

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 curriculum aligns with the proliferation of artificial intelligence (AI) technologies and the need to focus on analytics and data while maintaining coverage of the necessary elements that compose an MSIS degree.

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.

4+1 Master of Science in Information Systems Accelerated Program

The Master of Science in Information Systems (MS IS) 4+1 Program is designed for undergraduate students in the BBA ISM major who have the interest and demonstrated ability to pursue the MS IS degree. You can double-count up to fifteen master's-level information systems credits toward the BBA Information Systems Management major and the MS IS. The 4+1 program provides an opportunity to save time and money.

Eligibility

You are eligible to apply if you are:

- Currently enrolled at UM-Dearborn as a BBA student with Professional standing and with a declared Information Systems Management major
- Have completed ISM 310 (if currently enrolled, you may seek conditional admission) with a B or better
- Have a cumulative GPA of at least 3.2 at UM-Dearborn

Double Counting Credits

Credits eligible to be double counted include BA 530, ISM 575, ISM 650, ISM 644, and ISM 642. To take full advantage, apply for admission to the 4+1 option before you take ISM 301, ISM 321, ISM 331, ISM 371, and ISM 383. Students must complete the graduate level courses with a grade of B or better to maintain eligibility in the 4+1 program.

The double counted courses appear on the undergraduate and graduate transcripts. Only graduate level courses can be double counted towards both the undergraduate and graduate degrees. Please see the college website for admission requirements and program details.

University of Michigan-Dearborn students who have been admitted to the MS IS program and are not in the 4+1 program 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.
- leverage cutting-edge technologies to analyze data and develop innovative business solutions.
- develop foundational logic and programming skills for business intelligence and AI applications.

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.
- effectively interact with AI tools by developing and applying prompt engineering skills.

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

MS in Information Systems Curriculum

Code	Title	Credit Hours
Core courses		27
BA 520	AI Fundamentals for Business	
BA 530	Programming and Data Structures with Python ^{1,2}	
ISM 525	Fundamentals of Information Systems	
ISM 575	Information and Database Management ^{1,2}	
ISM 580	AI Application Development	
ISM 642	Cybersecurity and Networking ^{1,2}	
ISM 644	IT Strategies and Opportunities ^{1,2}	
ISM 649	Advanced Technologies in Business	
ISM 650	Systems Development and Data Quality ^{1,2}	
Electives		
Any one College of Business graduate course		3
Total Credit Hours		30

¹ Simultaneous credit toward the BBA Information Systems major and MSIS for students pursuing the Information Systems 4+1 option

² Information Systems 4+1 students *may not* receive credit for BA 530, ISM 575, ISM 650, ISM 642, or ISM 644 in the Master's program if those students have earned a B or better in the equivalent undergraduate courses of ISM 301, ISM 321, ISM 331, ISM 383, or ISM 371, respectively. Instead, Information Systems 4+1 students must replace these courses with more advanced electives from the MS in Information Systems program.

Students admitted to the 4+1 MS IS program may substitute a maximum of 15 credits of courses from the following: BA 530 for ISM 301, ISM 575 for ISM 321; ISM 650 for ISM 331, ISM 644 for ISM 371, ISM 642 for ISM 383.

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 9 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 Goals and Objectives

Goal 1: Students will have an understanding of the core business disciplines and be able to apply this knowledge to global business situations.

Objectives: MBA students will:

- Demonstrate knowledge of disciplinary concepts, terminology, models, and perspectives.
- Identify business problems and apply appropriate solutions (problem-finding/problem-solving).
- Integrate knowledge across disciplinary areas (integrative thinking).
- Apply knowledge in a global environment.

Goal 2: Students will be effective communicators.

Objectives: MBA students will:

- Demonstrate an ability to effectively communicate in a manner that is typically required of a business professional.

Goal 3: Students will appreciate the importance of ethical/corporate social responsibility principles.

Objectives: MBA students will:

- Identify and explain alternative approaches to ethical/corporate social responsibility issues.

MS-Information Systems 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.
- Leverage cutting-edge technologies to analyze data and develop innovative business solutions.
- Develop foundational logic and programming skills for business intelligence and AI applications.

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.
- Effectively interact with AI tools by developing and applying prompt engineering skills.

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.

MBS/MS-Information Systems Admission Prerequisite

- Mathematics admission prerequisite

MBA/MS-Information Systems Curriculum

Code	Title	Credit Hours
MBA Foundation Knowledge		
All of the following are required:		18
ACC 505	Devel & Interp Financial Info	
BE 530	Econ Analysis: Firm & Consumer	
FIN 531	Fin Fundament & Value Creation	
MKT 515	Marketing Management	
OB 510	Organization Behavior	
OM 521	Operations Management	
MBA Transformative Knowledge		
Future Ready - all of the following are required		9
BA 510	Introduction to Business Analytics	
BA 520	AI Fundamentals for Business	
BPS 516	Stakeholder-Centric Management	
Global - Select one course from the following:		3
BE 583	Global Econ: Crisis & Growth	
FIN 655	International Financial Mgt	
MKT 622	Global Marketing	
OB 610	Global Management and Cross-Cultural Strategies	
Decision Making - select one course from the following:		
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	
MBA Personalized Pathway Electives		
Select a minimum of three courses (9 credits) from College of Business graduate courses.		9
MBA Capstone		
Capstone is to be taken during the last 1/3rd of the MBA program.		
BPS 535	Advanced Strategy in Action	3
MS-Information Systems Core Courses		
All of the following are required:		24
BA 530	Programming and Data Structures with Python	
ISM 525	Fundamentals of Information Systems	
ISM 575	Information and Database Management	
ISM 580	AI Application Development	
ISM 642	Cybersecurity and Networking	
ISM 644	IT Strategies and Opportunities	
ISM 649	Advanced Technologies in Business	
ISM 650	Systems Development and Data Quality	
MS-Information Systems Electives		
Any College of Business graduate course		3

Students may waive any of the MBA core courses 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 9 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-Information Systems students will acquire discipline-specific knowledge and competencies.

Objectives: MS-Information Systems students will:

- Design an information system for an organization.
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- develop foundational logic and programming skills for business intelligence and AI applications.

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

Objectives: MS-Information Systems students will:

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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.

ISM 525 Fundamentals of Information Systems 3 Credit Hours

This course is designed to provide students with an overview of information systems in the business world. It presents an organizational and managerial view of how to use information technology to manage global organizations, provide useful products and services to customers, and create competitive advantages. Topics include a survey of information technology, information systems, and organizations; strategic information systems; management support systems; technological advancements and impacts; and ethical and social issues in information systems. The course prepares students to be proficient in concepts of information systems and ready for advanced ISM courses

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 and Database 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 580 AI Application Development 3 Credit Hours

AI has emerged as a transformative force in the business landscape, enabling new models and opportunities while freeing professionals from the constraints of extensive technical support and labor-intensive tasks. This course delves into the potential of generative AI in business through hands-on app development. Engaging actively in the creation of applications that harness AI capabilities for pragmatic business solutions, students will explore two application types: those seamlessly integrating AI abilities, such as chatbots, and those developed with AI assistance, requiring no extensive programming background. Streamlit, an accessible open-source Python library, will be adopted as the primary tool for app development. Upon successful completion, students are expected to gain profound insights into AI and develop skills to integrate it effectively into their professional endeavors.

Prerequisite(s): BA 520

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 Cybersecurity and Networking 3 Credit Hours

This course delves into the critical interplay between cybersecurity and networking, offering a comprehensive exploration of IT security methodologies, techniques, and tools alongside essential networking principles. Students will gain a deep understanding of core cybersecurity concepts, including threat identification, risk management, and security planning, while also mastering the technical foundations necessary to implement effective network security measures. The curriculum covers network attacks, firewalls, intrusion detection systems, and VPNs, emphasizing the fundamental networking concepts crucial for understanding and deploying these security technologies. Additionally, students will explore modern networking topics such as cloud networking, green computing, mobile enterprise/BYOD, open-source app development, and virtual services, all within the context of aligning IT systems and security strategies with business objectives. By integrating these elements, the course prepares students to manage and secure contemporary enterprise networks, addressing both technical and managerial challenges in the dynamic field of cybersecurity and networking.

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 Strategies and Opportunities 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 Advanced Technologies in Business 3 Credit Hours

This course is designed to equip students with an in-depth understanding of how advanced technologies like Artificial Intelligence (AI) and Business Intelligence (BI) transform business landscapes. Students will explore the integration of advanced technologies to enhance decision-making processes, improve operational efficiencies, and drive strategic growth. The curriculum covers key topics such as AI algorithms, quantum computing, blockchain technology, cybersecurity, etc. Real-world case studies and industry projects are incorporated to illustrate the practical application of these technologies in various sectors. By engaging in hands-on projects and case studies, students will develop the skills necessary to leverage AI and BI tools effectively, preparing them to address real-world challenges and make informed decisions in a technology-driven landscape.

Prerequisite(s): ISM 580 and BA 530

ISM 650 Systems Development and Data 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