

F.

PROFESSIONAL SPECIALIZATION(s)

About Section F...

This section addresses the third major component of the
MS in Applied Technology (MSAT) Program—
The PROFESSIONAL SPECIALIZATION.

Subsections include...

- ▶ Introduction to the PROFESSIONAL SPECIALIZATION

- ▶ Five Professional Specializations/Tracks
 - Track 1: *Applied* Information Systems
 - Track 2: *Applied* Network Technology
 - Track 3: *Applied* IT Project Management
 - Track 4: *Applied* Information Technology
 - Track 5: *Applied* Human-Computer Interaction

- ▶ Special Introductory Courses (Tracks 2 & 5)

Introduction to the PROFESSIONAL SPECIALIZATION...

The Professional Specialization (within the MSAT Program) includes a career-related ‘track’ of core courses offered by DePaul’s College of Computing and Digital Media/CDM. As such, all CDM courses are subject to CDM tuition.

At the point of admission to the MSAT Program, each student identifies the track that he/she wishes to pursue in and through the program. Thereafter, through **AT-580 (2cr) Introduction to Applied Technology**, the student focuses his/her learning agenda with respect to the courses included per track.

FIVE PROFESSIONAL SPECIALIZATIONS/TRACKS...

Each of the following five pages is devoted to one of MSAT’s Professional Specialization Tracks:

- TRACK 1: **Applied Information Systems**
- TRACK 2: **Applied Network Technology**
- TRACK 3: **Applied IT Project Management**
- TRACK 4: **Applied Information Technology**
- TRACK 5: **Applied Human-Computer Interaction**

Misc. Notes

✓ **MSAT Specialization Course Support**

Given the admissions foundation into advanced study, graduate specialization courses *beyond the introductory level* are not provided supplemental tutoring support. Graduate students are expected to: rally their backgrounds in order to capitalize on instruction/content per each course; avail themselves of instructor office hours; and/or, take initiative to seek out extra assistance, as needed, on their own.

✓ **MSAT Specialization Course Substitution**

MSAT Track Courses (foundational and advanced) may be *substituted* with other CDM courses or with appropriate transfer courses from other accredited institutions—provided the proposed substitution is comparable to the standing course, is applied within no more than 5 years of the course’s completion (earning a C or better) and preserves the overall integrity of the “track.” Students may submit proposals for course *substitution* by submitting the request and rationale to the CDM MSAT Co-Coordinator. If approved, the new or transfer course will be applied to replace the standing track requirement. *Unless otherwise stated, courses may NOT be applied to more than one degree program and no more than one course (4cr hrs) of a track’s foundational & advanced courses can be satisfied by an approved transfer course.*

MSAT Track: **Applied** Information Systems

The **Applied Information Systems** specialization focuses on integrating business and technology with an emphasis on the development, management and planning of information systems. This focus provides students with a strong foundation in business and systems analysis, project management and database and enterprise infrastructure. Students completing this specialization possess a broad range of skills and understandings in support of organizations gaining strategic and tactical competitive advantage.

FOUNDATION (12 cr hrs)

◆IS-421 Systems Analysis (4cr)

Course focus is on both traditional and object oriented systems analysis, with an emphasis upon developing competency in a wide range of modeling techniques. Specific topics include: overview of the software development environment and project management; project selection, initiation, and planning; determining requirements; process modeling, including DFDs and use cases; logic modeling, including decision tables, sequence diagrams, and activity diagrams; introduction to Entity-Relationship Diagrams.

◆CSC-451 Database Design (4cr)

Requirement analysis, conceptual design, logical design and implementation of relational databases. Emphasis will be on E-R modeling and E-R mapping, along with basic normalization and SQL for database implementation.

◆IS-422 System Design, Implementation, and Maintenance (4cr)

Course focus is on both traditional and object oriented systems design. Specific topics include: database design, including logical and physical design; Entity-Relationship diagrams, class diagrams, form and report design; interface and dialogue design; design specifications, including structure charts and prototypes; designing for LANs and distributed systems, as well as the Internet; system implementation, including parallel and phased implementation, testing, documentation, and user training; system maintenance, including types of maintenance, controlling and coordinating maintenance requests, and configuration management. Course ends with a multi-week case study applying the principles from both this course and IS-421, Systems Analysis. PREREQUISITE(S): IS-421 and CSC-451

ADVANCED (12 cr hrs)

◆ECT-424 Enterprise Infrastructure (4cr)

Introduction to modern infrastructure and the evolving technology environment. Major topics include: computer networks, Internet infrastructure, Web 2.0, Enterprise 2.0, social media and networking, software as a service, content management systems, cloud computing, and portal.

◆IS-430 Fundamentals of IT Project Management (4cr)

This course concentrates on monitoring, managing and controlling assets and resources on a single IT project. Topics covered are risk management; procurement and contract management; time and cost estimating; controlling and tracking techniques; quality assurance; testing and audit. Students will use common project management software for resource allocation and balancing.

◆One course (4cr) from the following...

CNS-440 Information Security Management (4cr)

IS-435 Organizational Modeling (4cr)

IS-483 Information Services and Operations (4cr)

IS-485 Requirements Elicitation, Analysis, and Specification (4cr)

IS-505 Business Continuity/Disaster Recovery Theories and Strategies (4cr)

IS-535 Information Technology Investment Financial Analysis (4cr)

IS-560 Enterprise Systems (4cr)

IS-565 IT Outsourcing (4cr)

✓ -For information regarding courses offered by the College of Computing and Digital Media/CDM, see <http://www.cdm.depaul.edu/academics/Pages/CourseSchedule.aspx> .

MSAT Track: **Applied Network Technology**

The **Applied Network Technology** specialization focuses on innovative network designs and developing network applications and services for business enterprises and the network providers that serve them. This focus offers theoretical and applied study in the design, configuration and management of converged communication networks. Students completing this specialization possess a broad range of skills and understandings in support of the technical and operational aspects of networks, voice-data communications and network management.

FOUNDATION (12 cr hrs) +introductory courses (unless waived)

►The following three introductory courses may be waiveable. (See page F-9.)

- TDC-405 Voice and Data Network Fundamentals (4cr)
- TDC-411 Introduction to Computer and Network Systems (4cr)
- TDC-413 Introduction to LAN and WAN (4cr)

◆TDC-460 Foundations of Network Technologies (4cr)

An introductory course on network technologies for local and wide area networks. The course examines in detail the core concepts for network architectures, Ethernet systems including wired, wireless, and Metro, virtual local area networks, storage area networks, optical networking, and the more traditional network services such as T-1, frame relay, Asynchronous Transfer Mode (ATM), and SONET. PREREQUISITE(S): TDC-405 and TDC-413.

◆TDC-463 Computer Networks and Data Systems (4cr)

A detailed discussion of the upper layers of network architectures. Network protocol organization will be discussed using TCP/IP as an example. IP addresses, subnetting, supernetting, and CIDR. Routing algorithms. Transport layer protocols. Application layer protocols. Introduction to IPv6. PREREQUISITE (S): TDC-405 and TDC-413

◆TDC-464 Converged Multimedia Networks (4cr)

Exploration of multimedia networks including voice, data, and video services offered by network carriers and Internet Service Providers (ISP) to both enterprise and residential customers. The course starts with an overview of current voice and data networks and presents the driving forces leading to a converged multimedia network. The focus is on Voice over IP (VoIP), including signaling, protocols, equipment, network architecture/design, traffic engineering, and service deployment strategy. PREREQUISITE(S): TDC-405

ADVANCED (12 cr hrs)

- ◆ ◆ ◆ Three courses (4cr each) focusing in either “**applied telecommunications**” or “**applied network & information security**” as identified *with approval of MSAT CDM Co-Coordinator*. Typically, such courses are labeled **TDC** or **CNS** and are courses regarding which the student meets the prerequisites.

✓-For information regarding courses offered by the College of Computing and Digital Media/CDM, see <http://www.cdm.depaul.edu/academics/Pages/CourseSchedule.aspx> .

MSAT Track: **Applied IT Project Management**

The **Applied IT Project Management** specialization focuses on processes and strategies for leading and managing IT projects and teams including the application of project management skills. This focus is intended for those who have either a technology undergraduate degree or a few years of IT work experience and wish to advance their careers by filling the growing need for IT Project Managers. Students completing this specialization possess a broad range of skills and understandings in support of IT project management and program management roles.

FOUNDATION (12 cr hrs)

♦PM or IS-430 Fundamentals of IT Project Management (4cr)

This course concentrates on monitoring, managing and controlling assets and resources on a single IT project. Topics covered are risk management; procurement and contract management; time and cost estimating; controlling and tracking techniques; quality assurance; testing and audit. Students will use common project management software for resource allocation and balancing.

♦PM or IS-556 Enterprise Project Management (4cr)

This course covers how an enterprise coordinates and effectively manages all its IT projects and programs through program management and the IT program management office. Students will learn the role of the IT program management office in establishing and maintaining the project and program infrastructure and in assisting project managers, program managers, and the executive steering committee. Students will analyze the role of program management in coordinating the delivery of expected program benefits, in managing stakeholder expectations, and in establishing program governance. PREREQUISITE(S): IS-430 or PM-430

♦Either MGT-500 (4cr) [OR] IS-500 (4cr)

-MGT 500 Managing for Effective and Ethical Organizational Behavior

Students will critically examine ethical and creative methods to solve problems related to managing individuals and teams. Students utilize feedback from a developmental assessment center assessing their managerial and interpersonal skills. Personal development plans are created and skills developed throughout the course. Skill development domains include perception, attribution, motivation, learning leadership, communication, team development, managing change and conflict, decision-making, power and politics and business ethics. PREREQUISITE(S): Reserved for Kellstadt students or CDM students in select programs.

-IS-500 Information Technology Leadership

Managing people ethically and effectively by applying a broad range of creative approaches to individual and team leadership within an Information Technology context. Leadership methods studied include trait-based, skills-based, situational, contingency theory, path-goal theory, leader-member exchange theory, transformational, psychodynamic, and authentic leadership, as well as team leadership and the international, cultural, and ethical dimensions of leadership. Students assess their leadership styles and design individualized development plans to strengthen existing skills and expand IT leadership capabilities by incorporating additional leadership dimensions. PREREQUISITE(S): IS-430, PM-430, OR SE-477

ADVANCED (12 cr hrs)

♦PM or IS-440 Collaborative Technologies for Leading Projects (4cr)

Study of the process of virtual teaming with emphasis on facilitation of different time project activities and facilitation of same time meetings. Students will learn how small group psychology and group communication theories inform specific behaviors in the design and leadership of meetings. Several meeting types including information briefing, focus group, document writing, decision making, requirements gathering, and teaching/training will be explored. In addition, the course surveys current collaboration technologies and discusses how to select among those technologies usability and fit to purpose of a meeting agenda. DL students may be required to schedule same time sessions with the instructor and other DL students; see current quarter syllabus for more information on this point.

♦PM or IS-535 Information Technology Investment Financial Analysis (4cr)

This course focuses on the application of financial analysis and decision-making approaches to aid information technology investment decisions at the operational, project, tactical and strategic levels. Students will learn how to apply a variety of financial methods -- breakeven analysis, present value analysis, profitability index, and return on investment to various IT investment decisions. The course will also address cost benefit analysis, outsourcing, balanced scorecard, and multi-factor scoring, benchmarking, and IT investment portfolio methods. These techniques will prepare students to manage capital budgets, acquisition of system and application software, hardware, personnel, and professional services at project and system levels as well as enterprise investment portfolio. PREREQUISITE(S): SE-477 or IS-565 or ACCT-500 or IS-430 or PM-430 or ECT-455

♦ **PM or IS-570 Enterprise System Implementation (4cr)**

This course is targeted towards information systems professionals who are involved in the planning and implementation of large scale, cross-functional enterprise systems. Students will examine the characteristics of technology efforts that change and transform the way people perform their tasks and how the new technology structures the flows of information and decision making using workflow modeling methods. Through case studies and exercises students gain insights into the elements of successful implementations leading to the preparation of a change management plan. Emphasis is placed on developing mechanisms for communicating and training all affected agents. PREREQUISITE(S): IS-430 or PM-430 or five or more other SoC MS level courses should contact the course instructor or an advisor

✓ -For information regarding courses offered by the ***College of Computing and Digital Media/CDM***, see <http://www.cdm.depaul.edu/academics/Pages/CourseSchedule.aspx> .

MSAT Track: **Applied Information Technology**

The **Applied Information Technology** specialization focuses on the allocation of monetary and human resources and the execution of daily operations in the management of organizational IT functions. Such positions have responsibility for identifying and championing the strategic use of IT within their organizations as well as ensuring that the IT infrastructure is capable of meeting strategic business goals. Students completing this specialization possess a broad range of skills and understandings in support of managing various functional departments within the information technology areas.

FOUNDATION (12 cr hrs)

♦PM or IS-430 Fundamentals of IT Project Management (4cr)

This course concentrates on monitoring, managing and controlling assets and resources on a single IT project. Topics covered are risk management; procurement and contract management; time and cost estimating; controlling and tracking techniques; quality assurance; testing and audit. Students will use common project management software for resource allocation and balancing.

♦IS-483 Information Services and Operations (4cr)

This course focuses on the operational aspects of information systems in organizations by examining the concepts, tools and techniques available to IS professionals responsible for the delivery of IT services. Topics include the organization of the IT services; the procurement of hardware, software and vendor services; operation of data centers, help desks and user training, the development and use of RFPs (Request for Proposals) and SLAs (Service Level Agreements), the integration of services and operations with application development project needs, and the role of capital and operating budgets. PREREQUISITE(S): Completion of five or more SoC MS level courses is required.

♦ECT-424 Enterprise Infrastructure (4cr)

Introduction to modern infrastructure and the evolving technology environment. Major topics include: computer networks, Internet infrastructure, Web 2.0, Enterprise 2.0, social media and networking, software as a service, content management systems, cloud computing, and portal.

ADVANCED (12 cr hrs)

♦CNS-440 Information Security Management (4cr)

Managing information assets and the security function. Emphasis on managing security-related risk, as well as the process of developing, implementing, and maintaining organizational policies, standards, procedures, and guidelines as they relate to security. Role of the CISO. Identifying and evaluating information assets, threats, and vulnerabilities. Quantitative and qualitative risk analysis, risk mitigation, residual risk, and risk resolution, as they relate to information security. Incident response. Consideration of the role and implementation of security controls during the process of analysis, design, and development. The application of policy development principles to security risk management. Introduction to compliance, as well as the CISSP domains.

♦IS-535 Information Technology Investment Financial Analysis (4cr)

This course focuses on the application of financial analysis and decision-making approaches to aid information technology investment decisions at the operational, project, tactical and strategic levels. Students will learn how to apply a variety of financial methods -- breakeven analysis, present value analysis, profitability index, and return on investment to various IT investment decisions. The course will also address cost benefit analysis, outsourcing, balanced scorecard, and multi-factor scoring, benchmarking, and IT investment portfolio methods. These techniques will prepare students to manage capital budgets, acquisition of system and application software, hardware, personnel, and professional services at project and system levels as well as enterprise investment portfolio. PREREQUISITE(S): SE-477 or IS-565 or ACCT-500 or IS-430 or PM-430 or ECT-455

♦CSC-451 Database Design (4cr)

Requirement analysis, conceptual design, logical design and implementation of relational databases. Emphasis will be on E-R modeling and E-R mapping, along with basic normalization and SQL for database implementation.

✓ -For information regarding courses offered by the **College of Computing and Digital Media/CDM**, see <http://www.cdm.depaul.edu/academics/Pages/CourseSchedule.aspx> .

MSAT Track: **Applied** Human-Computer Interaction

The **Applied Human-Computer Interaction** specialization focuses on the designing, implementing and evaluating computer interfaces to ensure their accessibility and ease of use. This interdisciplinary focus integrates concepts and methods from computer science, graphic design and the social sciences to provide a comprehensive understanding of the user-centered design process. Students completing this specialization possess a broad range of skills and understandings in support of areas such as user-centered design, usability testing, information architecture and dynamic website prototyping

FOUNDATION (12 cr hrs) +introductory courses (unless waived)

►The following four introductory courses may be waiveable. (See page F-9.)

- HCI-402 Foundations of Digital Design (4cr)
- HCI-406 Web Site Design for HCI (4cr)
- IT-403 Statistics and Data Analysis (4cr)
- IT-411 Scripting for Interactive Systems (4cr)

◆HCI-440 Introduction to User-Centered Design (4cr)

The user-interface development process. Introduction to methods for practicing user-centered design including user and task analysis, user interface design principles and testing using low-fidelity prototypes. Students may not receive credit for this course and HCI-441.

◆HCI-445 Inquiry Methods and Use Analysis (4cr)

This course provides students with the skills necessary to acquire and organize user information for the purpose of developing task and systems analyses. Topics covered include survey construction and administration, structured observation, interviewing, and participatory design. Students learn to evaluate and organize user information toward making analysis and design decisions. Human communication and presentation skills are developed. PREREQUISITE(S): IT-403 and (HCI-440 or HCI-441)

◆HCI-454 Interaction Design and Information Architecture (4cr)

Information architecture and interactive page design. Perception and use of menus, labels and user controls. Structuring information for navigation and presentation. Selecting and placing user controls for optimizing task flow on pages and across pages. Creating wire frames and using content managers. PREREQUISITE(S): HCI-406 and (HCI-440 or HCI-441)

ADVANCED (12 cr hrs)

- ◆ ◆ ◆ Three courses (4cr each) from the following...
 - HCI-430 Prototyping and Implementation (4cr)
 - HCI-450 Foundations of Human Computer Interaction (4cr)
 - HCI-460 Usability Evaluation Methods (4cr)
 - HCI-470 Digital Design (4cr)
 - HCI-511 Accessibility and Design for Diverse Users (4cr)

✓ -For information regarding courses offered by the College of Computing and Digital Media/CDM, see <http://www.cdm.depaul.edu/academics/Pages/CourseSchedule.aspx> .

Special INTRODUCTORY COURSES (Tracks 2 & 5)

A list of *introductory courses* has been identified to support student success within **Track 2: Applied Network Technology** and **Track 5: Applied Human-Computer Interaction**.

Students with sufficient experience pertaining to the appropriate track's focus may, in consultation with the CDM MSAT Co-Coordinator, propose to waive one or more of these courses (per track). Students also may secure a waiver from these courses by taking and passing a CDM Graduate Assessment Exam (GAE) per course.

For information regarding CDM Graduate Assessment Exams, see <http://www.cdm.depaul.edu/academics/pages/graduateassessmentexams.aspx>



