

# INFORMATION SYSTEMS

The Master of Science-Information Systems provides the knowledge and skills required to manage IT projects, oversee application development, and develop an organization's IT strategy.

The program will prepare you to manage information systems functions, as well as the organizational challenges facing information systems managers. If you have a background in fields such as information technology management, computer science, electronics engineering – or even if you simply have an aptitude for information technology – we welcome your application.

The program is offered on campus, and a few of the courses are also occasionally available on-line. You may enroll on a full- or part-time basis during the fall and winter semesters, and some courses are often available during the summer. The program usually can be completed within 12 months of full-time study.

Admission is rolling, and you may begin the program in September or January. May admission is also usually possible for part-time students.

University of Michigan-Dearborn students who have been admitted to the MS-Information Systems may take up to 6 graduate credits during the final semester of their undergraduate program.

## MS-Information Systems Program Goals and Objectives

Goal 1: MS-Information Systems students will acquire discipline-specific knowledge and competencies.

Objectives: MS-Information Systems students will:

- Design an information system for an organization.
- Evaluate security risks of an organization.
- Use data to provide solutions to business questions.

Goal 2: MS-Information Systems students will develop effective communication skills.

Objectives: MS-Information Systems students will:

- Communicate complex information technology concepts orally.
- Communicate complex information technology concepts effectively in writing.

Goal 3: MS-Information Systems students will develop information technology strategy skills.

Objectives: MS-Information Systems students will:

- Be able to assess the impact of information technology strategy on organizational effectiveness.
- Manage information quality initiatives in organizations.

## MS-Information Systems Admission Prerequisites

- Mathematics admission prerequisite
- GMAT/GRE admission prerequisite, unless applicant qualifies for the GMAT/GRE waiver

## MS-Information Systems Curriculum

Code	Title	Credit Hours
<b>Core courses</b>		
ISM 525	Computer and Info Systems	
ISM 575	Information Management	
ISM 641	Enterprise Architecture Netwrk	
ISM 642	Information Assurance	
ISM 644	IT Policy and Strategy	
ISM 649	Business Intelligence	
ISM 650	Information System Quality	
<b>Electives</b>		
Select three of the following courses:		9
ACC 555	Cost Management	
DS 520	Applied Statistical Modeling	
DS 570	Management Science	
DS 630	Applied Forecasting	
DS 631	Decision Analysis	
DS 632	System Simulation	
FIN 531	Fin Fundament & Value Creation	
ISM 527	Programming & Data Structures	
ISM 643	Info Tech Project & Chg Mgmt	
MKT 515	Marketing Management	
OB 510	Organization Behavior	
OM 521	Operations Management	
OM 664	Strategic Sourcing	
OM 665	ERP in SCM	
BA 690	Graduate Research	
BI 500	Business Internship	
BI 505	Part-Time Business Internship	

**Total Credit Hours** 9

Previous coursework deemed substantially similar to ISM 525, or an undergraduate degree in Information Systems Management, may qualify to exempt students from ISM 525. Exempt courses must be replaced with other elective courses in the degree program.

In addition, up to 6 transfer credits for previous equivalent graduate coursework can be applied to the degree if those credits have not been counted toward a degree.

Exemptions and transfer credit are granted at the discretion of the program faculty.

## Dual Degree, MBA/MS-Information Systems

The dual MBA/MS-Information Systems combines a broad managerial education with in-depth training in the skills required to manage IT

projects, oversee application development, and develop an organization's IT strategy.

The Master of Science-Information Systems will prepare you to manage information systems functions, as well as the organizational challenges facing information systems managers, while the MBA will provide you with a managerial perspective on your organization as a whole. If you have a background in fields such as information technology management, computer science, electronics engineering – or even if you simply have an aptitude for information technology – we welcome your application.

The dual MBA/MS-Information Systems allows students to receive both the MBA and MS-Information Systems simultaneously upon completion of the required 57-66 credit hours.

All courses in the program are offered on campus; many are also available on-line. You may enroll on a full- or part-time basis during the fall and winter semesters, and some courses are often available during the summer.

Admission is rolling, and you may begin the program in September or January. May admission is also usually possible for part-time students.

University of Michigan-Dearborn students who have been admitted to the MBA/MS-Information Systems may take up to 6 graduate credits during the final semester of their undergraduate program.

## MBA/MS-Information Systems Curriculum

Code	Title	Credit Hours
<b>MBA Core Courses</b>		
ACC 505	Devel & Interp Financial Info	3
BPS 516	Corporate Social Responsibility	3
BE 530	Econ Analysis: Firm & Consumer	3
DS 520	Applied Statistical Modeling	3
FIN 531	Fin Fundament & Value Creation	3
ISM 525	Computer and Info Systems	3
MKT 515	Marketing Management	3
OB 510	Organization Behavior	3
OM 521	Operations Management	3
<b>MBA Applied Integrated Management (AIM)</b>		
International AIM Course:		
Select one course from:		3
BE 583	Global Econ: Crisis & Growth	
FIN 655	International Financial Mgt	
MKT 622	Global Marketing	
OB 610	Intrnatl Dimensions of Managmt	
AIM Capstone:		
BPS 535	Strategic Planning and Decision Making	3
General AIM Courses:		
Select two courses from:		6
BA 605	Managerial Decision Making	
BA 607	Business Disruption in the Digital Age: Machine Learning, Platforms, and the Crowd	
BA 611	Organizational Dysfunction and Wealth Effects	
BA 616	Firm Value and Market Reactions	
BPS 585	Managing Strat Innov & Change	

### MBA Electives or Optional Concentration <sup>1</sup>

Complete 9 credits from at least one of the available MBA concentrations (Accounting, Business Analytics, Finance, Human Resources Management, International Business, Marketing, Supply Chain Management), or choose at least three elective courses (9 credits).

#### MS-Information Systems Core Courses

ISM 575	Information Management	3
ISM 641	Enterprise Architecture Netwrk	3
ISM 642	Information Assurance	3
ISM 644	IT Policy and Strategy	3
ISM 649	Business Intelligence	3
ISM 650	Information System Quality	3

**Total Credit Hours** **66**

<sup>1</sup> Up to three graduate credits may be elected from units other than the College of Business, with prior approval of the Graduate Program Advisor.

### Breadth Requirements

- Complete AIM courses in at least 3 different disciplines.
- Complete no more than 4 AIM, MBA Concentration, and Elective courses (12 credits) in any one discipline other than Finance.
- Complete no more than 7 courses (21 credits) in Management Information Systems courses (MIS) after completion of the MBA Core.
- Complete graduate business courses in at least 7 different disciplines.

No single course may be counted toward more than one requirement or concentration in the dual degree program.

Students may waive any of the MBA core courses except ISM 525 if they have equivalent courses in an AACSB business program completed within the previous 10 years and have earned at least a 3.2 post-60 GPA (that is, the GPA in courses taken after the first 60 undergraduate credit hours). Students who do not meet these criteria may request to have their courses evaluated for waiver credit at the time of admission. Students must have earned a B or better in equivalent courses as a part of a degree program completed within the previous 10 years.

Previous coursework deemed substantially similar to ISM 525 may qualify to exempt students from the course. The exempt course must be replaced with other approved courses in the MS-Information Systems program.

Regardless of waiver and exemption credits granted, students must earn at least 57 credits in the dual-degree program, including at least 36 credits in the MBA portion of the program.

In addition, up to 6 transfer credits for previous equivalent graduate coursework can be applied to the degree if those credits have not been counted toward a degree.

Exemptions, waivers and transfer credit are granted at the discretion of the program faculty.

## Learning Goals

**Goal 1—MS-IS students will acquire discipline-specific knowledge and competencies.**

- Students will design an information system for an organization.
- Students will evaluate security risks of an organization.
- Students will use data to provide solutions to business questions.

**Goal 2—MS-IS students will develop effective communication skills**

- Students will communicate complex IT concepts orally.
- Students will communicate complex IT concepts effectively in writing.

**Goal 3—MS-IS students will develop IT strategy skills.**

- Students will be able to assess the impact of IT strategy on organizational effectiveness.
- Student will manage information quality initiatives in organizations

### ISM 525 Computer and Info Systems 3 Credit Hours

This course focuses on the management concepts and information technology needed to create effective information systems. Topics include: a survey of information technology, information systems and organizations, strategic information systems, management support systems, and ethical and social issues in information systems.

**Restriction(s):**

Can enroll if Class is Graduate

### ISM 526 IT Services Management 3 Credit Hours

Students in IT Services Management will learn how to organize and operate in an IT environment centered on processes and services. Students will learn to use major models like ISO 20000 and the Information Technology Library (ITIL) as tools for managing and controlling the IT function within an organization. Upon completion of the course, students should be prepared for the ITIL Foundations examination.

**Prerequisite(s):** ISM 525\* or MIS 525\*

### ISM 527 Programming & Data Structures 3 Credit Hours

This course introduces the basic concepts of program design, emphasizing an event-driven environment. Students will develop an understanding of fundamental programming logic and learn to use basic programming structures to solve simple business problems. Students are introduced to the program development cycle and programming principles, basic programming logic and structures, and common data types. Topic coverage may include an introduction to object-oriented programming and other next generation programming environments.

**Prerequisite(s):** ISM 525\* or MIS 525\*

### ISM 575 Information Management 3 Credit Hours

This course examines the basic concepts of information management for business organizations. Database systems are examined as a key tool for managing information. The goal of this course is to provide adequate technical detail while emphasizing the organizational and implementation issues relevant to the management of computerized information in an organizational environment. Topics include data modeling, database design, data definition and manipulation languages, database administration, data standards and policies, data, quality, data integration, data warehousing and data mining.

**Prerequisite(s):** ISM 525\* or MIS 525\*

### ISM 585 Network App Development 3 Credit Hours

This course is designed for students to explore the unique concerns in developing applications designed to run in a networked environment. The goal of this course is for students to gain proficiency in network-based programming languages, while at the same time understanding concerns specific to networked applications, such as security and latency. Topics include client-server development, distributed object models, training in specific languages such as PHP and PERL, programming and security, and networked application tuning.

**Prerequisite(s):** MIS 527 or ISM 527

### ISM 640 Info Systems Development 3 Credit Hours

This course provides a foundation in systems analysis and design concepts, methodologies, techniques, and tools. Students will learn to analyze an organizational program, define user requirements, design an information system, and plan an implementation. Methodologies covered include the traditional life cycle approach as well as newer methodologies such as an object-oriented approach, joint application development (JAD), and prototyping. A semester-long project gives students the opportunity to apply these techniques to a business problem. This project will use technologies such as computer-aided software engineering (CASE) tool, a database management system (DBMS), fourth generation language.

**Prerequisite(s):** MIS 575\* or ISM 575\*

### ISM 641 Enterprise Architecture Netwrk 3 Credit Hours

In this class, students will learn the principles of managing the hardware, software, networks, and data centers that are used in modern enterprises. Students will learn the interfacing of IT systems to business goals and objectives. Traditional architecture frameworks will be discussed, along with the integration of more contemporary topics like cloud networking, green computing, mobile enterprise/BYOD, and virtual services.

**Prerequisite(s):** MIS 525 or ISM 525

### ISM 642 Information Assurance 3 Credit Hours

This course will provide the students with an exposure to the unique concerns and realities of assuring information and managing risks in the IT environment today. The course will cover principles of security from a managerial point of view, but will provide the students with enough of a technical focus to actively participate in the process of organizational security. Students will be exposed to the problems and dangers from insecure IS and the means, including physical, technical and administrative controls, to prevent security breaches, while also learning to respond to a breach when it does happen. Students will take this knowledge to learn to develop security plans and conduct security audits. Coursework will include extensive reading and seminar participation as well as time in the laboratory to explore and reinforce concepts.

**Prerequisite(s):** MIS 525 or ISM 525

### ISM 643 Info Tech Project & Chg Mgmt 3 Credit Hours

This course examines the management of information systems projects in business organizations as well as human and organizational reactions to the changes brought about by new information systems. Topics include project planning, change control, project controls, project reporting, information systems projects and organizational change, factors affecting project success and failure, and project management software.

**Prerequisite(s):** MIS 525\* or ISM 525\*

**ISM 644 IT Policy and Strategy 3 Credit Hours**

This course provides an overview and an understanding of the issues involved in the strategic management of the information technology (IT) and information systems (IS) of an organization and the development of organizational strategies and policies considering environmental constraints. A broad range of issues and problems associated with the information assets of the organization and their alignment with the strategic goals of the organization is examined. An example of topics covered might include: ethical, privacy, and social issues arising within the new information environment; current laws and currently proposed laws and their implications; competition and monopoly in software and hardware markets; and online content and access. Since the course focuses on current issues, the reading each week consists of basic text chapters as well as readings contributed by the professor and class. These readings will change to reflect the dynamic environment of IT/IS. The course prepares students for IT strategy and policy analysis and development. Coursework includes extensive reading, seminar participation, case analysis, research projects, and examinations.

**Prerequisite(s):** MIS 525\* or ISM 525\*

**ISM 645 Global Outsource IS Activities 3 Credit Hours**

This course provides an overview and an understanding of the issues involved in extensive outsourcing in the global environment. There exists a growing relationship between globalization, outsourcing, and information technology and the technological and social issues that support or inhibit this relationship is the focus of this class. An example of topics covered might include: national culture, the global IT manager, managing a global IT project, cultural diversity, and ethical and social issues. Since the course focuses on current issues, the reading each week consists of basic text chapters as well as current academic and practical articles. These readings will change to reflect the dynamic environment of IT/IS. Coursework will include extensive reading, seminar participation, case analysis, research projects, and examinations.

**Prerequisite(s):** (MIS 525 or ISM 525) and (MIS 643 or ISM 643 or MIS 644 or ISM 644)

**ISM 646 HCI Interface & Design 3 Credit Hours**

This course introduces students to the fields of human computer interaction (HCI), interface design, and usability engineering. The cognitive aspects of HCI will be explored as well as several methods for usability evaluation/inspection. The course will include an examination of the emerging discipline of information architecture. Topics will include: HCI definitions, theories, and history; interface design principles and interaction methods; usability evaluation techniques; usability heuristics and design guidelines; perspectives of designers versus users; and user centered design.

**Prerequisite(s):** MIS 525 or ISM 525

**ISM 647 Advanced Programming 3 Credit Hours**

This course allows students to build on their programming skills learned in ISM 527. Students will be exposed to advanced programming topics, such as multi-threading, multimedia, exception handling, networks, database connections, component-based programming, Web-based applications, and non-technical issues in programming and application development. Students will be introduced to a computer-aided software environment and collaborate on building more complex applications based on business requirements.

**Prerequisite(s):** MIS 527 or ISM 527

**ISM 648 Information Management II 3 Credit Hours**

This course examines the processes and tools used to develop and administer database systems in business. Database systems used to support both transactions processing and decision-making in organizations are studied. A class project involving the development of a database using a client/server database management system is performed. Topics include database development, client/server databases, concurrency control, database security, administration of database privileges, and complex data retrieval commands.

**Prerequisite(s):** MIS 575 or ISM 575

**ISM 649 Business Intelligence 3 Credit Hours**

This course will introduce students to the fundamentals of data warehouses (DW) and data mining (DM). Topics will focus on how to leverage big data to support business decisions. Going through major activities involved in a data warehousing project, students will study the principles of dimensional data models, data warehouse architecture and infrastructure, techniques for data extraction, cleaning, transformation, and loading, online analytical processing (OLAP), and managerial issues of data warehouse implementation. Common data mining techniques and applications, such as decision trees association rules, text mining, rule based classification, cluster analysis, machine learning, will be introduced.

**Prerequisite(s):** MIS 525 or ISM 525

**ISM 650 Information System Quality 3 Credit Hours**

This course examines two related areas of study: (1) the concepts of information systems analysis and design in business organizations and (2) the management of information quality in organizations. Students will learn to plan and manage information systems projects, determine information requirements, model information process requirements, model system logic requirements, design user interfaces, and implement and maintain information systems. Students will also gain an understanding of the dimensions of information quality, the assessment and improvement of information quality in organizational settings, cognitive and behavioral aspects of information quality, and the effect of information quality on organizational decision making. The implications of information quality for systems analysis and design and applications of systems analysis and design methodologies for the management of information quality will be examined.

**Prerequisite(s):** MIS 525 or ISM 525

\*An asterisk denotes that a course may be taken concurrently.

## Frequency of Offering

The following abbreviations are used to denote the frequency of offering: (F) fall term; (W) winter term; (S) summer term; (F, W) fall and winter terms; (YR) once a year; (AY) alternating years; (OC) offered occasionally