

# MANAGEMENT INFORMATION SYSTEMS

Management Information Systems is the analysis and use of information systems and technologies to support problem solving and decision making within and across organizations. Organizations and companies use data, most often in digital form, to conduct nearly every part of their businesses and functions. The program provides students with the core knowledge related to every dimension of information systems and technologies, including the creation and implementation of software and databases, to information security, analytics, and the user interface. The program takes a balanced approach with both technical and managerial coursework.

## Undergraduate Major in Management Information Systems

**For undergraduate curriculum in business, major in management information systems.**

The Department of Information Systems and Business Analytics offers a major in management information systems. Students will complete the general education requirements (including business foundation courses), business core requirements for the bachelor of science (BS) degree, and 18 additional credits in the major.

The instructional objective of the Management Information Systems major is to prepare students for professional careers with a wide variety of firms and roles, ranging from small start-up firms to large multinational corporations. Common job titles include business analyst and systems analyst. Students are also pursuing careers in Information Technology consulting.

Students are limited to three business majors/degrees within the Ivy College of Business, or a total of three business majors/minors within the college. This limit is on business majors/degrees/minors only, and does not apply to multiple majors/degrees/minors taken outside the Ivy College of Business.

For more information on the undergraduate major in Management Information Systems, please visit: <https://ivybusiness.iastate.edu/undergraduate/majors-minors/management-information-systems/>

## Undergraduate Minor in Management Information Systems

The Department of Information Systems and Business Analytics also offers a minor for non-Management Information Systems majors in the Ivy College of Business. The minor requires 15 credits from an approved list of courses, including at least 6 credits in courses numbered 300 or above taken at Iowa State University with a grade of C or higher. The minor must include at least 9 credits that are not used to meet any other

department, college, or university requirement. Students with declared majors have priority over students with declared minors in courses with space constraints.

Required Course (3 credits):

MIS 301	Management Information Systems	3
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Elective Courses (12 credits):

Select twelve credit hours from 300 or 400 level MIS courses

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For more information on the undergraduate minor in Management Information Systems, please visit: <https://ivybusiness.iastate.edu/undergraduate/majors-minors/>

### Curriculum:

The Management Information Systems major requires students to take 18 credit hours in the management information systems area, including 12 credit hours of required core courses and 6 credit hours of electives.

Required Courses (12 credits):

MIS 307	Intermediate Business Programming	3
MIS 310	Information Systems Analysis	3
MIS 320	Database Management Systems	3
MIS 340	Project Management	3

Elective Courses (6 credits):

Select 6 credits of MIS department courses, OR select one of the MIS elective CLUSTERS described below:

The remaining 6 credits can be taken from the department approved electives, preferably with the specified clusters that focus on specific IT job related knowledge and skills (application development, business analytics, IT infrastructure and security, and supply chain technology). Students are encouraged to take electives that cover multiple clusters to enhance marketability and career flexibility.

### Application Development Cluster

MIS 407	Advanced Business Programming
MIS 447	Information Systems Development

### Business Analytics Cluster

MIS 436	Introduction to Business Analytics #
MIS 446	Advanced Business Analytics #

### IT Infrastructure and Security Cluster

MIS 435	Information Systems Infrastructure
MIS 445	Enterprise Systems and Architecture
<b>Supply Chain Technology Cluster</b>	
MIS 440	Supply Chain Information Systems
MIS 450	Enterprise Resource Planning Systems in Supply Chain
<b>Other MIS Courses</b>	
MIS 315	Business Data Streams and Issues
MIS 368	Marketing Analytics
MIS 495	Case Practicum *

# STAT 326 is a prerequisite for these courses.

\* Only 3 credits of MIS 495 may count as a Management Information Systems major choice elective.

NOTE: Management Information Systems majors must take MIS 207 Fundamentals of Computer Programming as part of the supporting courses.

Management Information Systems, B.S.

Sample 4-Year Plan (Your plan may differ)

**Freshman**

Fall	Credits Spring	Credits
BUSAD 102 or 103	1 ECON 102	3
ECON 101	3 STAT 226	3
COM S 113	3 Global/International Perspective <sup>@</sup>	3
ENGL 150	3 ACCT 284	3
MATH 150	3 BUSAD 203	1
LIB 160	1 HUM/SOC SCI	3
	<b>14</b>	<b>16</b>

**Sophomore**

Fall	Credits Spring	Credits
ACCT 285	3 SP CM 212	3
MIS 301	3 Natural Science	3
ENGL 250	3 PHIL 230	3
MIS 207	3 MIS 307	3
MATH 151	3 HUM/SOC SCI	3
	<b>15</b>	<b>15</b>

**Junior**

Fall	Credits Spring	Credits
ACCT 215	3 MIS 320	3
MIS 310	3 MIS 340	3
Business Core Courses	6 Business Core Courses	6

US Diversity <sup>#</sup>	3 ENGL 302	3
	<b>15</b>	<b>15</b>

**Senior**

Fall	Credits Spring	Credits
MIS Elective or Cluster	3 MIS Elective or Cluster	3
Global/International Perspective <sup>@</sup>	3 HUM/SOC SCI	3
Business Core Courses	6 MGMT 478 <sup>*</sup>	3
General Electives	5 General Electives	6
	<b>17</b>	<b>15</b>

**Total Credits: 122**

<sup>@</sup> Courses in these requirements may also be used as Global Perspective.

<sup>#</sup> US Diversity courses may be used to satisfy HUM/SOC SCI.

<sup>\*</sup> All core classes must be completed prior to taking MGMT 478 in the graduating semester.

Students must be admitted to the professional program in business to major in management information systems. The requirements to enter the professional program are:

1. Completion of at least 30 credits, Foundation Courses, ENGL 150, and all ENGL 101/99 courses if required.

2. A minimum GPA of 2.50 either cumulative or in the Foundation Courses. Early admission is allowed for Honors-eligible students. (See your advisor for specific information)

Graduation Requirements:

1. Grade of "C" or higher in at least 30 credits of Core and Major courses.

2. 42 credits of 300+ level courses from a four-year institution.

3. 50% of required Business courses must be earned at ISU.

4. At least 32 credits and the LAST 32 credits must be earned at ISU (exceptions for study abroad and internship may be requested).

5. 122 Credits minimum and a Cumulative GPA of at least 2.00 with no quality point deficiencies.

6. Grade of C or better in ENGL 250 required, and also in one other required ENGL course.

7. All 300-level and higher business credits must be earned at a four-year college.

8. Multiple business **majors** must have at least 15 distinct credits in each of the major requirements; when applicable, one course can be

shared between business majors; see your advisor regarding multiple business **degree requirements**.

## Graduate Study

The Department of Information Systems and Business Analytics participates in the MS in Information Systems (MSIS), the full-time and part-time Master of Business Administration (MBA) and the PhD in Business and Technology programs. The department also participates in an interdepartmental MS in Cyber Security as well as in a master's and PhD program in Human Computer Interaction.

The MBA program is a 48-credit, non-thesis, non-creative component curriculum. Thirty of the 48 credits are core business courses and the remaining 18 credits are graduate electives. Within the MBA program, students may obtain a specialization in information systems.

For more information about the MBA program with a specialization in Information Systems, please visit: <https://ivybusiness.iastate.edu/masters/mba/>

The MSIS is a 30-credit (minimum) curriculum designed around three interrelated areas – business foundation, IS core, and electives. All students are expected to be familiar with basic computing skills before entering the program. The MSIS program will educate students on applying IS theory and concepts to modern IS development through classes that enable them to learn and use the latest software in application projects. Students graduating from the program will have advanced technical and managerial skills to develop and manage information systems projects.

For more information about the MSIS program, please visit: <https://ivybusiness.iastate.edu/masters/msis/>

The PhD in Business and Technology is a 56-credit curriculum (minimum) which includes a 12-credit dissertation designed around four interrelated areas—core, specialization, minor, and research methods—and the dissertation. The Management of Information Systems (MIS) specialization examines issues related to the development, building, management, and use of information and knowledge-based technologies. Such technologies enable users to collect organizational data, provide a platform for organizing and disseminating the data, and offer operational, decision support, and knowledge management tools through which users can leverage data and information for making better organizational decisions. Students in the MIS specialization will study areas such as information technology analysis and development, database and knowledge management systems, decision support and data mining, human computer interaction, system security and integrity, and project management and collaborative teamwork.

For more information about the PhD program with a specialization in MIS, please visit: <https://ivybusiness.iastate.edu/phd/>

## Graduate Certificates

The graduate certificate in enterprise cybersecurity management will equip business professionals with basic concepts and techniques in cybersecurity and the management of information assets, including understanding cyber threat and choosing appropriate protections, enterprise cyber risk management, budgeting for cybersecurity, policies, procedures, human relations issues, and compliance and legal issues present in the modern organization.

The certificate is for working professionals as well as students enrolled in graduate programs. The certificate is available on campus in Ames and at Capital Square in Des Moines.

For more information about the graduate certificate in Enterprise Cybersecurity Management, please visit: <https://ivybusiness.iastate.edu/masters/graduate-certificates/>

The graduate certificate in business analytics will address the challenges of dealing with issues of "big data" and its analysis to extract actionable insights, equips business professionals with the basic analytic concepts and techniques necessary in various areas of business such as marketing, supply chain, operations, forensics, and risk management. Students will have a foundation in data management, business analytics, modeling, and communicating through data visualization.

The certificate is for working professionals as well as students enrolled in graduate programs who are employed or seeking a career as business analysts, analytic systems designers, and data scientists to help improve business performance. The certificate is available online, on campus in Ames and at Capital Square in Des Moines.

For more information about the graduate certificate in business analytics, please visit: <https://ivybusiness.iastate.edu/masters/graduate-certificates/>

### Courses primarily for undergraduates:

#### **MIS 207: Fundamentals of Computer Programming**

(Cross-listed with COM S). (3-1) Cr. 3. F.S.SS.

*Prereq: MATH 150 or placement into MATH 140 or higher*

An introduction to computer programming using an object-oriented programming language. Emphasis on the basics of good programming techniques and style. Extensive practice in designing, implementing, and debugging small programs. Use of abstract data types. Interactive and file I/O. This course is not designed for computer science, software engineering, and computer engineering majors. Credit may not be applied toward graduation for both Com S 207/MIS 207 and Com S 227.

**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: COM S 113, 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*

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 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 434: Electronic Commerce Strategy**

(3-0) Cr. 3.

*Prereq: MIS 301, MKT 340, SCM 301*

Overview of business strategies and technologies used for electronic commerce. Emphasis is on the strategic, operational, and technical issues associated with global electronic commerce using class lecture/discussion and case studies.

**MIS 435: Information Systems Infrastructure**

(3-0) Cr. 3.

*Prereq: MIS 301*

Overview of Internet and telecommunications technology used in business applications. Understand Internet and network protocols, network and application architectures, design, and implementation.

**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 Systems and Architecture**

(3-0) Cr. 3.

*Prereq: MIS 301*

Contemporary theories, concepts, and practices in network infrastructure, network design, and information security. Design, install, and administer a complex network infrastructure. Study security threats and attacks and countermeasures. Investigate exposure to attacks, firewalls, and development of intrusion detection systems. Other security topics such as risk management, IT audit, and security regulations will also be addressed.

**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: Case Practicum**

(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.

**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: Advanced Business Software Development**

(3-0) Cr. 3.

*Prereq: Graduate classification or instructor permission.*

A survey of business-oriented programming languages with emphasis on state-of-the-art development techniques for business software. Topics include object-oriented and Internet programming issues and methods.

**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, Communication, and Project Management**

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*

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.