

Management Information Systems

IN THE FOWLER COLLEGE OF BUSINESS

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Faculty

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Robert O. Briggs, Ph.D., Professor of Management Information Systems
Murray E. Jennex, Ph.D., Professor of Management Information Systems (Graduate Adviser)
John M. Penrose, Ph.D., Professor of Management Information Systems, Emeritus
Feraidoon Raafat, Ph.D., Professor of Management Information Systems (Graduate Adviser)
Bruce A. Reinig, Ph.D., Professor of Management Information Systems, Interim Dean, Fowler College of Business
Bongsik Shin, Ph.D., Professor of Management Information Systems
Theophilus Addo, Ph.D., Associate Professor of Management Information Systems, Emeritus
Aaron C. Elkins, Ph.D., Associate Professor of Management Information Systems (Graduate Adviser)
Kaveh Abhari, Ph.D., Assistant Professor of Management Information Systems
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General Information

The Master of Science degree in cybersecurity management prepares students to take a senior position associated with cybersecurity risk management across all private industries and public sectors. Many enterprises are finding themselves vulnerable to cybersecurity threats and try to protect information assets while promoting communication between stakeholders. In this program, students develop and implement plans to enact emergency response, ensure regulatory compliance, manage risk, and provide information assurance.

The Master of Science degree in information systems prepares students to take a senior position associated with the information systems field across all private industries and public sectors. The program is designed to balance management knowledge of business and technology, general technical knowledge in information systems, and domain knowledge in a special area selected by the student. Upon successful completion of the program, students will be competent in leading organizations in the evaluation and adoption of information systems and technologies for strategic advantage as well as in bridging the cultural and communication gaps that often exist between information systems and business function professionals.

Master of Science Degree in Cybersecurity Management

Admission to the Degree Curriculum

In addition to meeting the requirements for classified graduate standing and the general requirements for master's degrees as described in Admission and Registration, the student must have satisfactorily completed equivalents of the following courses as prerequisites:

MIS 515	Object-Oriented Programming for Business Applications.....	3
B A 623	Statistical Analysis.....	3
B A 625	Financial and Management Accounting.....	3

Notice of admission with classified graduate standing will be sent to the student upon the recommendation of the Fowler College of Business and the approval of the dean of the Division of Graduate Affairs.

Advancement to Candidacy

All students must satisfy the general requirements for advancement to candidacy, as described in Requirements for Master's Degrees.

Students concurrently enrolled in deficiency coursework may be given permission to take the comprehensive examination prior to actual completion of all coursework. However, comprehensive examinations will not be evaluated and results will not be reported to the Division of Graduate Affairs until all deficiency coursework has been successfully completed. This may delay graduation.

Specific Requirements for the Master of Science Degree

(Major Code: 07031) (SIMS Code: 222341)

In addition to meeting the requirements for classified graduate standing as described above and the general requirements for master's degrees as described in Requirements for Master's Degrees, the student must complete a graduate program of at least 30 approved units including at least 21 units in 600- and 700-numbered courses. Up to nine units of coursework may be accepted as transfer credit. Not more than a total of three units in courses Management Information Systems 797 (Research) and Management Information Systems 798 (Special Study), may be accepted for credit toward the degree. With approval of the graduate adviser, a substitute course may be allowed in place of a required course after reviewing student credentials.

Required core courses (21 units):

MIS 585	Fundamentals of Cybersecurity Management.....	3
MIS 620	Electronic Business and Big Data Infrastructures.....	3
MIS 687	Secure Enterprise Networking and Mobile Technologies.....	3
MIS 755	Information Systems Security Management.....	3
ACCTG 621	Accounting Information Systems.....	3
ACCTG 673	Accounting Information Systems (AIS) Development.....	3
ACCTG 675	Seminar in Accounting Information Systems Audit and Control.....	3

Culminating Experience

Three units selected from the following courses:

MIS 790	Directed Readings in Management Information Systems.....	3 (Cr/NC)
and a written comprehensive examination		
OR		
B A 799A	Thesis.....	3 (Cr/NC/RP)

Electives (6 units):

MIS 686	Enterprise Data Management.....	3
MIS 691	Decision Support Systems.....	3
MIS 695	Business Systems Analysis and Design.....	3
MIS 749	Business Analytics.....	3
ACCTG 505	Fraud Examination.....	3
ACCTG 729	Seminar in Current Issues in Accounting and Auditing: Forensic Accounting	
H SEC 690	Seminar*.....	3
H SEC 690	Seminar**.....	3

* Cyber Warfare and Terrorism (fall term)

** Critical Infrastructure and Cyber Crime (spring term)

The Master of Science degree in cybersecurity management requires Plan A, Thesis or Plan B, directed readings in information systems which includes a written comprehensive examination offered by the department. The program must be approved by the college and departmental adviser.

Management Information Systems

For regulations concerning grade point averages, final approval for the granting of the degree, award of the degree, and diplomas, refer to the basic requirements for the master's degree as described in Requirements for Master's Degrees.

Master of Science Degree in Information Systems

Admission to the Degree Curriculum

In addition to meeting the requirements for classified graduate standing and the general requirements for master's degrees as described in Admission and Registration, the student must have satisfactorily completed equivalents of the following courses as prerequisites:

B A 625	Financial and Management Accounting.....	3
B A 627	Marketing.....	3
B A 628	Operations and Supply Chain Management.....	3

Notice of admission with classified graduate standing will be sent to the student upon the recommendation of the Fowler College of Business and the approval of the dean of the Division of Graduate Affairs.

Advancement to Candidacy

All students must satisfy the general requirements for advancement to candidacy, as described in Requirements for Master's Degrees.

Students concurrently enrolled in deficiency coursework may be given permission to take the comprehensive examination prior to actual completion of all coursework. However, comprehensive examinations will not be evaluated and results will not be reported to the Division of Graduate Affairs until all deficiency coursework has been successfully completed. This may delay graduation.

Specific Requirements for the Master of Science Degree

(Major Code: 07021) (SIMS Code: 222335)

In addition to meeting the requirements for classified graduate standing as described above and the general requirements for master's degrees as described in Requirements for Master's Degrees, the student must complete a graduate program of at least 30 approved units including at least 21 units in 600- and 700-numbered courses. Up to nine units of coursework may be accepted as transfer credit. Not more than a total of three units in courses Management Information Systems 797 (Research) and Management Information Systems 798 (Special Study), may be accepted for credit toward the degree. With approval of the graduate adviser, a substitute course may be allowed in place of a required course after reviewing student credentials.

Required core courses:

IS Technology

Nine units selected from the following courses:

MIS 686	Enterprise Database Management.....	3
MIS 687	Secure Enterprise Networking and Mobile Technologies.....	3
MIS 691	Decision Support Systems.....	3
MIS 695	Business Systems Analysis and Design.....	3
MIS 697	Project Planning and Development.....	3
MIS 752	Seminar in Supply Chain and Enterprise Resource Planning.....	3

IS Management and Analytics

Nine units selected from the following courses:

MIS 688	Information Systems and Strategies in Organizations.....	3
MIS 748	Seminar in Applied Multivariate Analytics.....	3
MIS 749	Business Analytics.....	3
MIS 750	Strategic Project Management.....	3

MIS 755	Information Systems Security Management.....	3
B A 623	Statistical Analysis.....	3

Culminating Experience

Three units selected from the following courses:

MIS 790	Directed Readings in Management Information Systems.....	3
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OR

B A 799A	Thesis.....	3 (Cr/NC/RP)
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Career Track

Students select a career track and courses with the approval of the graduate adviser. Nine units selected from the following courses:

MIS 515	Object-Oriented Programming for Business Applications.....	3
MIS 705	Communication Strategies.....	3
MIS 744	Seminar in Lean Six Sigma.....	3
MIS 753	Global Supply Chain Management.....	3
MIS 754	Seminar in Operations Strategy.....	3

Career track courses may include additional department and courses from outside the Fowler College of Business with the approval of the graduate adviser.

The Master of Science degree in information systems requires Plan A, Thesis or Plan B, directed readings in information systems or a written comprehensive examination offered by the department. The program must be approved by the college and departmental adviser.

For regulations concerning grade point averages, final approval for the granting of the degree, award of the degree, and diplomas, refer to the basic requirements for the master's degree as described in Requirements for Master's Degrees.

Data Analytics Advanced Certificate (SIMS Code: 222392)

The advanced certificate is intended for students who wish to gain in-depth, hands-on knowledge in data analysis, interpretation, and management. This program is designed to develop the knowledge and skills necessary to inform organizational decision making through analyzing data, including unstructured data, using a variety of programming and statistical analysis tools. The goal of the program is to help prepare current or aspiring business analysts to succeed in areas such as government agencies, graduate degree programs, military, or private industry.

A bachelor's degree from an accredited institution is required for admission to this advanced certificate program.

Certificate Course Requirements (12 units)

MIS 749	Business Analytics.....	3
B A 623	Statistical Analysis.....	3

Electives: Six units selected from the following courses:

MIS 620	Electronic Business and Big Data Infrastructures.....	3
MIS 691	Decision Support Systems.....	3
MIS 748	Seminar in Applied Multivariate Analytics.....	3

Students must complete the 12 units of certificate coursework with a minimum grade point average of 3.0 with no grade lower than a C (2.0). Courses in the certificate program may be applied to the Master of Science in Information Systems or Master of Science in Business Administration degrees. Concurrent registration in the advanced certificate program and a master's degree program in the Fowler College of Business is permitted.

Courses Acceptable for Master's Degree Program in Information Systems (MIS)

Refer to *Courses and Curricula and Regulations of the Division of Graduate Affairs* sections of this bulletin for explanation of the course numbering system, unit or credit hour, prerequisites, and related information.

UPPER DIVISION COURSES

MIS 515. Object-Oriented Programming for Business Applications (3)

Prerequisite: Management Information Systems 315 or knowledge of one computer programming language. **Proof of completion of prerequisite required:** Copy of transcript.

Object-oriented programming as applied to business applications. Use of object-oriented classes, features, inheritance, and subclasses for modeling and processing of business information.

MIS 585. Fundamentals of Cybersecurity Management (3)

Prerequisite: Management Information Systems 383 or 687.

Cybersecurity risks, threats, and vulnerabilities. Technologies, procedures, and techniques to assess, control, detect, and remediate threats and vulnerabilities.

MIS 596. Contemporary Topics in Management Information Systems (1-3)

Prerequisites: Business major approved by the Fowler College of Business and consent of instructor.

Contemporary topics in management information systems. May be repeated with new content. See *Class Schedule* for specific content. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree. Credit for 596 and 696 applicable to a master's degree with approval of the graduate adviser.

GRADUATE COURSES

MIS 620. Electronic Business and Big Data Infrastructures (3)

Prerequisite: Business Administration 623.

Advanced data analysis and information technology concepts associated with e-business infrastructure and systems architecture.

MIS 680. Information Systems Hardware and Software (3)

Prerequisite: Classified graduate standing.

Computer architecture, programming languages, programming systems, and operating systems.

MIS 686. Enterprise Database Management (3)

Prerequisite: Classified graduate standing.

Database management technologies to host, secure, and manipulate enterprise data, information, and knowledge assets to create business value. Modeling tools for analyzing and specifying data requirements.

MIS 687. Secure Enterprise Networking and Mobile Technologies (3)

Prerequisite: Classified graduate standing.

Deployment and management of technologies for integrating resources within and between organizations through distributed networks, Internet of things (IoT) networks, and secure enterprise systems.

MIS 688. Information Systems and Strategies in Organizations (3)

Prerequisite: Classified graduate standing.

Managing information to create business value. Planning, organizing, and leading information systems initiatives. Relationship of data, information, and knowledge to strategic and operational decision making. Global aspects and ethical uses of information systems.

MIS 691. Decision Support Systems (3)

Prerequisite: Completion of MBA core or MS prerequisites.

Design, implementation, and integration of computerized decision support systems into business management. Problem representation, modeling, and simulation.

MIS 695. Business Systems Analysis and Design (3)

Prerequisite: Classified graduate standing.

Secure information systems to solve problems and exploit opportunities. Development strategies, process and data modeling, requirements definition, and security modeling for information systems.

MIS 696. Seminar in Selected Topics (3)

Intensive study in specific areas of information systems. May be repeated with new content. See *Class Schedule* for specific content. Credit for 596 and 696 applicable to a master's degree with approval of the graduate adviser.

MIS 697. Project Planning and Development (3)

Prerequisite: Classified graduate standing.

Project development, planning, execution, and control for information systems. Information project development life cycle, structure project planning methodology, theories, techniques, and utilization of project management technologies.

MIS 705. Communication Strategies (3)

Prerequisite: Classified graduate standing.

Development of advanced written, oral, and interpersonal communication strategies for the business environment.

MIS 727. Seminar in Scientific Method (3)

Prerequisite: Classified graduate standing.

Scientific method as an integrated body of philosophical logic to include applied science and engineering, experimental, exploratory, and theoretical research through multi-methodological and multidisciplinary lenses.

MIS 744. Seminar in Lean Six Sigma (3)

Prerequisite: Business Administration 628.

Lean principles and Six Sigma methodology for managing agility and quality in operations and projects. Lean tools, managerial frameworks, process improvement, statistical methods.

MIS 748. Seminar in Applied Multivariate Analytics (3)

Prerequisite: Business Administration 623.

Forecasting methods in business, finance, and marketing to include ARMA models and multivariate time series models. Data visualization; model diagnostics, identification, and selection.

MIS 749. Business Analytics (3)

Prerequisite: Business Administration 623.

Business analytics techniques for predictive modeling and customer segmentation. Applications include churn management, business experiments, cluster segmentation, and market basket analysis.

MIS 750. Strategic Project Management (3)

Prerequisite: Business Administration 628.

Managing projects and programs to implement business strategies. Project selection, programs, and portfolios; project organization; resource conflict and resolution; stakeholder management; project team management; project risk assessment and mitigation.

MIS 752. Seminar in Supply Chain and Enterprise Resource Planning (3)

Prerequisite: Business Administration 628.

Methodology, theory, and systems to plan and control supply chain and enterprise resources. Integrated processes of sales and operations planning, corporate accounting, materials requirement, procurement, capacity planning, and warehouse management in a simulated enterprise environment.

MIS 753. Global Supply Chain Management (3)

Prerequisite: Classified graduate standing.

Advanced concepts, method, and implementation of global supply chain strategies and management; global sourcing and supplier development; global logistic network and management; information technology and e-business for supply chain; supply chain design and optimization; performance metrics and measurements.

MIS 754. Seminar in Operations Strategy (3)

Prerequisite: Business Administration 628.

Strategic issues in operations and their integration with other functional areas. Includes operations strategy, product and process planning, experience curves, productivity measurements, and information technology implementation.

Management Information Systems

MIS 755. Information Systems Security Management (3)

Prerequisite: Classified graduate standing.

Information systems management. Focus on creation of a security plan for an organization to include risk analysis, security issues, security design, security plan, disaster recovery/business continuity, and threat analysis.

MIS 790. Directed Readings in Management Information Systems (3) Cr/NC

Prerequisite: Advancement to candidacy.

Preparation for the comprehensive examination for students.

MIS 797. Research (3) Cr/NC/RP

Prerequisite: Advancement to candidacy.

Research in the area of management information systems. Maximum credit six units applicable to a master's degree.

MIS 798. Special Study (1-3) Cr/NC/RP

Prerequisite: Consent of staff; to be arranged with department chair and instructor.

Individual study. Maximum credit six units applicable to a master's degree.

For additional courses applicable to the Master of Science degree in Information Systems see:
Business Administration 623. Statistical Analysis