Information Technology and Management

IIT School of Applied Technology

Daniel F. and Ada L. Rice Campus
201 E. Loop Road
Wheaton, IL 60187
www.iit.edu/applied_tech/

Dean and Program Director:
C. Robert Carlson
630.682.6002
carlson@iit.edu

The mission of the Master of Information Technology & Management program is to educate and inform students to prepare them to assume technical and managerial leadership in the information technology and cyber security fields. The Information Technology and Management program applies a hands-on, reality-based approach to education that allows students to apply what they learn in class to solve real-life problems. Additional courses may be taken taken from the IIT Chicago-Kent College of Law curriculum to give cyber security and forensics practitioners a thorough grounding in legal issues and compliance. The program provides an innovative experience where students work on cutting-edge, industry-sponsored projects. This teaching philosophy prepares students to become innovators, entrepreneurs, and leaders of the future. For some areas of study, it is possible to complete the entire MITM degree on-line.

Degrees Offered

Master of Information Technology & Management

Master of Cyber Forensics and Security

Certificate Programs

Advanced Software Development
Cyber Security Management
Cyber Security Technologies
Data Center Operations and Management
Data Management and Analytics
Digital Voice and Data Communication Technologies
Information Technology Innovation, Leadership and Entrepreneurship
Information Security Management
Systems Analysis
System Administration
Web Design and Application Development

Faculty

Carlson, C. Robert, Professor of Computer Science in the School of Applied Technology, Dean of the School of Applied Technology, Director of the Rice Campus, and Academic Director of Information Technology and Management. B.A., Augustana College; M.S., Ph.D., University of Iowa. Information architecture, object-oriented modeling and design, software maturity models, database design, software engineering, and IT entrepreneurship.

Davids, Carol, Industry Professor and Director, School of Applied Technology Real-Time Communications Laboratory. B.S.E.E. Cornell University; M.I.T.M. Illinois Institute of Technology. Voice over IP, voice and data networks, and digital and voice communications.

Hajek, Jeremy, Industry Associate Professor. B.I.T.M., M.I.T.M., Illinois Institute of Technology. Cloud computing, systems architecture, enterprise computing, embedded systems, and operating systems.

Hendry, Robert, Industry Professor. B.S., Aurora University; M.S., University of Maryland. Data management, databases, data analytics, data warehousing, application development, and informatics.

Lidinsky, William, Industry Professor and Director, School of Applied Technology Security and Forensics Laboratory. B.S.E.E., M.S.E.E. Illinois Institute of Technology; M.B.A. University of Chicago. Computer networking, computer and network security, computer and network forensics, vulnerability testing, and steganography.

Trygstad, Raymond E., Industry Professor, Associate Director for Information Technology and Management, and Director of Information Technology for the School of Applied Technology. B.S., United States Naval Academy; M.S.S.M., University of Denver. System administration, operating system virtualization, information security management, information technology policy, cloud computing, open source operating systems and applications, and multimedia.

Laboratories and Research Centers

The IIT School of Applied Technology operates and administers over 200 computers and servers at the Main and Rice Campuses, to support teaching, learning, and research. Nine laboratories include Sun Solaris facilities, a networking/network security and computer forensics facility, a dedicated Voice over IP (VoIP) facility, which includes an entire CISCO VoIP LAN as well as video and mesh wireless capabilities, and the world's first 10GBASE-T 10-gigabit Ethernet academic computing facility. The security/forensics, VoIP, and 10GBASE-T laboratories provide additional facilities for student projects and applied research, some of which is undertaken in conjunction with industry partners. All laboratories are normally available for student use outside of class hours, and one or more laboratories are available for student use weekdays between 10 am and 10 pm at the Rice Campus. A wireless network at the Rice Campus provides complete coverage of the campus and operates at all times that the campus is open. Students make extensive use of the network infrastructure provided to support personal notebook computers.

Admission Requirements

Applicants for admission must have earned a four-year bachelor's 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) or 300 quantitative + verbal and 2.5 analytical writing (for tests taken on or after August 1, 2011), and may be required to submit a TOEFL score (see requirements within this bulletin). Admission as a non-degree student follows the university policy set forth in this bulletin.

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 be 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). Students enrolled in undergraduate post-baccalaureate studies (see information at the front of this bulletin) may take these courses as part of that program.

Current prerequisites for the Master of Cyber Forensics and Security include computer hardware and operating system literacy (ITMO 301 or ITMO 302 or equivalent coursework certification or experience); an ability to program at a competent level using a contemporary programming language (ITMD 411); basic knowledge of networking concepts, protocols, methods, and the Internet (ITMO 440), and the ability to create and administer databases using a modern database management system (ITMD 421). Students enrolled in undergraduate post-baccalaureate studies may take these courses as part of that program.

Placement Examinations

Students entering the Master of Information Technology and Management degree program may be required to take placement examinations based on an evaluation of their background and their undergraduate degree program.

Students may be required to demonstrate proficiency in the use of a contemporary object-oriented programming language through completion of a programming proficiency examination. Students will be requested to complete a representative set of basic programming tasks and will have a choice of programming languages in which to complete the tasks; Visual Basic is not an acceptable language for this purpose. References may be consulted, but the test is timed so ability to code is necessary. Students who cannot satisfactorily complete the exam may be required to attend a refresher workshop or short course in their selected programming language, or may be required to complete an ITM programming course. The appropriate action will be based on their score on the exam.

Students who are not required to complete the Test of English as a Foreign Language (TOEFL) but have very low scores on the GRE Verbal (generally 10th percentile or lower) may be required to complete the IIT English Proficiency Review (EPR) Essay Examination or an English evaluation. If students cannot pass this examination or evaluation, they will be required to enroll in an appropriate ENG or PESL course and demonstrate proficiency at course completion.

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 an ability to program at a competent level using a contemporary programming language (ITMD 411); basic knowledge of networking concepts, protocols, and methods (ITMO 540); knowledge of the Internet, including the ability to build Web sites and deliver them on a server (ITMD 461); the ability to create and administer databases using a modern database management system (ITMD 421); and knowledge of a contemporary operating system (ITMO 456). Students enrolled in undergraduate post-baccalaureate studies (see information in this bulletin) may take these courses as part of that program, but they will not then be applied to their graduate degree.

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; alternative courses in each specialization may be available at the discretion of the student's advisor. Final determination of completion of a specialization will be made by a student's graduate advisor. 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

ITMD 411 Intermediate Software Development

AND 6 hours from the following:

ITMD 421 Data Modeling and Applications
ITMD 461 Internet Technologies and Web Design
ITMD 540 Introduction to Data Networks and the Internet
ITMO 456 Introduction to Open Source Operating Systems

Notes: Core courses may be waived upon presentation of evidence of equivalent coursework, certification, or experience or successful completion of the placement examination. Approval of waivers will be made by the student's advisor or the ITM Associate Director. If any one core course is waived, students must still complete nine hours of core course content. Core courses that also apply to specializations will still fulfill the core course requirement.

Computer and Information Security (21 hours)

Recommended Courses (12 hours)

ITMO 456 Introduction to Open Source Operating Systems
ITMS 548 Cyber Security Technologies
ITMS 549 Cyber Security Technologies: Projects and Advanced Methods
ITMS 578 Cyber Security Management

AND 6 hours from the following:

Any 500-level ITMS elective (ITMS 579 may only be taken once as part of this requirement).

AND 3 or more hours from the following:

Any 500 level ITMS elective

ITMO 551 Distributed Workstation System Administration

OR

ITMO 552 Client-Server System Administration
ITMM 586 Information Technology Auditing

Voice and Data Communication Technology (21 hours)

Recommended Courses (12 hours)

ITMO 456 Introduction to Open Source Operating Systems
ITMO 540 Introduction to Data Networks and the Internet
ITMO 545 Telecommunications Technology
ITMO 546 Voice Communications Over Data Networks

AND 9 hours from the following:

ITMD 565 Rich Internet Applications
ITMM 571 Project Management for Information Technology Management
ITMM 575 Networking and Telecommunications Management
ITMO 541 Network Administration and Operations
ITMO 542 Wireless Technologies and Applications
ITMO 544 Cloud Computing Technologies
ITMO 547 Voice Communications Over Data Networks: Projects & Advanced Methods
ITMO 555 Intelligent Device Applications
ITMS 543 Vulnerability Analysis and Control
ITMS 548 Cyber Security Technologies
ITMS 549 Cyber Security Technologies: Projects & Advanced Methods

IT Management and Entrepreneurship (18 hours)

Recommended Courses (9 hours)

ITMM 571 Project Management for Information Technology Management
ITMM 574 Information Technology Management Frameworks
ITMM 581 IT Entrepreneurship

AND 9 hours from the following:

Any 500-level ITMM elective
ITMD 532 UML Based Software Development
ITMM 570 Fundamentals of Management for Technical Professionals
ITMM 582 Business Innovation
ITMS 578 Information Systems Security Management
ITMT 531 Object Oriented System Analysis, Modeling and Design
INTM 511 Industrial Leadership
INTM 515 Advanced Project Management
INTM 522 Computers in Industry
INTM 534 Resource Management
INTM 543 Purchasing
TECH 581 Consulting for Technical Professionals

Data Management (18 hours)

Recommended Courses (9 hours)

ITMD 421 Data Modeling and Applications
ITMD 422 Advanced Database Management
ITMD 528 Database Security

AND 9 hours from the following:

ITMD 521 Client Server Technologies and Applications
ITMD 526 Data Warehousing
ITMD 527 Data Analytics
ITMD 529 Advanced Data Analytics
ITMM 574 Information Technology Management Frameworks
ITMO 557 Storage Technologies
ITMS 578 Cyber Security Management
ITMT 531 Object Oriented System Analysis, Modeling and Design

Web Design and Application Development (18 hours)

Recommended Courses (9 hours)

ITMD 461 Internet Technologies & Web Design
ITMD 534 Human/Computer Interaction
ITMD 562 Web Application Development

AND 9 hours from the following:

ITMD 513 Open-Source Programming
ITMD 515 Advanced Software Development
ITMD 519 Topics in Software Development
ITMD 555 Intelligent Device Applications
ITMD 563 Intermediate Web Application Development
ITMD 564 Advanced Web Application Development
ITMD 565 Rich Internet Applications
ITMD 566 Service-Oriented Architectures
ITMD 569 Topics in Application Development
ITMM 571 Project Management for Information Technology Management
ITMO 541 Network Administration and Operations
COM 525 Research and Usability Testing

Systems Analysis (18 hours)

Recommended Courses (9 hours)

ITMM 571 Project Management for Information Technology
ITMM 572 Process Engineering for Information Technology Managers
ITMT 531 Object Oriented System Analysis, Modeling and Design

AND 9 hours from the following:

ITMD 511 Application Development Methodologies
ITMD 532 UML Based Software Development
ITMD 534 Human Computer Interaction
ITMD 536 Software Testing and Maintenance
ITMM 574 Information Technology Management Frameworks
ITMM 575 Networking and Telecommunications Management
ITMM 586 Information Technology Auditing
ITMS 578 Cyber Security Management
INTM 522 Computers in Industry
TECH 581 Consulting for Technical Professionals

Data Center Operations and Management (21 hours)

Recommended Courses (9 hours)

ITMT 535 Data Center Architecture
ITMO 540 Introduction to Data Networks and the Internet
ITMO 554 Operating System Virtualization
ITMM 576 Data Center Management

AND 6 hours from the following:

ITMD 526 Data Warehousing
ITMM 574 Information Technology Management Frameworks
ITMO 527 Data Analytics
ITMO 529 Advanced Data Analytics
ITMO 544 Cloud Computing Technologies
ITMO 546 Voice Communications Over Data Networks
ITMO 557 Storage Technologies
ITMS 548 Cyber Security Technologies
ITMS 578 Cyber Security Management
ITMS 588 Incident Response, Disaster Recovery and Business Continuity

Software Development (18 hours)

Recommended Courses (9 hours)

ITMD 515 Advanced Software Development
ITMD 532 UML Based Software Development
ITMM 571 Project Management for Information Technology Management

AND 9 hours from the following:

ITMD 412 Advanced Software Development
ITMD 511 Application Development Methodologies
ITMD 513 Open Source Programming
ITMD 519 Topics in Software Development
ITMD 521 Client Server Technologies and Applications
ITMD 534 Human Computer Interaction
ITMD 536 Software Testing and Maintenance
ITMM 572 Process Engineering for Information Technology Managers
ITMO 555 Intelligent Device Applications
ITMO 556 Intelligent Device Project
ITMS 518 Coding Security
ITMT 531 Object Oriented System Analysis, Modeling and Design

System Administration (18 hours)

Recommended Courses (9 hours)

ITMO 541 Network Administration and Operations
ITMO 551 Distributed Workstation System Administration

OR

ITMO 552 Client-Server System Administration

AND 9 hours from the following:

ITMM 571 Project Management for Information Technology Management
ITMM 574 Information Technology Management Frameworks
ITMM 575 Networking and Telecommunications Management
ITMO 456 Introduction to Open Source Operating Systems
ITMO 544 Cloud Computing Technologies
ITMO 551 Distributed Workstation System Administration

OR

ITMO 552 Client-Server System Administration
ITMO 554 Operating System Virtualization
ITMO 557 Storage Technologies
ITMS 558 Operating System Security

Management Information Systems (18 hours)

Recommended Courses (9 hours)

ITMD 421 Data Modeling and Applications
ITMD 422 Advanced Database Management I
ITMM 571 Project Management for Information Technology

AND 9 hours from the following:

ITMD 526 Data Warehousing
ITMD 527 Data Analytics
ITMD 528 Database Security
ITMD 529 Advanced Data Analytics
ITMD 532 UML Based Software Development
ITMM 572 Process Engineering for Information Technology Managers
ITMM 574 Information Technology Management Frameworks
ITMM 586 Information Technology Auditing
ITMO 544 Cloud Computing Technologies
ITMO 554 Operating System Virtualization
ITMT 531 Object Oriented System Analysis, Modeling and Design
INTM 515 Advanced Project Management
INTM 522 Computers in Industry
TECH 581 Consulting for Technical Professionals

Digital Systems Technology (18 hours)

Recommended Courses (9 hours)

ITMO 555 Intelligent Device Applications
ITMT 533 Operating System Design Implementation
ITMT 593 Embedded Systems

AND 9 hours from the following:

ITMD 511 Application Development Methodologies
ITMO 540 Introduction to Data Networks and the Internet
ITMO 541 Network Administration and Operations
ITMO 542 Wireless Technologies and Applications
ITMO 544 Cloud Computing Technologies
ITMO 545 Telecommunications Technology
ITMO 546 Voice Communications Over Data Networks
ITMS 556 Intelligent Device Project
INTM 522 Computers in Industry

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 one alternative course listed for each area; more alternatives may be possible at the discretion of the student's advisor.

Web Design and Application Development

*ITMD 461 Internet Technologies & Web Design
ITMD 562 Web Site Application Development
ITMD 565 Rich Internet Applications

Data Management

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

Information Technology Management

*ITMM 571 Project Management for Information Technology
ITMM 574 Information Technology Management Frameworks
ITMM 586 Information Technology Auditing

Networking and Communications

*ITMO 540 Introduction to Data Networks and the Internet
*ITMS 548 Cyber Security Technologies
ITMO 541 Network Administration and Operations

Systems Administration

*ITMO 551 Distributed Workstation System Administration

OR

*ITMO 552 Client-Server System Administration

Software Development

*ITMD 411 Intermediate Object Oriented Programming
ITMD 532 UML Based Software Development
Computer & Information Security

Computer & Information Security

*ITMS 578 Cyber Security Management
ITMS 528 Database Security
ITMS 548 Cyber Security Technologies

Master of Cyber Forensics and Security

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. Law courses count as 500-level courses toward this total).
GPA: 3.0/4.0

Core Courses (15 hours)

Required Courses

ITMS 538 Cyber Forensics
ITMS 543 Vulnerability Analysis and Control
ITMS 548 Cyber Security Technologies
ITMS 548 Cyber Security Technologies: Projects and Advanced Methods
ITMS 578 Cyber Security Management
LAW 273 Evidence

Note: Core course requirements may be waived upon presentation of evidence of equivalent coursework, certification, or experience. Approval of waivers will be made by the student's advisor or the ITM Associate Director.

Elective Courses (15 hours)

Select at least twelve hours from the following:

ITMS 518 Coding Security
ITMS 528 Database Security
ITMS 539 Steganography
ITMS 549 Cyber Security Technologies: Projects and Advanced Methods
ITMS 555 Mobile Device Forensics
ITMS 558 Operating System Forensics
ITMS 579 Topics in Information Security
ITMS 588 Incident Response, Disaster Recovery, and Business Continuity
ITMM 585 Legal and Ethical Issues in Information Technology
ITMM 586 Information Technolgoy Auditing
ITMO 456 Introduction to Open Source Operating Systems
ITMT 594 Special Projects in Information Technology

AND at least 3 hours from the following:

LAW 240 National Security Law
LAW 478 Computer and Network Privacy and Security: Ethical, Legal, and Technical Considerations
LAW 495 Electronic Discovery

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. All courses may be later applied toward the Master of Information Technology and Management degree or the Masterof Cyber Forensics and Security degree for those who apply and are accepted to the degree program. Applicants should have a bachelors degree from an accredited college or university; the degree need not be in an information technology or computer related field. Prerequisites may be required for some courses in certificates; these prerequisites will not be applied to the certificate.

Advanced Software Development Certificate

This program is designed for students seeking knowledge that will enhance their skills as a software developer.

Required Courses

ITMD 515 Advanced Software Development
ITMM 571 Project Management for Information Technology Management

AND two of the following:

ITMD 511 Application Development Methodologies
ITMD 513 Open Source Programming
ITMD 519 Topics in Software Development
ITMD 532 UML Based Software Development
ITMD 534 Human Computer Interaction
ITMD 536 Software Testing and Maintenance
ITMO 555 Intelligent Device Applications
ITMO 556 Intelligent Device Projects
ITMS 518 Coding Security

Students who have already completed coursework, training, or certification equivalent to ITMM 571 may substitute a fourth course from the above list.

Cyber Security Management Certificate

This program is designed for students seeking knowledge that will prepare them for careers in the management of information security.

Required Courses

ITMS 548 Cyber Security Technologies
ITMS 578 Information System Security Management

AND two of the following:

ITMM 586 Information Technology Auditing
ITMS 543 Vulnerability Analysis and Control
ITMS 579 Topics in Information Security (may be applied to this certificate twice.)
ITMS 588 Incident Response, Disaster Recovery and Business Continuity

Cyber Security Technologies Certificate

This program is designed for students seeking knowledge that will prepare them for careers in computer and network security technologies and to deal with the challenging computer and network security problems facing society.

Required Courses

ITMO 543 Vulnerability Analysis and Control
ITMS 548 Cyber Security Technologies

AND two of the following:

ITMS 518 Coding Security
ITMS 528 Database Security
ITMS 538 Cyber Forensics
ITMS 539 Steganography
ITMS 549 Cyber Security Technologies: Projects & Advanced Methods
ITMS 558 Operating System Security

Data Center Operations and Management Certificate

This program is designed for students seeking knowledge that will prepare them for a career in data center operations.

Required Courses:

ITMM 576 Data Center Management
ITMO 540 Introduction to Data Networks and the Internet
ITMO 554 Operating System Virtualization
ITMT 535 Data Center Architecture

Students who have already completed coursework, training, or certification equivalent to ITMO 540 may substitute a fourth course from the list below.

ITMO 544 Cloud Computing Technologies
ITMO 557 Storage Technologies
ITMS 548 Cyber Security Technologies
ITMs 588 Incident Response, Disaster Recovery and Business Continuity

Data Management and Analytics Certificate

This program is designed for students seeking knowledge that will prepare them for careers in data management and analytics.

Required Courses

ITMD 421 Data Modeling and Applications
ITMD 422 Advanced Database Management
ITMD 527 Data Analytics

AND one of the following:

ITMD 526 Data Warehousing
ITMS 528 Database Security
ITMD 529 Advanced Data Analytics
ITMT 531 Object Oriented System Analysis, Modeling and Design

Students who have already completed coursework, training, or certification equivalent to ITMD 421 may substitute a fourth course from the above list.

Digital Voice and Data Communication Technologies Certificate

This program is designed for students seeking knowledge that will prepare them for careers in digital voice and data communications.

Required Courses

ITMO 540 Introduction to Data Networks and the Internet
ITMO 545 Telecommunications Technology
ITMO 546 Voice Communications Over Data Networks

AND one of the following:

ITMO 541 Network Administration and Operations
ITMO 547 Voice Communications Over Data Networks: Projects & Advanced Methods
ITM 575 Networking & Telecommunications Management

Students who have already completed coursework, training, or certification equivalent to ITMO 540 may substitute a fourth course from the above list.

Information Technology Innovation, Leadership and Entrepreneurship Certificate

This program is designed for students seeking knowledge that will prepare them to be leaders, innovators and entrepreneurs in the field of information technology.

Required Courses

ITMM 571 Project Management for Information Technology Management
ITMM 581 IT Entrepreneurship
ITMM 582 Business Innovation

AND one of the following:

Any ITMM Elective

INTM 511 Industrial Leadership
INTM 515 Advanced Project Management
INTM 522 Computers in Industry
INTM 534 Resource Management
INTM 543 Purchasing
TECH 581 Consulting for Technical Professionals

Students who have already completed coursework, training, or certification equivalent to ITMM 571 may substitute a fourth course from the above list. Only one INTM course may be applied to the certificate.

System Administration Certificate

This program is designed for students seeking knowledge that will prepare them for a career as a systems administrator.

One of the following two six-credit-hour courses:

ITMO 551 Distributed Workstation System Administration
ITMO 552 ClientServer System Administration

AND two of the following:

ITMO 456 Introduction to Open Source Operating Systems
ITMO 544 Cloud Computing Technologies
ITMO 554 Operating System Virtualization
ITMS 558 Operating System Security
ITMM 571 Project Management for Information Technology Management

Systems Analysis Certificate

This program is designed for students seeking knowledge that will prepare them for a career as a systems analyst.

Required Courses

ITMM 571 Project Management for Information Technology
ITMM 572 Process Engineering for Information Technology Managers
ITMT 531 Object Oriented System Analysis, Modeling and Design

AND one of the following:

ITMD 511 Application Development Methodologies
ITMD 532 UML Based Software Development
ITMD 534 Human Computer Interaction
ITMD 536 Software Testing and Maintenance
INTM 522 Computers in Industry
TECH 581 Consulting for Technical Professionals

Students who have already completed coursework, training, or certification equivalent to ITMM 571 may substitute a fourth course from the above list.

Web Design and Application Development Certificate

This program is designed for students seeking knowledge that will prepare them for careers in Web design and application development.

Required Courses

ITMD 461 Internet Technologies & Web Design
ITMD 562 Web Application Development

AND two of the following:

ITMD 534 Human Computer Interaction
ITMD 555 Intelligent Device Applications
ITMD 563 Intermediate Web Application Development
ITMD 564 Advanced Web Application Development
ITMD 565 Rich Internet Applications
ITMD 566 Service-Oriented Architectures
ITMD 569 Topics in Application Development

Students who have already completed coursework, training, or certification equivalent to ITMD 461 may substitute a fourth 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 within the front section of this bulletin).

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 or the Master of Cyber Forensics and Security degree for those who apply and are accepted to the degree program.

CourseDescriptions

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

Information Technology & Management: Development

ITMD 411
Intermediate Software Development
This course covers a broad spectrum of object-oriented programming concepts and application programming interfaces. The student considers the details of object-orientated development in topics of multi-threading, data structure collections, stream I/O and client interfaces. Software engineering topics of packaging and deployment are covered as well. Hands-on exercises reinforce concepts taught throughout the course.
Prerequisite(s): [(ITM 311)]
(2-2-3)

ITMD 412
Advanced Structured & Systems Programming
Structured programming continues with advanced concepts including strings, arrays, pointers, data structures, file manipulation, and dynamic memory management. Students create more complex applications that work with user input, manipulate user supplied text or text obtained from a file, apply standard library routines for working with literal text, use pointers to store complex structures within arrays, and read and write data from files, the console, and the terminal. The object-oriented programming (OOP) paradigm is covered in depth including the philosophy of OOP, classes and objects, inheritance, template classes, and making use of class libraries.
Prerequisite(s): [(ITM 312)]
(2-2-3)

ITMD 421
Data Modeling & Applications
Basic data modeling concepts are introduced. Hands-on database design, implementation, and administration of single-user and shared multi-user database applications using a contemporary relational database management system.
(2-2-3)

ITMD 422
Advanced Database Management
Advanced topics in database management and programming including client server application development are introduced. Expands knowledge of data modeling concepts and introduces object-oriented data modeling techniques. Students will learn the use of Structured Query Language in a variety of application and operating system environments.
Prerequisite(s): [(ITM 421) OR (ITM 421)]
(3-0-3)

ITMD 460
Fundamentals of Multimedia
Students are introduced to computer-based multimedia theory, concepts, and applications. Topics include desktop publishing, hypermedia, presentation graphics, graphic images, animation, sound, video, multimedia on the World Wide Web and integrated multimedia authoring techniques.
(2-2-3)

ITMD 461
Internet Technologies & Web Design
This course will cover the creation of Web pages and sites using HTML, CSS, Javascript 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)

ITMD 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(s): [(ITM 411) OR (ITM 412) OR (ITMD 411) OR (ITMD 412)]
(2-2-3)

ITMD 513
Open Source Programming
Contemporary open-source programming languages and frameworks are presented. The student considers design and development topics in system, graphical user interface, network and web programming. Dynamic scripting languages are covered using object-oriented, concurrent and functional programming paradigms. Concepts gained throughout the course are reinforced with numerous exercises which will culminate in an open-source programming project.
Prerequisite(s): [(ITM 411) OR (ITMD 411)]
(2-2-3)

ITMD 515
Advanced Software Programming
This course considers Web container application development for enterprise systems. The primary focus is on database connectivity (JDBC) integration with Web application programming using an enterprise-level application framework. A Web application term project considers the design and implementation of a database instance that serves as the information tier in a contemporary 3-tier enterprise solution.
Prerequisite(s): [(ITM 411) OR (ITMD 411)]
(2-2-3)

ITMD 519
Topics in Software Development
This course will cover a particular topic in software development varying from semester to semester in which there is particular student or staff interest. The course may be taken more than once but only 9 hours of ITMD 419/519 credit may be applied to a degree.
(Credit: Variable)

ITMD 521
Client/Server Technologies & 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 studies, with particular focus on middleware, systems planning, and data access. The course includes hands-on development of client-server applications in database systems.
Prerequisite(s): [(ITM 421) OR (ITMD 421)]
(2-2-3)

ITMD 526
Data Warehousing
This class will introduce the student to concepts needed for successfully designing, building and implementing a data warehouse. The class will provide the technological and managerial knowledge base for data modeling approaches such as the star schema and database de-normalization issues. Topics such as loading the warehouse, performance considerations, and other concepts unique to the data warehouse environment will be discussed demonstrated in detail.
Prerequisite(s): [(ITM 421) OR (ITMD 421)]
(3-0-3)

ITMD 527
Data Analytics
This is a hands-on course that focuses on the creation, maintenance, and analysis of large informatics databases. Concepts such as data modeling, probability, linear regression, and statistical data analysis are covered in depth. In addition, this course will use large simulated equities, healthcare, insurance, and banking database systems. The student is expected to have a working understanding of relational database concepts as well as SQL.
Prerequisite(s): [(ITM 422) OR (ITMD 422)]
(3-0-3)

ITMD 529
Advanced Data Analytics
Informatics is the application of information technology to solve problems in other fields. Informaticists use technology and information to build intelligent systems used to bridge the gaps between information, technology, and the people who use it. The study of informatics is about blending applied mathematics with technology while understanding the broader consequences of computing on society and the problem being solved. It is important for any student to develop a broad perspective of technology and the people it serves. This course builds upon the student's knowledge of mathematical concepts of predictive modeling of samples and populations with an emphasis on applying technology to solve real world problems.
Prerequisite(s): [(ITM 527) OR (ITMD 527)]
(3-0-3)

ITMD 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(s): [(ITM 412) OR (ITMD 412)]
(3-0-3)

ITMD 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)

ITMD 536
Software Testing & 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
Prerequisite(s): [(ITM 471) OR (ITM 571) OR (ITMM 471) OR (ITMM 571)]
(3-0-3)

ITMD 555
Intelligent Device Applications
Intelligent device application development is covered with various technologies on mobile and robotic platforms. Utilizing contemporary toolkits, the student considers design and development on emulated and real "smart" devices including smart phones, personal digital assistants, sensors, actuators, and robots. Numerous exercises reinforce concepts gained throughout the course. A term project will integrate course topics into a comprehensive intelligent device application. This course may be taken more than once but only 6 hours of ITM 455/555 or ITMD 455/555 credit may be applied to a degree.
(2-2-3)

ITMD 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 Web site including basic CGI programs with Web interfaces and process data flows from online forms with basic database structures.
Prerequisite(s): [(ITM 461) OR (ITMD 461)]
(2-2-3)

ITMD 563
Intermediate Web 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.
Prerequisite(s): [(ITM 411) OR (ITMD 411)] AND [(ITM 461) OR (ITMD 461)]
(2-2-3)

ITMD 564
Advanced Web Application Development
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.
Prerequisite(s): [(ITM 563) OR (ITMD 563)]
(2-2-3)

ITMD 565
Rich Internet Applications
Students learn to create interactive rich Internet applications using Web development frameworks, applications, and techniques that primarily operate on the client-side. These applications often exhibit the same characteristics as desktop applications and are typically delivered through a standards-based Web browser, via a browser plug-in, or independently via sandboxes or virtual machines. Current software frameworks used to download, update, verify and execute these applications are addressed as well as writing applications for deployment in these frameworks.
Prerequisite(s): [(ITM 461) OR (ITMD 461)]
(2-2-3)

ITMD 566
Service-Oriented Architectures
This course covers IT enterprise systems employing web services technologies in SOA and ESB architectural patterns. The student considers SOA which defines and provisions IT infrastructure and allows for a loosely-coupled data exchange over disparate applications participating in business processes. The simplification of integration and flexible reuse of business components within SOA is greatly furthered by ESB. Lab exercises using contemporary toolkits are utilized to reinforce platform-agnostic course topics.
Prerequisite(s): [(ITM 411 or ITMD 411)] AND [(ITM 461 or ITMD 461)]
(2-2-3)

ITMD 569
Topics in Application Development
This course will cover a particular topic in application development, varying from semester to semester, in which there is a particular student or staff interest. This course may be taken more than once but only 9 hours of ITM 469/569 or ITMD 469/569 credit may be applied to a degree.
(Credit: Variable)

Information Technology & Management: Management

ITMM 570
Fundamentals of Management for Technology Professionals
This course explores fundamentals of management for professionals in high-technology fields. It addresses the challenges of the following: managing technical professionals and technology assets; human resource management; budgeting and managerial accounting; management of services, infrastructure, outsourcing, and vendor relationships; technology governance and strategy; and resource planning.
(3-0-3)

ITMM 571
Project Manangement for Information Technology Management
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)

ITMM 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 (ITMM 471) OR (ITM 571) OR (ITMM 571)]
(3-0-3)

ITMM 573
Building & Leading Effective Teams
This course will prepare students to be effective IT managers. Students will be introduced to the general challenges of management as well as the challenges unique to leading teams of technology professionals. The course will explore the skills necessary to excel as a leader including dealing with conflict, developing leadership skills, recruiting and developing employees, and leading remote and virtual teams. Students will explore case studies and execute team exercises to enrich their learning experience.
Prerequisite: [(ITM 471) OR (ITMM 471) OR (ITM 571) OR (ITMM 571)]
(3-0-3)

ITMM 574
Information Technology Management Frameworks
This course will examine the application of industry standard frameworks to the management of information technology infrastructure, development and operations. Frameworks including the Information Technology Infrastructure Library (ITIL), Control Objectives for Information and related Technology (COBIT), and others will be covered. Students will learn to use these frameworks to tailor a set of concepts and policies to necessary manage IT in a specific enterprise.
(3-0-3)

ITMM 575
Networking & Telecommunicastions Management
This course address the design, implementation, and management of computer networks and enterprise telecommunications 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 441) OR (ITMO 441) OR (ITM 541) OR (ITMO 541)].
(3-0-3)

ITMM 576
Data Center Management
This course is an in-depth examination of best practices in the management of enterprise data centers. Topics include data center consolidation; data center maintenance; server and network management methods and tools; budget and finance; service-level agreements; managing data center personnel and staff; and disaster recovery.
Prerequisite: [(ITM 535) OR (ITMO 535)]
(3-0-3)

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

ITMM 582
Business Innovation
This course is designed to teach innovative thinking through theory, methods, and practice of innovation. The course incorporates Einstein's thinking, and Edison's method to establish the innovation process that can be applied in current business environment. Current economic conditions and global sourcing requires that innovation becomes a leading tool for developing a competitive edge. Innovation has been considered a competency of educated, design engineering, and a selected few employees that has become insufficient today. Corporations and organizations need innovation to develop customer-specific solutions in almost real time.
(3-0-3)

ITMM 584
Information Technology at C-Level
The issues, competencies, challenges and rewards of managing information technology in major enterprises at the Chief Information Officer/Chief Technology Officer level are examined in depth. The course will equip students with a fundamental awareness of what the enterprise and the profession expects from the highest levels of IT management. Readings, case studies and guided discussions will be supplemented by a series of guest lectures from-and discussions with-Chicago-area IT professional currently employed in these roles.
(3-0-3)

ITMM 585
Legal & 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)

ITMM 586
Information Technology Auditing
Industry standard practices and standards in the auditing of information technology in an organization are addressed, with a particular emphasis on examination of IT governance, assets, controls, and control techniques. Specific areas covered will include the audit process, IT governance, systems and infrastructure life cycle management, IT service delivery and support, protection of information assets, and business continuity and disaster recovery. Students will examine case studies and complete hands-on exercises.
(3-0-3)

Information Technology & Management: Operations

ITMO 456
Introduction to Open Source Operating Systems
Students learn to set up and configure an industry-standard, open-source operating system including system installation and basic system administration. Also addressed are applications and graphical user interfaces as well as support issues for open-source software.
(2-2-3)

ITMO 540
Introduction to Data Networks & 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)

ITMO 541
Network Administration & 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 workgroups and domains: file and printer sharing, remote access, and Windows networking are addressed. A research paper in the above topic areas is required.
Prerequisite: [(ITM 440) OR (ITMO 440) OR (ITM 540) OR (ITMO 540)]
(2-2-3)

ITMO 542
Wireless Technologies & Applications
This course will provide students with the knowledge of wireless communication technologies. The course will focus on the 3G and 4G wireless networks such as UMTS, LTE, and WiMAX. Students will have the opportunity to study the different wireless networks architectures and major network elements including devices, base stations, base station controller, and core networks. Major topics of the course include air interfaces, protocols, session management, QoS, security, mobility, and handoff.
Prerequisite(s): [(ITM 440) OR (ITMO 440) OR (ITM 540) OR (ITMO 540)]
(3-0-3)

ITMO 544
Cloud Computing Technologies
Computing applications hosted on dynamically-scaled, virtual resources available as services are considered. Collaborative and non-collaborative "cloud-resident" applications are analyzed with respect to cost, device/location independence, scalability, reliability, security, and sustainability. Commercial and local cloud architectures are examined. A group-based integration of course topics will result in a project employing various cloud computing technologies.
(2-2-3)

ITMO 545
Telecommunications Technology
This course introduces technologies underlying telecommunications and real-time communications systems and services. Topics will include: wire-line and fiber systems including those associated with the public switched telephone networks and cable service providers; wireless systems including cellular, WiFi and WiMAX. Methods and architectures for delivery of signaling, voice and video are introduced; analog telephone systems, digital telephone systems on circuit switched networks both wire-line and cellular; digital telecommunications on packet switched networks. Codecs and transformation of voice and video into digital formats are introduced. Physical and data-link layer protocols are studied with emphasis on how they carry voice and video. Channelization and multiple-access methods are introduced. Switching methods studied include circuit switching, virtual circuit switching and packet switching.
(3-0-3)

ITMO 546
Telecommunications Over Data Networks
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 to PSATN 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(s): [(ITM 440) OR (ITMO 440) OR (ITM 540) OR (ITMO 540)]
(3-0-3)

ITMO 547
Telecommunications Over Data Networks: Projects & Advanced Methods
Mentored projects focused on real-time media applications, systems and services. HTTP-based and SIP-based systems are studied; reference is made to RTCWeb, W3C and IETF specifications and initiatives. Topics may include web-based real-time media applications; web-conferencing and distributed class-room applications; communications systems using SIP and Web technologies; standards-based systems supporting emergency calls over IP backbone networks; metrics for performance characteristics of real-time systems; security of streaming media; interoperability/conformance testing of real-time applications and services. Students present/demonstrate projects in a public meeting. Students should have previous or concurrent experience with one or more of the following: SIP, HTTP, HTML, and scripting or coding languages.
(2-2-3)

ITMO 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.
(4-4-6)

ITMO 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 work-station, 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.
(4-4-6)

ITMO 554
Operating Systems Virtualization
This course will cover technologies allowing multiple instances of operating systems to be run on a single physical system. Concepts addressed will include hypervisors, virtual machines, paravirtualization and virtual appliances. Both server and desktop virtualization will be examined in detail, with brief coverage of storage virtualization and application virtualization. Business benefits, business cases and security implications of virtualization will be discussed. Extensive hands-on assignments and a group project will allow students to gain first-hand experience of this technology.
(2-2-3)

ITMO 556
Itelligent Device Projects
Students create projects that exercise and expand their understanding of intelligent device application development. Instructional materials and lectures are provided as needed to support projects. Scope and deliverables will be determined through joint decision of the instructor and students. Students will describe requirements, create the plans as needed, demonstrate the application when applicable, create a written description of the work, and may deliver a formal presentation to an audience appropriate to the scope and scale of the work completed. This course may be taken more than once but only 6 hours of ITMO 456/556 credit may be applied to a degree.
Prerequisite(s): [(ITM 455) OR (ITM 555) OR (ITMD 455) OR (ITMD 555)]
(2-2-3)

ITMO 557
Storage Technologies
Modern enterprise data storage technologies and architectures are examined in depth. Topics include storage devices, file systems, storage networks, virtual storage, RAID, NAS, SAN, and other current enterprise-level storage models. Storage management, replication, deduplication, storage tiers, backups as well as fundamentals of business continuity, application workload, system integration, and storage/system administration are addressed. Specific knowledge and skills required to configure networked storage to include archive, backup, and restoration technologies are covered.
(3-0-3)

Information Technology & Management: Security

ITMS 518
Coding Security
This course examines security architecture elements within modern object-oriented programming languages that create the framework for secure programming. Analysis of components and services with their inherent strength and weaknesses give rise to common coding security challenges. An exploration of identity management, encryption services and common hacking techniques will enable the student's ability to develop secure code. Homework assignments and projects will reinforce theories taught.
Prerequisite(s): [(ITM 411) OR (ITMD 411)]
(3-0-3)

ITMS 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(s): [(ITM 421) OR (ITMD 421)]
(3-0-3)

ITMS 538
Cyber Forensics
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. Technical topics covered include detailed analysis of hard disks, files systems (including FAT, NTFS and EXT), and removable storage media; mechanisms for hiding and detecting hidden information; and the hands-on use of powerful forensic analysis tools.
(2-2-3)

ITMS 539
Steganography
Digital steganography is the science of hiding covert information in otherwise innocent carrier files so that the observer is unaware that hidden information exists. This course studies both digital steganography and digital steganalysis (the science of discovering the existence of and extracting the covert information). In addition to understanding the science and the pathologies of specific carriers and hiding algorithms, students will have hands-on experience with tools to both hide and extract information. Carrier files such as image, audio, and video files will be investigated.
Prerequisite(s): [(ITM 538) OR (ITMS 538)]
(2-2-3)

ITMS 543
Vulnerability Analysis & Control
This course addresses hands-on ethical hacking, penetration testing, and detection of malicious probes and their prevention. It provides students with in-depth theoretical and practical knowledge of the vulnerabilities of networks of computers including the networks themselves, operating systems and important applications. Integrated with the lectures are laboratories focusing on the use of open source and freeware tools; students will learn in a closed environment to probe, penetrate and hack other networks.
Prerequisite(s): [(ITM 440) OR (ITMO 440) OR (ITM 540) OR (ITMO 540)]
(2-2-3)

ITMS 548
Cyber Security Technologies
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 he extended into a full operational security system in a follow-course,
Prerequisite(s): [(ITM 440) OR (ITM 540) OR (ITMO 440) OR (ITMO 540)]
(2-2-3)

ITMS 549
Cyber Security Technologies: Projects & Advanced Methods
Prepares students for a role as a network security analyst and developer and gives 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 design and development of secure networks. This course includes a significant real world team project that results in an fully operational security system. Students should have previous experience with object-oriented and/or scripting languages.
Prerequisite(s): [(ITM 448) OR (ITM 548) OR (ITMS 448) OR (ITMS 548)]
(2-2-3)

ITMS 555
Mobile Device Forensics
This course will address methods for recovering digital data or evidence and conducting forensic analysis of mobile devices such as smart phones and tablets. Various devices will be compared including iPhone, Android, and Blackberry. A brief review of Linux and related forensic tools. ANAND technology and mobile file systems will be discussed. Students will learn how to unlock and root mobile devices and recover data from actual mobile devices.
Prerequisite(s): [(ITM 538) OR (ITMS 538)]
(2-2-3)

ITMS 558
Operating Systems Security
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 456) OR (ITMO 456)]
(2-2-3)

ITMS 577
Case Studies in Management of Information Technology
This course examines approaches and models for the management of information technology at an enterprise level through the use of case studies in the field.
(3-0-3)

ITMS 578
Cyber 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.
(3-0-3)

ITMS 579
Topics in Information Security
This course will cover a particular topic in Information Security, varying from semester to semester, in which there is particular student or staff interest. This course may be taken more than once but only 9 hours of ITM 479/579 or ITMS 479/ITMS 579 credit may be applied to a degree.
(Credit: Variable)

ITMS 588
Incident Response, Disater Recovery, & 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 organizations such as a business or a government body or agency.
(3-0-3)

Information Technology & Management: Theory and Technology

ITMT 492
Embedded Systems & Reconfigurable Logic Design
This course covers reconfigurable intelligent devices programmed with modern high level languages focusing on design and integration to modern environments. The course will also cover the topic and deployment of wireless sensor networks and the use of rapid prototyping for commercial application. Students will discover hardware, software and firmware design trade-offs as well as best practices in current embedded systems development. A final project will integrate course topics into a system using an embeddable single-board microcontroller.
Prerequisite(s): [(ITM 311) OR (ITM 312)]
(3-0-3)

ITMT 495
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.
(Credit: Variable)

ITMT 514
Enterprise Application Architecture
This course examines current enterprise application architectures from the perspective of senior technology planners and managers. Topics such as models and patterns of enterprise application architecture, application virtualization, cloud application architectures, integration of custom application infrastructure with major vendor products, and full systems integration issues will be addressed.
Prerequisite(s): [(ITM 411) OR (ITMD 411)]
(3-0-3)

ITMT 531
Object-Oriented System Analysis, Modeling & 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)

ITMT 533
Operating System Design Implementation
This course introduces students to the fundamental principles of operating systems design, and gives them hands-on experience with real operating systems installation, design and implementation. The students apply what they learned about operation systems design to practical implementation, by modifying and extending the MINIX Operating System, MS Windows, and LINUX are briefly discussed as case studies. Requires knowledge of C++.
(3-0-3)

ITMT 535
Data Center Architecture
The course deals with building integrated data center information infrastructures, including facility, hardware, software, and network components as solutions to particular enterprise information management needs and requirements. Students will learn critical elements of modern data center design including physical plant construction; network infrastructure; data storage technologies; power provisioning and conditioning; environmental controls and HVAC; system and physical security; modular component use; and planning for growth.
(3-0-3)

ITMT 537
Instructional Technologies
In this course students will create, assess, and deploy current technologies used for K-College instruction and corporate training environments. Topics covered include developing training materials, courses, individualized instruction, websites, multimedia projects, and on-line instruction in educational settings. focus will be given to modern programming environments and models for developing instructional materials.
(3-0-3)

ITMT 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)

ITMT 594
Special Projects in Information Technology
Special projects.
(Credit: Variable)

ITMT 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.
(Credit: Variable)

ITMT 596
Graduate Honors Studies in Information Technology
Graduate honors project, thesis or whitepaper. Prerequisites: Graduate honors status and consent of the instructor.
(Credit: Variable)

ITMT 597
Special Problems in Information Technology
Independent study and project.
(Credit: Variable)

Technology

TECH 580
Topics in the Management of Technology
This course will cover a particular topic, varying from semester to semester, in which there is particular student or staff interest. This course may be taken more than once but only 9 hours of TECH 580 credit may be applied to a degree.
(Credit: Variable)

TECH 581
Consulting for Technical Professionals
This course explores the application of technology and technical management skills to working with business, industry, or various professions in solving specific problems for an organization as an internal or external consultant. Students learn how to involve clients in all phases of problem identification and solution with the goal that, at the end of a consulting assignment, the clients are able to sustain the necessary changes in their organization. Particular attention is paid to managing expectations among change agents, managers, executives, technical professionals, and other members of the organization. The course will cover the most critical, high-level, functional frameworks used by top consulting firms today as well as the tools commonly used by consulting professionals.
(3-0-3)

Undergraduate Courses Available to Graduate Students as Prerequisites Only

Note: Students may take up to an approved number of the following courses.

ITM 301
Introduction to Contemporary Operating Systems and Hardware I

ITM 301
Introduction to Contemporary Operating Systems and Hardware II

ITM 301
Introduction to Software Development

ITM 301
Introduction to Systems Software Programming