident analysis, and the design and development of secure networks. This course includes a significant real world team project the results in an fully operational security system. Students should have previous experience with object-oriented and/or scripting languages. Prerequisite: ITM 548 (2-2-3) (C)

ITM 551
Distributed Workstation System Administration
Students learn to set up and maintain PC workstations and servers and to administer PC servers and networks.. Topics include hardware requirements; software compatibility; and system installation, configuration and options and post-installation topics; administrative practices required for file system security; process management; performance monitoring and tuning; storage management; back-up and restoration of data; and disaster recovery and prevention. A group project or research paper will demonstrate mastery of the subject. Prerequisite: ITM 301 (4-4-6)

ITM 552
Client-Server System Administration
Students learn to setup and configure a contemporary operating system, including the actual installation of the operating system on the student workstation, in a networked client-server environment. User account management, security, printing, disk configuration, and backup procedures are addressed, with particular attention to coverage of TCP/IP and TCP/IP applications. System installation, configuration and administration issues as well as network file systems, network access and compatibility with other operating systems are also addressed. A group project or research paper will demonstrate mastery of the subject. Prerequisite: ITM 302 (4-4-6)

ITM 555
Handheld Device Technologies
An in-depth introduction to contemporary handheld device technologies such as personal digital assistants (PDA), handheld computers, network analysis/security devices and wireless telephone/pager technologies including i-mode and wireless access protocol (WAP). Fundamentals of programming and security considerations for handheld device technology are introduced. Prerequisites: ITM 412, ITM 421, and ITM 461 or 561, or a working knowledge of object-oriented programming, database fundamentals, and HTML (2-2-3)

ITM 558
Operating System Security (draft)
This course will address theoretical concepts of operating system security, security architectures of current operating systems, and details of security implementation using best practices to configure operating systems to industry security standards. Server configuration, system-level firewalls, file system security, logging, anti-virus and anti-spyware measures and other operating system security strategies will be examined. Prerequisite: ITM 301 or ITM 302
(2-2-3)

ITM 561
Internet Technologies & Web Design
This course will cover how the Internet is organized, addressing, routing, DNS, protocols, TCP/IP, SMTP, the use of Internet applications, and the creation of Web pages using HTML and graphical applications. Networked multimedia distribution technologies are also explored. The design of effective Web site including page layout, user interface design, graphic design, content flow and site structure as well as management of Web site resources including intranet management and design considerations are addressed. Students design and create a major Web site with multiple pages and cross-linked structures. (2-2-3)

ITM 562
Web Site Application Development
Programming the Common Gateway Interface (CGI) for Web pages is introduced with emphasis on creation of interfaces to handle HTML form data. CGI programming is taught in multiple languages. Security of Web sites is covered with an emphasis on controlled access sites. Setup, administration and customization of content management systems including blog and portal sites is introduced. Students design and create a major Web site with including basic CGI programs with Web interfaces and process data flows from online forms with basic database structures. Prerequisite: ITM 561 (2-2-3)

ITM 563
Internet Application Development
In-depth examination of the concepts involved in the development of Internet applications. Students will learn the differences and similarities between Internet applications and traditional client/server applications. A discussion of the technologies involved in creating these Internet applications is included, and students will learn to use these technologies to create robust server-side applications. Also addressed is the role of the Application Service Provider (ASP) in enterprise information technology management. Prerequisite: ITM 411 (2-2-3)

ITM 564
Electronic Commerce Applications and Management
Strategies for management of electronic commerce allow students to learn to re-engineering established business processes to increase enterprise competitive advantage, provide better customer service, reduce operating costs, and achieve a better return on investment. Students will learn to evaluate, use, and deploy state-of-the-

art tools and techniques needed to develop a reliable e-commerce offering on the Web. The course will cover state-of-the-art programming and development tools. This class will provide students with hands-on exposure needed to design and build a fully functional e-commerce Web site. Prerequisites: ITM 563 (2-2-3)

ITM 565
Dynamic Web Page Development
Students will learn the W3C and major vendors' Document Object Models (DOM) and how to use scripting syntax and techniques to make use of the DOM in the preparation of dynamic web pages. The role of Cascading Style Sheets in dynamic pages will also be covered in detail. Prerequisite: ITM 561 (2-2-3)

ITM 566
Web Services and Service-Oriented Architectures
The student is introduced to the XML markup language and associated modeling techniques required to develop leading edge Web documentation for a next generation Web site, and learns to design structured and intuitive markup utilizing schema and stylesheets which flexibly augment the underlying XML infrastructure. Principles of XML use are reinforced by analysis of business case studies including an XML-based Web site. Prerequisite: ITM 561 (2-2-3)

ITM 567
Enterprise Web Application Development
Students learn how to construct large-scale enterprise-level Web applications using current technologies. Areas covered include components, design goals, and architecture as well as integration of databases and directory services; security will be discussed and give rise to topics including persistence, communication, transactions and container services. Students will design, develop and deploy a real-world Web application. Prerequisite: ITM 415 or permission of instructor (2-2-3)

ITM 571
Project Management for Information Technology Management
Basic principles of project management are taught. Includes software development concepts of requirements analysis, object modeling and design and software testing. Management of application development and major Web development projects will also be addressed. (3-0-3)

ITM 572
Process Engineering for Information Technology Managers
This course will provide students with the knowledge and skills to define, model, measure and improve business processes. The course will focus on re-engineering processes through the application of technology to achieve significant and measurable improvement. The course will explore the latest industry standards and students will use state-of-the-art software tools for hands-on experiential learning. Prerequisite: ITM 471 or ITM 571 (3-0-3)

ITM 574
Strategic Information Technology Management
This course defines information technology management strategies, explores the possible information technology strategies of an organization, and provides conceptual frameworks for the development and evaluation of information technology management strategies. It also examines concepts of strategic information technology systems, approaches for analyzing strategic applications, and systems planning as it relates to information technology management strategy and the interface with organizational strategies. (3-0-3)

ITM 575
Networking and Telecommunications Management
This course addresses the design, implementation, and management of computer networks and enterprise telecommunication systems. Design issues in wide area networks and telecommunications with emphasis on Internet connectivity are also addressed. Tools for supporting the distribution and sharing of system resources and information are discussed, along with tools to support network design and management.
Prerequisite: ITM 541 (3-0-3)

ITM 578
Information System Security Management
In-depth examination of topics in the management of information technology security including access control systems & methodology, business continuity & disaster recovery planning, legal issues in information system security, ethics, computer operations security, physical security and security architecture & models using current standards and models. Students working in teams will conduct an information security program audit for a real-world organization such as a business or a government body or agency. (3-0-3)

ITM 581
IT Entrepreneurship
This course prepares students to become leaders in information technology and to build ITM companies. Students design and develop a prototype ITM product and prepare a business plan and venture proposal presentation. (3-0-3)

ITM 585
Legal and Ethical Issues in Information Technology
Current legal issues in information technology are addressed including elements of contracting, payment systems and digital signatures, privacy concerns, intellectual property, business torts and criminal liability including hacking, computer trespass and fraud. Examination of ethical issues including privacy, system abuse, and ethical practices in information technology equip students to make sound ethical choices and resolve legal and moral issues that arise in information technology. (3-0-3)

ITM 588 (draft)
Disaster Recover and Business Continuity
Students learn to design and manage key business information security functions including incident response plans and incident response teams; disaster recovery plans; and business continuity plans. Reporting, response planning and budgeting are all addressed. Students working in teams will prepare an incident response, disaster recovery, or business continuity plan for a real-world organization such as a business or a government body or agency. Prerequisite: ITM 578 (3-0-3)

ITM 589 (draft)
Information Security Risk Assessment and Analysis
Students will learn the details of risk management in information security. Risk assessment involves estimating harm to business likely to result from

a security failure and the likelihood of such a failure. Risk analysis is the process of indentifying an organization's information resources, existing controls, security risks, and vulnerabilities; determining their magnitude; and indentifying areas needing safeguards as well as establishing potential costs. Students working in teams will conduct a risk assessment or risk analysis for a real-world organization such as a business or a government body or agency. Prerequisite: ITM 578 (3-0-3)

ITM 592
Embedded Systems and Reconfigurable Logic Design
This course covers embedded system design fundamentals. Working with various microcontrollers, microprocessors, and DSPs, students will discover hardware, software and firmware design tradeoffs, tool chains, and best practices in current embedded systems development. Laboratory exercise and experience reinforce the lecture concepts. A course project encapsulates all topics culminating in an embedded system designed and implemented from the ground up. Prerequisite: Knowledge of digital logic and C or instructor consent. (4-4-6)

ITM 593
Embedded Systems
This course introduces embedded systems concepts and technology, illustrates the trade-offs which occur as part of embedded systems design, as well as providing practical applications of embedded systems technology. Particular emphasis is given to embedded systems hardware, software and development tools. The course labs include hands-on development of several stand-alone embedded applications using development tools such as compilers, simulators and evaluation boards. Prerequisite: ITM 301 or equivalent computer architecture course; C/C++ programming experience. (2-2-3)

ITM 594
Special Projects in Information Technology
Capstone project. Prerequisite: written consent of instructor (Credit: 1 to 6)

ITM 595
Topics in Information Technology
This course will cover a particular topic, varying from semester to semester, in which there is particular student or staff interest. Prerequisite: consent of instructor (Credit: variable)

ITM 597
Special Problems in Information Technology
Independent study and project. Prerequisite: Consent of instructor. (Credit: variable)

Undergraduate Courses Available to Graduate Students in Information Technology & Management

ITM 301 (as a prerequisite only)
Introduction to Contemporary Operating Systems and Hardware I

ITM 302 (as a prerequisite only)
Introduction to Contemporary Operating Systems II

ITM 311 (as a prerequisite only)
Introduction to Object Oriented Programming

ITM 312 (as a prerequisite only)
Introduction to Systems Software Programming

ITM 411
Intermediate Object-Oriented Programming

ITM 412
Advanced Structured and Systems Programming

ITM 414
Human Factors in Visual Programming Environments

ITM 415
Advanced Object-Oriented Programming

ITM 421
Data Modeling and Applications

ITM 422
Advanced Database Management

ITM 456
Introduction to Open Source Operating Systems

ITM 460
Fundamentals of Multimedia

ITM 495
Topics in Information Technology