MIS - Management Information Systems

Management Information Systems: MIS

Lower-Division Courses

MIS 301. Introduction to Information Technology Management.
Restricted to students in the McCombs School of Business. Explores how information technology helps to achieve competitive advantage and improve decision making, business processes, operations, and organizational design. Uses a cross-functional perspective to recognize the role of technology across business activities of management, finance, marketing, human resources, and operations. Three lecture hours a week for one semester. Management Information Systems 301 and 301H may not both be counted. Offered on the letter-grade basis only.

MIS 301H. Introduction to Information Technology Management: Honors.
Restricted to students admitted to the McCombs School of Business Honors Program. Explores how information technology helps to achieve competitive advantage and improve decision making, business processes, operations, and organizational design. Uses a cross-functional perspective to recognize the role of technology across business activities of management, finance, marketing, human resources, and operations. Three lecture hours a week for one semester. Management Information Systems 301 and 301H may not both be counted. Offered on the letter-grade basis only.

MIS 302F. Foundations of Information Technology Management.
Restricted to non-McCombs School of Business majors. Explores how information technology helps to achieve competitive advantage and improve decision making, business processes, operations, and organizational design. Uses a cross-functional perspective to recognize the role of technology across business activities of management, finance, marketing, human resources, and operations. Three lecture hours a week for one semester. Management Information Systems 301 and 302F may not both be counted. Offered on the letter-grade basis only.

MIS 304. Introduction to Problem Solving and Programming.
Same as Business Analytics 304. Restricted to students in the McCombs School of Business. Programming skills for creating easy-to-maintain systems for business applications. Object-oriented and structured methodologies with Python. Three lecture hours a week for one semester. Only one of the following may be counted: Business Analytics 304, 305, or Management Information Systems 304. Offered on the letter-grade basis only.

Basic computer terminology, hardware and software, communications technology, graphics, systems analysis and design, and issues arising out of the rapidly evolving field of information systems. Students are expected to achieve a working knowledge of personal computer software, including operating system software and environments, as well as spreadsheets, analytical graphics, databases, and presentation software. Hands-on experience with the Internet and use of electronic mail. Three lecture hours a week for one semester.

Upper-Division Courses

MIS 325. Database Management.
Same as Business Analytics 325. Restricted to students in the McCombs School of Business. Beginning and intermediate topics in data modeling for relational database management systems. Three lecture hours a week for one semester. Only one of the following may be counted: Business Analytics 325, 327, or Management Information Systems 325. Offered on the letter-grade basis only.

MIS 333K. Web Application Development.
Restricted to students in a business major. Concepts and practices of information systems. Advanced programming techniques used to generate menu-driven applications. Three lecture hours a week for one semester. Offered on the letter-grade basis only. Prerequisite: Business Analytics 304, 305, or Management Information Systems 304; and Business Analytics 325, 327, or Management Information Systems 325 with a grade of at least C- in each.

This course is used to record credit the student earns while enrolled at another institution in a program administered by the University’s Study Abroad Office or the school’s BBA Exchange Programs. Credit is recorded as assigned by the study abroad adviser in the Department of Information, Risk, and Operations Management. University credit is awarded for work in an exchange program; it may be counted as coursework taken in residence. May be repeated for credit when the topics vary.

MIS 366P. Management Information Systems Practicum.
Restricted to students in a business major. Students apply skills in their major area and focus on additional project management skills through group projects conducted in a professional setting. Students may work with a private or a public enterprise. The equivalent of three lecture hours a week for one semester. Prerequisite: Forty-five semester hours of college coursework and consent of instructor.

MIS 173, 273, 373. Topics in Management Information Systems.
Restricted to students in a business major. Provides in-depth treatment of business data processing concerns such as database management, telecommunications, and development of commercial systems. For each semester hour of credit earned, one lecture hour a week for one semester. May be repeated for credit when the topics vary. Offered on the letter-grade basis only. Prerequisite: Varies with the topic.


Topic 11: Advanced Analytics Programming. Focuses hands-on data analysis using the Python programming language. Subjects include machine learning tasks such as classification and clustering. Only one of the following may be counted: Management Information Systems 373 (Topic: Advanced Analytics Programming), 373 (Topic 11), Business Analytics 372 (Topic 1). Offered on the letter-grade basis only. Additional prerequisite: Business Analytics 304, 305, or Management Information Systems 304 with a grade of at least C-.

Topic 13: Information Technology for Supply Chains. Provides an understanding of how information technology is used to coordinate supply chain activities across different industries. Students work in teams and undertake hands-on exercises to learn how to plan and coordinate operations. Management Information Systems 173, 273, 373 (Topic 13) and Operations Management 137, 237, 337 (Topic 4) may not both be counted. Offered on the letter-grade basis only. Additional prerequisite: Management Information Systems 301, 301H, or 302F with a grade of at least C.


Topic 16: Information Technology Security, Privacy, and Survivability. Offered on the letter-grade basis only. Additional prerequisite: For business majors, Management Information Systems 333K or the equivalent; for others, consent of instructor.

Topic 17: Predictive Analytics and Data Mining. Introduces the data mining process and primary data mining techniques employed to extract intelligence from data and evaluates the strengths and weaknesses of data mining techniques applied to challenges in various business domains. Only one of the following may be counted: Business Analytics 357, 372 (Topic 2), Management Information Systems 373 (Topic 17), Marketing 372 (Topic: Predictive Analytics and Data Mining), 372 (Topic 22). Offered on the letter-grade basis only. Additional prerequisite: Statistics 301, 301H, 309 or 309H.


Topic 21: Open Innovation. Offered on the letter-grade basis only.

Topic 22: IT Audit and Security. Offered on the letter-grade basis only.

Topic 23: Social Media Analytics. Introduction to social network analysis for business value using statistical optimization and decision theory; and foundation for analyzing online search and conversation data for market sensing, sentiments, product quality, reputation, recommendations, and brand awareness. Management Information Systems 373 (Topic 23) and Business Analytics 372 (Topic 23) may not both be counted. Offered on the letter-grade basis only.

Topic 24: Mobile Apps and Web Services. An overview of mobile and web services technology models and architectures. Only one of the following may be counted: Management Information Systems 365, 373 (Topic: Mobile Apps & Web Services), 173, 273, 373 (Topic 24). Offered on the letter-grade basis only. Additional prerequisite: Management Information Systems 333K.

Topic 25: User Generated Content Analytics. Designed to showcase the virtually unlimited opportunities that exist today to leverage the power of user generated content analytics. Focuses on a gamut of questions ranging from strategic to operational matters pertaining to a firm’s social media initiatives, metrics to capture relevant outcomes, and predictive analysis to link social media chatter to business performance. Only one of the following may be counted: Management Information Systems 373 (Topic: User Generated Content Analytics), 373 (Topic 25), Business Analytics 372 (Topic 4). Offered on the letter-grade basis only.

Topic 26: Health Care Analytics. Explore key management challenges and how data may be leveraged to guide decisions and improve operations, with the unifying theme of providing health care services in a manner that leads to lower cost and higher quality. Only one of the following may be counted: Management Information Systems 373 (Topic: Healthcare Analytics), 373 (Topic 26), Operations Management 337 (Topic: Healthcare Analytics), 337 (Topic 8), Business Analytics 372 (Topic 17). Offered on the letter-grade basis only.


Restricted to students in a business major. Provides foundation in business system analysis, project management, planning, design, and implementation using basic business knowledge and computer skills. Three lecture hours a week for one semester. Offered on the letter-grade basis only. Prerequisite: Seventy-five semester hours of college coursework, including Management Information Systems 333K.

MIS 375. Strategic Information Technology Management.

Restricted to students in a business major. Designed to develop an understanding and appreciation for the role of information technology in the context of a firm’s strategy. Explores the impact of information technology on the economy and business performance, the emergence of electronic business applications and organizational and market transformation, and the nature of technology-driven business models and strategies. Three lecture hours a week for one semester. Offered on the letter-grade basis only. Prerequisite: Upper-division standing.


Restricted to students in a business major. Conference course. Only one of the following may be counted: Accounting 179C, 379C, Business, Government, and Society 179, 379, Finance 179C, 379C, International Business 179C, 379C, Legal Environment of Business 179, 379, Management 179C, 379C, Management Information Systems 179, 379, Marketing 179C, 379C, Operations Management 179, 379, Risk Management 179, 379. Prerequisite: Eighteen hours of coursework in business and economics, six of which must be upper-division; Business Analytics 304, 305, or Management Information Systems 304 and Business Analytics 325, 327, or Management Information Systems 325 with a grade of at least B- in each, and consent of instructor; and written approval before the first meeting of the course from the department chair’s office, on forms provided for that purpose.

Graduate Courses

MIS 380. Seminar in Organizational Communication.

Selected topics in organizational communication, written and oral. Three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Research Methodology in Business and Organizational Communication.

Topic 2: Projects, Proposals, and Presentations. Communicating effectively in business using advanced writing and presentation
MIS 180D, 280D, 380D. Database Management.
Explore designing, building, and implementing a relational database to improve company operations and reporting. Examine how databases affect analytics and app development. For each semester hour of credit earned, the equivalent of one lecture hour a week for one semester. Prerequisite: Graduate standing and consent of instructor.

MIS 380N. Topics in Information Management.
Three lecture hours a week for one semester. May be repeated for credit when the topics vary. Offered on the letter-grade basis only. Prerequisite: Graduate standing.

Topic 2: Managing Information. Understanding, designing, and controlling the information processing activities of an organization. Complements Business Administration 380C by focusing on information systems rather than information technology. Includes business intelligence, knowledge management, data modeling, group decision support systems, and electronic commerce. Offered on the letter-grade basis only. Additional prerequisite: Business Administration 380C.

Topic 3: Business Process Excellence. Emerging technology, data and process modeling (flow focus for integrated applications), reengineering, and change management. Offered on the letter-grade basis only. Additional prerequisite: Business Administration 380C.

Topic 4: Digital Economy and Commerce. Offered on the letter-grade basis only. Additional prerequisite: Management Information Systems 380N (Topic 2) and credit or registration for Management Information Systems 380N (Topic 3).

Explore programming skills for creating easy-to-maintain systems for business applications. Examine object-oriented and structured methodologies with Python. For each semester hour of credit earned, the equivalent of one lecture hour a week for one semester. Prerequisite: Graduate standing and consent of instructor.

MIS 181N, 281N, 381N. Topics in Information Systems.
Selected topics in information technology and management of information systems development. For each semester hour of credit earned, one lecture hour a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Introduction to Data Management.
Topic 2: Research in Information Systems: Organizational and Behavioral Perspectives.


Topic 6: Research Seminar.


Topic 8: Managing Disruptive Innovations. Focuses on the management of disruptive technologies, including analyzing whether an emerging technology is sustaining or disruptive, identifying new markets for disruptive technologies, justifying investments in disruptive technologies, implementing disruptive technologies, and appropriating value from them.

Topic 9: Change Management Practicum I. Project-oriented course focusing on design of organizational change.


Topic 11: Research in Information Technology.


Topic 14: Global Information Technology Management.

Topic 15: Introduction to Electronic Commerce.

Topic 16: Information Systems Projects.

Topic 17: Client/Server Development.

Topic 18: Innovation, Technology, and Commercialization.

Topic 19: Technology Transfer. Theory and Practice.


Topic 26: Research Methods in Information Systems. Restricted to doctoral students. Overview of research methods used to study information systems problems. Fundamental concepts and criteria for use with and evaluation of quantitative and qualitative, positivist and interpretive research methods. Current state-of-the-art applications.

Topic 27: Strategies for Networked Economy. Analyzes the competitive dynamics of platform-mediated networks; explores innovations like cloud computing in supporting network-based competition, the implications of information technology-enabled global sourcing, and business intelligence for business value and competitive advantage; and discusses the role of information technology in business transformation and making a case for information technology investments. Management Information Systems 381N (Topic 27) and 381N (Topic 29) may not both be counted.

Topic 28: Data Management. Explore general database concepts such as E-R modeling, relational database design, and advanced SQL. Design and develop mission-critical web-based business applications using databases. Explore data warehouse design and advanced analytics functions within SQL. Management Information Systems 181N, 281N, 381N (Topic 28) and 284N (Topic: Data Management) may not both be counted.
Topic 29: Digital Strategies for Enterprise Transformation. Analyze the competitive dynamics of platform-mediated business models; explore innovations such as cloud computing and Internet of things in supporting platform-based competition; study the implications of information technology-enabled disruption; understand applications of artificial intelligence and machine learning to develop competitive advantage; and discuss the role of information technology in business transformation. Management Information Systems 381N (Topic 27) and 381N (Topic 29) may not both be counted.

MIS 382N. Topics in Information Management.
Three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Managing Financial Information. Data modeling and information management for investment analysis and financial systems.
Topic 2: E-Business Change.
Topic 3: E-Business Application Development.
Topic 4: Cross-Functional Systems Integration. Prerequisite: Management Information Systems 380N (Topic 2), 380N (Topic 3), and credit or registration for Management Information Systems 380N (Topic 4).
Topic 5: Managing Complexity.
Topic 7: Project Management in Fast-Cycle Environments.
Topic 8: Balanced Scoreboard: An Information Systems Perspective. Theory and tools that support the design and implementation of balanced scoreboard evaluation systems.
Topic 10: Data Mining for Marketing.
Topic 11: Business Intelligence Capstone. Explores foundations of business analytics related to database management, data analysis techniques, and business decision making to solve a business problem of a client. Additional prerequisite: Consent of instructor.
Topic 12: Social Media Analytics. An introduction to social network analysis for business value using statistical optimization and decision theory, including the foundation for analyzing online search and conversation data for market sensing, sentiments, product quality, reputation, recommendations, and brand awareness. Additional prerequisite: Consent of instructor.
Topic 13: Predictive Analytics and Data Mining. Management Information Systems 382N (Topic 9: Business Data Analytics with Data Mining) and and 382N (Topic 13) may not both be counted.
Topic 14: Business Data Science. An introduction to basic concepts, methodology, algorithms, and technology used in business analytics and decision making. Explore concepts from probabilistic modeling, analysis and experimental design. Examine the basics of modern regression and classification, clustering, visualization, dimensionality reduction, A/B Testing and an introduction to deep learning. Management Information Systems 382N (Topic: Business Data Science) and 382N (Topic 14) may not both be counted.

MIS 283M, 383M. Supply Chain Management for Executives.
Restricted to students in the Executive MBA Program. Examine frameworks for understanding how to transform supply chain strategy in the face of pressures from technological, social, and political disruption. For each semester hour of credit earned, one lecture hour a week for one semester. Offered on the letter-grade basis only. Prerequisite: Graduate standing.

MIS 383N. Topics in Information-Intensive Business Processes.
Topics in management of information in specific industries or application areas. Three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Health Care Management.
Topic 2: Health Services Seminar.
Topic 3: Customer Insights.
Topic 4: Supply Chain Management.
Topic 6: Trading-Floor Technology.
Topic 10: Practicum in Multimedia Systems Development. Restricted to MBA and MPA students who have chosen the information management concentration. Additional prerequisite: Business Administration 380C and consent of instructor.
Topic 12: E-Business Innovation.
Topic 13: Managing Innovation in a Global Company. Examines innovation-based business strategies that rely on internal and external sources, processes in different organization forms, and market structures.

MIS 184N, 284N, 384N. Topics in Business Analytics.
Restricted to students admitted to the Master of Science in Information, Risk, and Operations Management. Selected topics in business analytics. One, two, or three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate Standing; additional prerequisites vary with the topic.

Restricted to students in the MS in Information Technology and Management Program. Overview of hardware and software life cycles; in-depth considerations of program design, including experience programming for large-scale computer systems in COBOL, FORTRAN, and/or BASIC. Three lecture hours a week for one semester. Prerequisite: Graduate standing.

Restricted to students in the Executive MBA Program. Introduction to artificial intelligence (AI) and machine learning (ML) through a review of AI and ML concepts, tools, and the complete AI/ML lifecycle in the context of tackling business and organizational challenges. For each semester hour of credit earned, one lecture hour a week for one semester. Offered on the letter-grade basis only. Prerequisite: Graduate standing.

MIS 185N, 285N, 385N. Topics in Information Technology and Management.
Restricted to students admitted to the Master of Science in Information Technology and Management program. Selected topics in information technology and management. For each semester hour of credit earned, the equivalent of one lecture hour a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; additional prerequisites vary with the topic.

Topic 1: Big Data and Distributed Programming. Explore a range of subjects required for developing modern applications that operate over vast data sets that are potentially distributed in nature. Consider alternative technologies and architectures for working with big data, examining the pros and cons of the different approaches. Management Information Systems 284N (Topic: Big Data/Distributed Programming) and 185N, 285N, 385N (Topic 1) may not both be counted.

Topic 2: Emerging Technologies I. Explore all aspects of the Internet of Things (IoT) product life-cycle. Interface with the devices (sensors/actuators) that collect data and affect the environment. Explore network protocols for communication with these constrained devices. Examine programming of the back-end services that host, manipulate and disseminate the collected data. Study the development of apps that facilitate human interaction with these devices and the analysis
of the data they produce. Examine security, privacy and performance considerations specific to IoT. Management Information Systems 284N (Topic: Emerging Technologies I) and 185N, 285N, 385N (Topic 2) may not both be counted.

**Topic 3: IT Security, Policy, and Compliance.** Explore the prevention and mitigation of data security and privacy risks in newly designed digital artifacts through IT governance, risk, and control frameworks as well as relevant laws, regulations, and industry standards. Management Information Systems 382N (Topic: IT/Secur/Policy/Compliance) and 185N, 285N, 385N (Topic 3) may not both be counted.

**Topic 4: IT Capstone.** Develop real-life business and social solutions using emerging information technologies. Engage with industry partners to explore business context for IT Capstone projects. Management Information Systems 382N (Topic: IT Capstone) and 185N, 285N, 385N (Topic 4) may not both be counted.


**Topic 6: Strategic IT and Change Management.** Explore the strategic management of new IT-embedded product and service innovations and their incorporation into the digital business ecosystems of organizations. Management Information Systems 284N (Topic: Strat IT and Change Mgmt) and 185N, 285N, 385N (Topic 6) may not both be counted.

**Topic 7: IT and Supply Chain Management.** Examine the role of Information Technology in managing Supply Chains. Explore the IT capabilities needed by firms to coordinate their operations, collaborate with business partners and manage uncertainty. Illustrate the role of technologies and tools like ERP platform, ABAP programming, XML, web services, distributed computing and machine learning to improve the performance of supply chains. Management Information Systems 284N (Topic: IT and Supply Chain Mgmt) and 185N, 285N, 385N (Topic 7) may not both be counted.

**Topic 8: Design Methods.** Utilize design tools and methods to understand user needs, frame business opportunities, and design solutions. Examine design from both organizational and technical perspectives. Conduct research with end users, synthesize data, prototype solution ideas, and communicate compelling stories. Undertake design challenges that focus on emerging information technologies, including the internet of things (IoT), cognitive computing, AI, cloud, mobile, and 3D/4D printing. Management Information Systems 382N (Topic: Design Methods) and 185N, 285N, 385N (Topic 8) may not both be counted.

**Topic 9: Advanced Programming and App Development.** Explore various approaches to modern app development, including required advanced programming and software engineering concepts. Explore approaches to app development ranging from native platform programming through programming frameworks that allow cross-platform development, to high-level approaches based on web frameworks. Management Information Systems 382N (Topic: Adv Programming/App Devel) and 185N, 285N, 385N (Topic 9) may not both be counted.

**Topic 10: User Generated Content Analytics.** Generate business and social insights from user-generated content (e.g., text, images, video, etc.) through the use of text analytics, sentiment analysis, visualization techniques, etc. Management Information Systems 381N (Topic: User Genrtd Content Anlytcs) and 185N, 285N, 385N (Topic 10) may not both be counted.

**Topic 11: Advanced Data Mining and Web Analytics.** Examine a variety of data mining and machine learning techniques for descriptive, predictive and prescriptive analytics. Explore approaches to analyzing different types of information from the Web (web structure, content, usage). Management Information Systems 382N (Topic: Advanced Mining/Web Analytics) and 185N, 285N, 385N (Topic 11) may not both be counted.

**Topic 12: Healthcare IT and Analytics.** Design new healthcare solutions using emerging information technologies such as Internet of Things, cognitive computing, artificial intelligence, the cloud, mobile, and 3D and 4D printing.

**Topic 13: Emerging Technologies II.** Build a strong business and technical foundation for blockchain. Discuss business inefficiencies that can be addressed by blockchain technology. Examine cryptography and distributed computing that blockchain systems rely on, including an overview of Bitcoin. Explore current research problems, perform programming assignments, lead discussions, and hear presentations from industry and academic researchers. Management Information Systems 382N (Topic: Emerging Technologies II) and 185N, 285N, 385N (Topic 13) may not both be counted.

**Topic 14: Programming Blockchain.** Cover the development of the bitcoin protocol from scratch. Explore basic libraries to build the protocol using a step-by-step approach. Examine the primary and secondary aspects of scaling, mining and operating a bitcoin protocol based system. Management Information Systems 284N (Topic: Programming Blockchain) and 185N, 285N, 385N (Topic 14) may not both be counted.

**MIS 698. Thesis.**

The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in information, risk, and operations management and consent of the graduate adviser; for 698B, Management Information Systems 698A.

**MIS 398R. Master’s Report.**

Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in information, risk, and operations management and consent of the supervising faculty member and the graduate adviser.

**MIS 399W, 699W, 999W. Dissertation.**

May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

**Professional Courses**