

MANAGEMENT INFORMATION SYSTEMS (MIS)

Any experimental courses offered by MIS can be found at:

registrar.iastate.edu/faculty-staff/courses/explistsings/ (<http://www.registrar.iastate.edu/faculty-staff/courses/explistsings/>)

Courses primarily for undergraduates:

MIS 207: Fundamentals of Programming for Business and Analytics

(3-1) Cr. 3. F.S.SS.

Prereq: MATH 150 or placement into MATH 140 or higher

Introduction to programming (what it is and how it works) and problem-solving methods, emphasizing the basics of good programming techniques and style. Covers data types, control and data structures, functions, parameter passing, library functions, and object-oriented design to develop business and analytics applications.

MIS 301: Management Information Systems

(3-0) Cr. 3.

Prereq: COM S 113

The role of information technology in organizations. Overview of methodologies for design and development of systems including decision support systems, expert systems, data bases, end-user computing, etc. Computer applications relate concepts to practice. Lecture and laboratory work emphasizes the enabling role of IT in contemporary organizations.

MIS 307: Intermediate Business Programming

(3-0) Cr. 3.

Prereq: MIS 207/COM S 207 or COM S 227; credit or enrollment in MIS 301

Introduction to the concepts and use of data structures, file accesses and object oriented programming methodologies in contemporary business environments. Application development environments will be covered.

MIS 310: Information Systems Analysis

(3-0) Cr. 3.

Prereq: credit or enrollment in MIS 301

Critical analysis of business processes, data and process modeling, feasibility studies, CASE tools, and developing system design specifications.

MIS 315: Business Data Streams and Issues

(Cross-listed with ACCT). Cr. 3. Alt. F., offered even-numbered years. Alt. S., offered odd-numbered years. SS.

Prereq: MIS 301, ACCT 284

Identification of open data sources and other private data sources. Develop methods of data access, collection, and sharing; develop methods to validate and standardize data sources; develop methods to assess data worthiness (risk).

MIS 320: Database Management Systems

(3-0) Cr. 3.

Prereq: Credit or enrollment in MIS 301

Database design, development, and implementation. Focus on data models, both classical and object oriented. Uses relational and/or object oriented database management systems.

MIS 340: Project Management

(Cross-listed with SCM). (3-0) Cr. 3.

Prereq: credit or enrollment in MIS 301

Equips students to support team activities in the general project management environment and better manage their careers. Practical experience using project management techniques and tools. Course topics include project initiation and execution, risk assessment, estimating and contracts, planning, human factors, and standard methods.

MIS 367: Consultative Problem Solving

(Cross-listed with MKT). Cr. 3. F.S.

Prereq: Sophomore and above

Consultative problem-solving approach to address complex problems in marketing and related fields. Topics include problem definition, issue tree dis-aggregation, hypotheses development and the Pyramid Principle. Development of skills such as formulating problems, structuring and prioritizing problems, synthesizing results and communicating intuition from quantitative analyses.

MIS 368: Marketing Analytics

(Cross-listed with MKT). (3-0) Cr. 3. F.S.

Prereq: MKT 340, STAT 226

Use of different tools to conduct various analyses to support marketing strategies. Topics include data visualization and exploration, forecasting, social media analytics and other marketing techniques. Development of skills such as structuring problems, and synthesizing results from quantitative analyses.

MIS 403: Healthcare Information Systems

(Cross-listed with HCM). Cr. 3.

Prereq: MIS 301; credit or concurrent enrollment in HCM 301

Explores the critical role information technologies and systems play in healthcare organizations. The focus is on evaluating and implementing software and IT systems that facilitate delivery of health care; understanding information technology governance, data privacy, and security; planning and project management; and tracking future developments of information technology in healthcare management. Introduction to Electronic Health Records (EHR) and other Management and Financial Information System applications used by healthcare organizations.

MIS 407: Advanced Business Programming

(3-0) Cr. 3.

Prereq: MIS 307

Advanced software development and topics in contemporary programming languages. Topics include basic syntax, advanced programming techniques, file structures and management, database access, algorithm design, web forms and graphical user interfaces.

MIS 435: Cybersecurity in Business

(3-0) Cr. 3.

Prereq: MIS 301

Introduction to fundamental concepts in networking and cloud computing and related cybersecurity concepts. Examination of network and cloud architectures, technologies, management and governance, security controls and techniques used to design, deploy, and protect resources in those environments. Exposure to cybersecurity tools in hands-on labs and explore methods of implementing and maintaining effective networks and cybersecurity programs in private, public, and cloud infrastructures.

MIS 436: Introduction to Business Analytics

(3-0) Cr. 3.

Prereq: MIS 320 or ACCT 384, AND Pre- or Co-requisite of STAT 326

Introduction to the field of business analytics (BA). Students will examine BA processes and techniques used in transforming data to knowledge and creating value for organizations. Business cases, presentations by business professionals, class lectures and discussions on data analysis, design and modeling, and extensive hands-on analytical exercises.

MIS 439: Topics in Management of Information Systems

(3-0) Cr. 3. Repeatable.

Prereq: MIS 301, permission of instructor

A variety of topics will be covered and topics may vary between semesters. Some of the topics are information resources management, electronic commerce, decision support systems, and expert systems.

MIS 440: Supply Chain Information Systems

(Cross-listed with SCM). (3-0) Cr. 3.

Prereq: MIS 301, SCM 301

Internal and inter-organizational information systems necessary for a supply chain to achieve competitive advantage. Topics include: design, development, implementation, and maintenance of supply chain information systems; enterprise resource planning; advanced planning and scheduling, manufacturing execution systems; and the interface between manufacturing planning and control processes, logistics processes, and the information system.

MIS 445: Enterprise Cybersecurity

(3-0) Cr. 3.

Prereq: MIS 301

Introduction to the elements of a cybersecurity program in the administrative, technical, and physical security domains. Learn methods to analyze and assess organizational risk and determine appropriate controls, be exposed to offensive and defensive cybersecurity tools in hands-on labs, and explore methods of implementing and maintaining effective cybersecurity programs. Examination of policy, frameworks, laws, regulations, and compliance and how they influence and contribute to cybersecurity programs.

MIS 446: Advanced Business Analytics

(3-0) Cr. 3.

Prereq: MIS 320 or ACCT 384, AND Pre- or Co-requisite of STAT 326

Projects-based course which provides an in-depth understanding of BA methods of visualization, data mining, text mining, web-mining, and predictions through the use of specific BA tools. For students who are interested in understanding advanced techniques and applications of data analytics and acquiring hands-on skills for making intelligent business decisions in data-rich organizations.

MIS 447: Information Systems Development

(3-0) Cr. 3.

Prereq: MIS 301 and MIS 310

Design of business systems using contemporary tools and methods such as SQL, CASE tools, OOD tools, etc. Focuses on synthesizing concepts from earlier MIS courses.

MIS 450: Enterprise Resource Planning Systems in Supply Chain

(Cross-listed with SCM). (3-0) Cr. 3.

Prereq: SCM 301, MIS 301 or I E 148, I E 341

Examination of the role of enterprise resource planning systems (ERP) in the supply chain. Hands-on experience with a major software application in use by many corporations to manage and improve the efficiency of their supply chains and operations. Students will develop a more process-centric perspective about how a supply chain operates and how ERP enables and supports such operations.

MIS 490: Independent Study

Cr. 1-3. Repeatable.

Prereq: MIS 301, senior classification, permission of instructor

MIS 495: Executive Presentation and Analysis

(3-0) Cr. 3. Repeatable. F.S.

Prereq: MIS 301

Students explore different practical scenarios related information systems projects and cases. Students acquire necessary skills and knowledge to solve practical issues associated with presented cases and problems. Students compete at different venues around the country. Only 3 credits of MIS 495 may count as a MIS major or minor choice elective.

Courses primarily for graduate students, open to qualified undergraduates:

MIS 501: Management Information Systems

(3-0) Cr. 3.

Prereq: Graduate classification or instructor permission.

Current theories and practices appropriate for understanding the role and application of information systems for individuals, organizations, and society within a globally competitive context. Focus on information technology and its uses in improving work practices, products, and tools for individuals and organizations. Issues pertaining to current and emerging topics in the development and use of technology, the role of technology in and its alignment with organizational strategy and sustainable business practices, information system planning and the development of enterprise architectures, and human interface and personal characteristics in the design and use of technology.

MIS 515: Big Data for Business

Cr. 3. F.

Prereq: Graduate classification or instructor permission.

Understanding the issues and challenges of data from multiple sources, different velocities, in large volumes with questionable veracity.

MIS 532: Programming Foundations for Business Analytics

(3-0) Cr. 3. SS.

Prereq: Graduate classification or instructor permission.

Explores the application of structured programming techniques for business analytics. Topics include data collection, processing, analysis, and more. Focus is on individual and group activities that reinforce skills development and provide the basis for later advanced work in data modeling.

MIS 533: Data Management for Decision Makers

(3-0) Cr. 3.

Prereq: Graduate classification or instructor permission.

Addresses data needs of functions such as marketing, finance, and production. Advanced skills needed to design, develop and use database, data warehousing and data mining systems for effective decision support. Emphasis on importance of contemporary technologies.

MIS 535: Networks and Information Security Management

(3-0) Cr. 3.

Prereq: Graduate classification or instructor permission.

Issues involved in the management of telecommunications function. Overview of communications technology used in various business applications, local area network, wide area network, broad band network, wireless and voice networks. Internet technologies and protocols. Analyzing the strategic impact of these technologies on organizations. Strategic planning for telecommunications, including network planning and analysis.

MIS 536: Business Analytics Foundation

(3-0) Cr. 3.

Prereq: Graduate classification or instructor permission.

Introduction to Business Analytics (BA) concepts and tools. Hands-on lab exercises and business case studies in data preparation, data querying and data visualization. Also covers various modeling techniques in predictive and prescriptive analytics.

MIS 537: Project Management

(3-0) Cr. 3.

Prereq: Graduate classification or instructor permission.

Prepares students to support team activities in the general project management environment and provides them with a working understanding of the full scope of project management activities. Students will also have practical experience using project management techniques and tools. Course topics include project initiation and execution, risk assessment, estimating and contracts, planning, human factors, and standard methods. The course follows the recommended content areas of the Project Management Institute, and provides students with a recognized foundational training in project management.

MIS 538: Business Process Systems

(3-0) Cr. 3.

Prereq: MIS 501 and graduate classification or instructor permission

Examine current and historical perspectives on business process management. Topics include process identification, mapping, and improvement. Additional topics will address business process automation and integration, business process outsourcing. Investigate current and potential tools and methods for business process management. Include process management projects.

MIS 539: Topics in Management of Information Systems

(3-0) Cr. 3. Repeatable, maximum of 6 credits.

Prereq: Graduate classification or instructor permission.

A variety of topics may be offered in different semesters. Topics may include electronic commerce, information resources management, decision support systems, and expert systems.

MIS 541: Analytics in Finance

(Cross-listed with FIN). Cr. 3. S.

Prereq: BUSAD 502 or an advanced undergraduate statistics course recommended

Introduction to Business Analytics (BA) in finance and the insurance industry. The concepts and tools discussed in this course, to be followed and complemented by more advanced courses in the area. Basic analytical thinking and business acumen focusing on applications from finance and insurance. Practical data analytic skills based on building real analytic applications on real data.

MIS 544: Social Media Business Applications and Analytics

Cr. 3. SS.

Prereq: MIS 536

The role of new collaborative social technologies and analysis of social media data. Exploration of strategic and operational applications of social media and of tools that support the analysis of social network and social media data. Application of text analysis and social network theory.

MIS 545: Enterprise Cybersecurity Management

Cr. 3. F.S.

Prereq: Graduate classification or instructor permission.

Challenges, technologies, and practices of information security management in enterprise operations.

MIS 546: Advanced Business Analytics

(3-0) Cr. 3. F.S.

Prereq: MIS 536

An in-depth discussion of various advanced topics in Business Analytics (BA) such as Big Data Analytics, Text Analytics, and Web Analytics. Extensive hands-on exercises of using BA tools to solve real-world problems. Preparation for students' capstone projects.

MIS 547: Teams, Projects, and Analytics Leadership

Cr. 3. SS.

Prereq: Graduate classification or instructor permission.

Provides business analytics students with an intensive preparation in teamwork and project management skills necessary to prosper in the program and carry forward into their professional lives. Topics include project management, team management, in class exercises, and case studies. Practical experience using project management techniques and tools.

MIS 548: Applications of Machine Learning for Business Intelligence

Cr. 3. F.

Prereq: Graduate classification or instructor permission.

Introduction to applications for data science concepts in the business domain. As big data, machine learning, business analytics, business intelligence and other concepts grow in business applications, it is essential for students to understand the underlying concepts, data, models, and applications to be successful in a data-driven world. Learn to determine problem types, data restrictions, model selection, tool choice, and analysis of data science concepts for greater business value.

MIS 551: IT Strategy & Execution

Cr. 3. F.

Prereq: Graduate classification or instructor permission.

Explore the building blocks of IT strategy in alignment with the business strategy. Emphasis on business aspects. Evaluate the impact of technologies on IT strategy. Explore IT strategy framework, understand the latest trends and exercise critical thinking with relevant case studies and discussion. Small groups will analyze a fictitious company as assigned and develop a future state IT vision and IT strategy that supports the business goals. Guest lecturers.

MIS 556: Business Analytics Capstone Project

Cr. 3. S.

Prereq: MIS 547

Synthesize analytics concepts, skills, and practices learned during the program of study to complete a course project. Projects proposals relevant to a firm are proposed and accepted midway through the program. Student cohort teams will complete the capstone project under the supervision of an advisory team of faculty. At the completion of the course teams will present their project marking the completion of the program of study. Offered on a satisfactory-fail basis only.

MIS 568: Marketing Analytics

(Cross-listed with MKT). Cr. 3. F.S.

Prereq: Graduate Classification or Instructor Permission and must have knowledge of R or Python

Integration of various concepts to solve problems using appropriate tools. Specifically, the course consist of the following three components: (a) help students develop consultative problem-solving skills; (b) introduce various newly developed consumer behavior theories; (c) provide an overview of quantitative models in the field of marketing analytics. Hands-on experiences to enhance skills such as formulating problems, structuring and prioritizing problems, synthesizing results and communicating intuition from complicated analyses.

MIS 590: Special Topics

Cr. 1-3. Repeatable, maximum of 3 credits.

Prereq: Graduate classification or instructor permission.

For students wishing to do individual research in a particular area of MIS.

MIS 598: Research Seminar in Management Information Systems

(3-0) Cr. 3.

Prereq: Graduate classification

Examines issues such as the nature and content of information systems research; aspects of starting and pursuing research topics in information systems; exploring and understanding relevant research methods and tools. Develop preliminary research proposals.

MIS 599: Creative Component

Cr. 3.

Prereq: Graduate classification, permission of supervisory committee chair

Preparation and writing of creative component.

Courses for graduate students:**MIS 601: Introduction to Information Systems Research I**

(3-0) Cr. 3.

Prereq: MIS 501 or equivalent, enrollment in PhD program

The state of behavioral research in the IS function. MIS activities in an organization span the following three major areas: design and implementation of the MIS, use of the MIS, and management of the MIS function. Each of these processes is carried out at several levels: individual, group, organizational and inter-organizational. Identify behavioral issues of relevance for the cells defined by the process and level dimensions. Reading and discussion of the research literature surrounding the development, use, and implications of information technology.

MIS 602: Introduction to Information Systems Research II

(3-0) Cr. 3.

Prereq: MIS 501 or equivalent, enrollment in PhD program

Three fundamental areas of Information Systems, namely, infrastructure, management, and processes. Infrastructure studies examine the IT architecture including computing, communication, data, and application. Management focuses on addressing the value added notion of IT. Finally processing addresses topics related to enabling role of IT in myriad of areas.

MIS 603: Seminar on IT Strategy and Structure

(3-0) Cr. 3.

Prereq: MIS 601

Strategic issues in IT management. Address issues such as aligning IT strategy with corporate strategy and functional strategies, IT structure, valuation, governance and control, and related topics. Provide students with research skills related to the boundary between IT and the firm's external environment.

MIS 604: Collaboration, Knowledge, and Intelligence in Organizations

(3-0) Cr. 3.

Prereq: MIS 601

Research issues in the emerging areas of collaboration, knowledge management, and enterprise intelligence. Topics will include emerging and contemporary technologies of Data Mining, Knowledge Discovery from Databases, Web Mining, organizational memory, and knowledge management.

MIS 605: Technical Research Methods in Information Systems

Cr. 3. S.

Prereq: MIS 501 or equivalent, enrollment in PhD program

Focuses on analytical modeling and empirical analyses using methods drawn from economics, management science, and statistics/econometrics, etc. Example topics include economics of information goods; impact of information technologies on firm performance and policy outcomes; and analysis of data generated from social media and business transactions.

MIS 606: Economic Research Methods in Information Systems

Cr. 3. S.

Prereq: MIS 501 or equivalent, enrollment in PhD program

Focuses on analytical modeling and empirical analyses using methods drawn from economics, management science, and statistics/econometrics, etc. Example topics include economics of information goods; impact of information technologies on firm performance and policy outcomes; and analysis of data generated from social media and business transactions.

MIS 620: Overview of MIS Research

Cr. 3. Alt. F., offered odd-numbered years.

Introduce doctoral students to the most cited research in IS, as well as to various behavioral research methods. Readings on research topics will cover categories of IS knowledge including: IS development, IT & individuals, IT & groups, IT & organizations, and IT & markets.

MIS 625: Analytical Research in Information Systems

Cr. 3. Alt. S., offered odd-numbered years.

Mathematical models to capture the essence or abstractions of real-world problems and applying established techniques to derive optimal solutions or business insights. Application of theories and tools from operations research, economics, computer science, and statistics to tackle problems regarding the development, marketing, utilization, and management of information technologies and systems in organizations and the society.

MIS 630: Empirical Research in MIS

Cr. 3. Repeatable, maximum of 2 times. F.

Intermediate level statistical and econometric methods used in MIS research. Preparation to conduct rigorous longitudinal analyses. Statistical and econometric methods used to examine phenomena that can evolve with the passage of time. Methods used for analyzing cross-sectional data. Application of advanced empirical methods in combination with rigorous theoretical arguments.

MIS 635: Computational Research in MIS

Cr. 3.

Introduction for doctoral students to Information Systems research methods rooted in computational thinking. Topics include important issues in IS research that benefit from computational thinking; and computational methodologies commonly used in IS research.

MIS 650: Research Practicum I

(1-0) Cr. 1.

Prereq: enrollment in the PhD program

Preparation of a research manuscript to be submitted to a peer-reviewed academic journal. Students will work with a faculty mentor on a research project.

MIS 651: Research Practicum II

(1-0) Cr. 1.

Prereq: enrollment in the PhD program

Preparation of a second research manuscript to be submitted to a peer-reviewed academic journal. Although students work under the supervision of a faculty mentor, the students will take independent responsibility for the research project.

MIS 655: Organizational and Social Implications of Human Computer Interaction

(Cross-listed with HCI). (3-0) Cr. 3.

Prereq: Graduate classification

Examine opportunities and implications of information technologies and human computer interaction on social and organizational systems. Explore ethical and social issues appurtenant to human computer interaction, both from a proscriptive and prescriptive perspective. Develop informed perspective on human computer interaction. Implications on research and development programs.

MIS 699: Research

Cr. 3-6. Repeatable.

Prereq: Graduate classification, permission of dissertation supervisor

Research.