



Master of Science Information Technology

Program Overview & Course Catalog



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MSIT/COPACE Website: <http://clarku.edu/copace>

COPACE maintains a website which describes all COPACE programs and is linked to the Clark University website. This site contains the most up-to-date and accurate information on all COPACE degree programs. Please visit the COPACE website to confirm any information in this catalog.



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Dear students and friends of Clark University:

Business intelligence is the key to strategic success. Today, the focus is on creating and developing information and knowledge from both internal and external sources to better support business decisions. Learning technology management skills that directly effect bottom line results is the edge provided by Clark University's Master of Science in Information Technology (MSIT) degree.

The Internet experience has created a new framework for business intelligence, but technology managers need to adapt to and accommodate these changes with the flow of real-time business data. In the near future a far greater number of end-users across the enterprise will rely on business intelligence capabilities to provide better visibility into the performance of their segment of the organization. New leadership skills that couple technology with strategic global business initiatives will determine who the winners and losers will be.

The Clark MSIT program is designed to develop the qualities of a chief information officer (CIO). If you are a CIO already, the Clark MSIT approach will improve your management insight into new technologies and decision approaches for a constantly changing environment. You will learn to apply performance management techniques to achieve real-time shifts in strategy that respond to changes in the competitive marketplace.

For IT professionals, there is no shortage of challenges when it comes to protecting and managing data assets. Join Clark University's Master of Science in Information Technology degree program and become skilled at technology management and then link that insight into every decision that is made -- from manufacturing to marketing to distribution to store operations to finance -- wherever information technology and decision making come together.

We invite you to register for a course to find out for yourself what the MSIT degree can do for you.

Sincerely,

Dennis G. Wadsworth

Dennis G. Wadsworth, Director
Master of Science in Information Technology degree program

Master of Science in Information Technology

PROGRAM OVERVIEW

As the need for technical expertise increases exponentially, so has the demand for qualified information technology managers:

Managers who understand that each technical decision is also a business decision.

The incredible global evolution and expansion of information technologies in general and “e-based” systems in particular has created an unprecedented demand for highly skilled technology professionals. What makes the difference today, however, between someone who works with technology and someone who strategically uses technology to achieve competitive advantage is what the Clark University MSIT program is all about.

The most effective skill that an IT manager can possess is the ability to take a holistic approach, think critically and creatively, and then combine technology and organization goals to produce operational synergies. Clark University's Master of Science in Information Technology is designed to prepare you to utilize these professional skills with confidence.

As a Clark University MSIT student you will enhance your technical and managerial skills through hands-on application and lectures by industry professionals with years of experience. The MSIT program provides an in-depth overview of information technology areas and couples this knowledge with skills in project management, business intelligence systems, systems analysis, Internet optimization techniques, eCommerce, and other management areas where an understanding of technology usage creates opportunities for strategic rewards.

The Clark University MSIT degree program provides current and future professionals with a global understanding of information technologies and its complex interface with “e-Business” objectives. At the same time, graduates study the issues of modern technology management: ethics, legal and financial constraints, change management, and the leadership and communication skills necessary to lead the information technology effort while applying effective “people” skills.

Core Competency Development

Graduates of the Clark University MSIT degree program will learn skills to help them:

- ◆ Develop data administration policies and procedures, understand *business intelligence*.
- ◆ Use managerial economics to plan, control and make technological decisions.
- ◆ Utilize a methodological approach to system design and implementation.

- ◆ Gather, assess, and interpret information on emerging technologies and key trends in the application of these technologies to a particular industry.
- ◆ Understand data security issues, data encryption, and legal aspects of information security.

Elective Competency Development

- ◆ Implement search engine optimization techniques, optimize web sites, and work with Internet developers on a host of applications and technologies.
- ◆ Work with eCommerce applications and new media technologies including wireless programming, on-line payment strategies, and eCommerce business solutions.
- ◆ Empower staff to embrace and place into operations a new corporate vision and to understand the new strategic intent when organizations undergo rapid transformations.
- ◆ Utilize architectural solutions for information systems and their underlying technologies.
- ◆ Understand financial system basics within an organization, how financial data is interpreted, and the impact of such data on decision making.
- ◆ Examine legal guidelines and the ethical expectations of the general public as applied to public relations, media, product/service promotion, copyright, and libel issues.
- ◆ Utilize organizational communication theory in terms of its affect on behavior of the members of an organization.
- ◆ Understand the technology/human resource interface and how one can leverage and develop human IT capital.



Special Features of the Clark University MSIT Degree Program

Customize your degree for Personal Goals: The MSIT curriculum allows you to tailor your degree to custom fit your individual aspirations/needs through the selection of elective courses.

Need advice?: An advisor is always available. Graduate Programs staff members at the Worcester campus and at the *Graduate Management Center* in Framingham are ready to assist students with their advising needs every weekday during office hours.

Three Courses Before Matriculation: You can begin the MSIT program before applying formally. Complete courses with grades of "B" or above and skip the GRE or GMAT requirement for matriculating into the MSIT program.

"Rolling" Admissions: You may apply for matriculation into the MSIT program at any time during the school year.

Internship Experience: To link the classroom to the marketplace, a formal internship is available to MSIT students with less than three years of full-time professional work experience. Interns are placed in carefully selected, mutually-agreed-upon sites where they engage in the full range of duties assigned to entry-level employees. Ordinary tasks are balanced with challenging responsibilities that will contribute to their professional growth. Interns report to a designated on-site supervisor who provides guidance and feedback on performance and participates in the evaluation process. Interns are provided a comprehensive handbook and participate in a regular seminar to share experiences and strategies to position themselves better to enter the career path of their choice with poise. The internship counts as one elective.

Visit the COPACE M.S.I.T. Web Site: <http://ckarku.edu/copace> The COPACE web site encompasses all COPACE departments, including both undergraduate and graduate programs. The site has a link to the Clark University web site (click on *Master of Science Information Technology*.) Students are able to view program curricula, course offerings, course descriptions, and current faculty listings, as well as to register on-line. The secure site provides for confidential entry and it accommodates distance learning features increasingly incorporated into many courses through *Blackboard*, with interactive forums, news articles, on-line documentation, and message posting. Students may view syllabi, transmit assignments, and interact with faculty accessible to them through their individual e-mail accounts.

Master of Science in Information Technology

Degree Requirements (as of Fall Semester, 2007)

This is a 13-course curriculum consisting of the following required and elective courses:

Seven Required Courses:

Five Foundation Courses

- MSIT 3083* - Management Information Systems and Technology
- MSIT 3033 - Database Management
or MSIT3083 Business Intelligence
- MSIT 3043 – Technology Management
- MSIT 3053 - Information Systems Analysis and Design
- MSIT 3999 – Capstone

**MSIT3080/3 can be granted an exemption based on experience and/or the completion of the same or similar course at the undergraduate or graduate level, thereby reducing the required number of courses to complete the MSIT program from 13 units to 12 units.*

Two Application Courses

- MSIT 3113 - Data Security and Privacy
- MSIT 3123 - Legal and Financial Issues in Information System Management
(May be taught as a single course or in two segments equaling one course)

Six Electives

Technical and Communication Electives: (Select 6)

- MSIT 3013 - Information Systems Architectures
- MSIT 3063 - Introduction to IT Systems Implementation
- MSIT 3133 – Business Data Communications
- MSIT 3143 - Operating Systems
- MSIT 3813 - PhotoShop for Internet Graphics Development
- MSIT 3823 - Business Intelligence
- MSIT 3833 - E-Commerce and E-Business
- MSIT 3853 - Webmaster (formerly Web-based Systems Development)
- MSIT 3999 - Capstone *(Becomes requirement for new students, Fall 2007)*
- MSIT 3173 - Change Management
- MSIT 3301 - Advanced Professional Communication
- MSIT 3403 - Finance and Accounting for the Non-Financial Manager
- MSIT 3323 - Ethics and Professional Life
- MSIT 3073 - Organizational Communication
- MSIT 3843 - Project Management for the IT Professional

Other course choices are available from the Master of Science in Professional Communications degree program with the permission of your advisor. Special topics courses are offered each semester that are not specified in the above listing

The MSIT Curriculum

This is a 13-course curriculum consisting of the following required and elective courses:

Foundation Courses (Required)

MSIT 3080/MSIT 3083*

Management Information Systems and Technology

Effective communication and management skills in today's technology driven organizations require that the individual possess a working knowledge of state-of-the art presentation software tools and a pragmatic understanding of both the organization's existing information tools as well as capabilities of those tools which exist outside of the organization. This course will introduce the student to state-of-the-art software through hands-on application of the most popular tools in use today with a conceptual foundation in information system technology from a management perspective.

**MSIT3080/3 can be granted an exemption based on experience and/or the completion of the same or similar course at the undergraduate or graduate level, thereby reducing the required number of courses to complete the MSIT program from 13 units to 12 units.*

MSIT 3033

Database Management

(or MSIT 3823 Business Intelligence as a *Foundation* or *Technical Elective*)

Designed to be an introduction to database management systems featuring database directives, design elements of databases, architectures and commercial databases. It discusses distributed, parallel and object-oriented database systems and issues in database recovery, concurrency, security and integrity. Students will participate in the development and administration of a small database application that meets the needs of some real-world business data application.

MSIT 3083

Business Intelligence

(or MSIT3033 Database Management as a *Foundation* or *Technical Electives*)

As business leaders, consuming and creating information is a constant activity yet we often take information for granted. Our course will focus on how we can improve the amount and quality of information available and how information is put to use to improve competitive positions. The student will develop an understanding of business processes that drive information use, the challenge to obtain and the benefits of quality information, and the methodology and challenges of implementing Business Intelligence tools for the enterprise.

MSIT 3043

Technology Management

Designed to cover the theory and practice of planning and managing the information systems function for strategic organizational planning and competitive positioning. This course includes the interaction of corporate and information systems management and the strategic position of information systems in a variety of commercial and manufacturing enterprises. Students will also consider technological consequences of the development of information policies and the affect on overall organizational decision making.

MSIT 3053

Information Systems Analysis and Design

Despite all of its current and future technological capabilities, the computer still owes its power and usefulness to people. Business people define the business problems to be solved by the computer. Computer programmers and technicians apply information technology to build information systems that solve those problems. Systems Analysis and Design is the study of a business problem domain to recommend improvements and specify the business requirements for the solution through the specification or construction of a technical, computer based solution.

MSIT 3999

Capstone

Working in teams of 2 to 4, students will perform a consulting engagement for a local business. Working from a request letter from the CIO of a client company, students will engage with the client to develop a proposal for an analysis and design project, including deliverables, expected interactions with client management and staff and expected timeline. After presenting the proposal and gaining client approval, the team will carry out the proposed effort. Each project will culminate in a proposed solution, and sufficient documentation that the client can issue a Request for Proposal to implement the design. Lectures will address the consulting process, requirements gathering and the role of repeatable methodologies and consistent documentation methods.

Application Courses: (Required)

MSIT 3113

Data Security and Privacy

Begins with an introduction to the basic concepts of data security both physical and logical. It continues with dealing with data security standards, the SSL and S-HTTP protocols, data integrity; data encryption; coding methods; the use of smart cards; assurances of financial transactions, payment methods of E-business and E-Commerce; medical information security, legal aspects of information security.

MSIT 3123

Legal and Financial Issues in Information System Management

Deals, first, with how the law affects the acquisition and use of computer systems. Topics include contracting, protection of proprietary information, privacy, freedom of information, censorship, copyright and regulation. Second, it deals with the use of managerial economics to plan, control and make technological decisions. Topics include valuation analysis, operations management, risk management, cash flow management and sources of financing.

Technical Electives: (Choose six)

MSIT 3063

Introduction to IT Systems Implementation

Introduces the process of systems implementation for non-programmers. This course provides the student with background in the process of IT systems implementation, some basic concepts in computer science and an introduction to information systems terminology. To guide the student in understanding the development of

client/server applications using Microsoft Visual Studio 6.0, students work through several real-world solutions to problems in the context of the software development life cycle. This course assumes that the student has little or no basic programming skills and outcomes will include the ability to create simple Visual Basic applications and knowledge of computer systems fundamentals. However, this should not be understood to be a course in VB programming. Students should have a user knowledge of Windows 95, Microsoft Office, Internet browsing, and E-Mail systems.

MSIT 3093

Information Systems Architectures

An in-depth look at the art and science of System Architecture in an Information Technology Department context, this course is designed for students contemplating a role in IT System Architecture, IT Project Management or Implementation Team Leadership. In addition to providing the student with an understanding of the role of the System Architect, and the tools of the trade, the course will explore the breadth and depth of current architectural solutions for information systems and their underlying technologies. Students are expected to have experience with system implementation or work experience in an IT systems management context. Satisfactory completion of MSIT 3010, Introduction to IT Systems Implementation, or equivalent, is sufficient preparation for this course. Prior completion of MSIT 3033, Database Management, is recommended.

MSIT 3133

Design and Analysis of Computer Networks

Designed as an overview of LAN/WAN; encoding digital and analog signals, asynchronous/synchronous protocols; ISDN, B-ISDN, TCP/IP, with a focus on modeling and analysis of networks and network protocols.

MSIT 3143

Operating Systems

Developed as an introduction to operating systems' characteristics, designs and structures. Topics include a history of operating systems, concurrent processes and synchronization, coordination of asynchronous events, file systems, scheduling, deadlock resolution and memory management.

MSIT 3813

PhotoShop for Internet Graphics Development

Images make powerful statements about our business, our brand, and persona. The Internet allows us a way to use images to communicate in a manner never contemplated even just a few years ago. Meanwhile we are still inundated with print media, often from the same organizations as our web content. How to choose, create, and manage dynamic images for business applications is critical for successful messaging to our intended audience. This course will cover three general areas of design, digital image creation, and layout for Web and Print business applications with a primary focus on Adobe Photoshop CS3. Students will create a web site for a real or fictitious client and a flyer, brochure, or small catalog that compliments the web site.

MSIT 3833

E-Commerce and E-Business

Focuses on commercial applications of new media technologies. Beginning with an overview of the current use of the Internet in commercial settings, it then turns to the costs and benefits of these applications and suggest appropriate hardware and software for various purposes and will offer practice in the creation of modules and applications. Topics include wireless programming, authoring modules, training applications, product education

and support, on-line payment strategies and E-commerce business solutions drawn from companies successfully offering E-business solutions.

MSIT 3853

Webmaster (Formerly “Web-based Systems Development”)

Focuses on the design, development and implementation of Internet technologies using popular web applications. Participants will design, build and place online a web site for a live client. No pre-requirements. Also discussed is web server implementation, administration and ongoing support. Topics include: HTML page development, Java Script, Cascading Style Sheets, page layout, frames, tables, image maps, multimedia, and the use of graphics tools. In addition, the course will cover search engine optimization, web trends analysis, secure socket layer encryption, and client interaction culminating in a capstone project presentation.

MSIT 3443

Special Topics: Operating Systems II

Prerequisite: MSIT 3143 Operating Systems.

Many organizations are seeking alternate operating systems due to increased flexibility and controls these systems offer. The concept of open systems integration includes such operating systems that afford both management and technology the cost savings along with software code free of bugs and enhanced tighter security. This course is designed for those aspiring decision makers to better understand the cost/benefit / performance alternatives of operating systems such as OS2, UNIX, Linux, MAC/ OS and DOS.

MSIT 3443

Special Topics: Wireless Networking:

This course focuses upon the basic understanding of the technology plus hands-on capability to build a protected Wi-Fi network which will enhance an organization's ability to adapt to rapid changing business needs.

Wi-Fi (short for "wireless fidelity") is the popular term for a high-frequency wireless local area network (WLAN). The Wi-Fi technology is rapidly gaining acceptance in many companies as an alternative to a wired LAN. Wi-Fi is a viable business alternative to wired networks especially where the time and cost to setup and configure wired networks are scarce.

Unless adequately protected, a Wi-Fi wireless LAN can be susceptible to access from the outside by unauthorized users, some of whom have used the access as a free Internet connection. Companies that have a wireless LAN are urged to add security safeguards such as the Wired Equivalent Privacy (WEP) encryption standard, the setup and use of a virtual private network (VPN) or IPsec, and a firewall or DMZ.

MSIT3999

Capstone (Required course for new students enrolling Fall semester 2007, or later)

Working in teams of 2 to 4, students will perform a consulting engagement for a local business. Working from a request letter from the CIO of a client company, students will engage with the client to develop a proposal for an analysis and design project, including deliverables, expected interactions with client management and staff and expected timeline. After presenting the proposal and gaining client approval, the team will carry out the proposed effort. Each project will culminate in a proposed solution, and sufficient documentation that the client can issue a Request for Proposal to implement the design. Lectures will address the consulting process, requirements gathering and the role of repeatable methodologies and consistent documentation methods.

MSIT 3170/MSIT 3173
Change Management

Focuses on how to empower staff to embrace and make operational a new corporate vision and to understand the new strategic intent when organizations undergo rapid transformations. Students explore ways for managers to develop a new vision for the organization and/or bring the base of the organization into line with strategic change in light of mergers, acquisitions, privatization, and/or shifts in product or product lines.

MSIT 3400/MSIT 3403
Finance and Accounting for the Non-Financial Manager

Provides the student with a basic understanding of the financial systems within an organization, how financial data is interpreted, and the impact of such data on decision making. Budgeting, pricing, cash flow, balance sheets and income statements are reviewed

MSIT 3000/MSIT 3003
Advanced Professional Communication

The ability to write effectively and succinctly is among the most powerful communications tools available to managers today. Emphasis is on planning narrative structure, developing pace and setting tone for various routine written summaries, directives, informational and promotional pieces as well as proposals, press releases and employee evaluations.

MSIT 3070/MSIT 3073
Organizational Communication

Analyzes communication theory in terms of its affect on behavior of the members of an organization. Internal and external communication is an essential aspect of organizational functioning, and the majority of managerial problems are rooted in communication. This course examines the major theoretical and practical aspects of communication in organizations as they apply to business and governmental contexts.

MSIT 3840/MSIT 3843
Project Management

Analyzes the most important aspects of project management within the framework of organizational behavior and structure that can determine project success: the planning, scheduling, and controlling process vital to effective project management. Students will be required to learn to use Microsoft Project 2000 +, including planning a project, creating project schedules, communication, project information, using the critical path, assigning resources, tracking progress, and sharing information across applications and the Web. Access to Microsoft Project software required.

Note: Other elective choices may be available from the Master of Science in Professional Communications degree program with the permission of your advisor. Special topic courses are provided as they become available.