

# MANAGEMENT SCIENCE AND INFORMATION SYSTEMS

## Courses

### MSIS 2103 Business Data Science Technologies

**Description:** The class focuses on problem solving with data analytics tools and technologies that are key to organization decision making. Emphasis is placed on decision making with spreadsheets and databases. Key information systems and cybersecurity concepts are also studied.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

### MSIS 2203 Computer Programming for Business

**Description:** Problem solving and computer programming for business. Fundamental principles and constructs of programming. Fundamentals of a current applied business programming language.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

### MSIS 3023 Technology, Diversity and Entrepreneurship

**Description:** A study of technology, diversity and entrepreneurship. The use of technology as a research tool to study diversity and the opportunities available to diverse groups through entrepreneurship.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

### MSIS 3103 End User Database Systems Design and Management

**Prerequisites:** Non-MIS or CS or Business Analytics or Data Analytics or Accounting Systems majors only.

**Description:** Principles and techniques of logical database design and related database concepts. Analysis, design and implementation of a database system using a relational DBMS. No credit for students in the MIS, Business Analytics, Data Analytics or Accounting Systems majors.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

### MSIS 3153 International Telecommunications Business Environment

**Description:** This course concentrates on understanding the implications and challenges of utilizing telecommunications networks in today's global business environment. Emphasis will be placed on identifying the major players in the global information infrastructure, standards setting bodies and procedures, and the various regulatory processes encountered. Students will research the telecommunications industry in other countries and develop comprehensive written reports. Course previously offered as TCOM 3153.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

### MSIS 3163 Web Design Essentials

**Description:** Web design principles including UX/UI, HTML/CSS, scripting, database management, and other relevant topics using the latest professional tools.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

### MSIS 3203 Advanced Computer Programming for Business

**Prerequisites:** MSIS 2203.

**Description:** Advanced programming features are examined with an emphasis on the development of computer programs for business applications. Previously offered as MSIS 4203.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

### MSIS 3223 Principles of Data Analytics

**Prerequisites:** MSIS 2103 and (BADM 2233 or MATH 2103 or higher).

**Description:** Problem solving with descriptive, predictive and prescriptive analytics in a business context using spreadsheets and other analytic tools. Techniques include forecasting, optimization, location analysis, decision analysis, inventory management, among others. Previously offered as MGMT 3223.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

### MSIS 3233 Management Science - Prescriptive Analytics

**Prerequisites:** MSIS 3223.

**Description:** Prescriptive analytics applied to resource allocation and operational problems encountered in accounting, economics, finance, management and marketing. Linear programming, goal programming, integer programming, and network models.. Previously offered as MGMT 3233.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 3243 Descriptive Analytics****Prerequisites:** MSIS 3223.**Description:** Application of descriptive analytics, especially from a "big data" perspective. Previously offered as MGMT 3243.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**MSIS 3253 Supply Chain Operations and Analytics****Prerequisites:** MSIS 3223.**Description:** Practical tools that support supply chain operations using relevant data and analytic models.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**MSIS 3293 Business Analytics Programming****Prerequisites:** MSIS 2103 or BADM 2233.**Description:** Fundamental principles of programming for business analytics, with a focus on data wrangling concepts and tools.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**MSIS 3333 Database Systems Development****Prerequisites:** MIS or CS or Business Analytics or Data Analytics or Accounting Systems or MATH or STAT majors only.**Description:** Database design principles focusing on database modeling with hands-on creation, population and querying of transactional databases using SQL. Required for MIS majors. May not be used for degree credit with MSIS 5643. Course previously offered as MSIS 4013.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**MSIS 3363 Web Application Development****Prerequisites:** MSIS 2203 and MSIS 3333.**Description:** Develop web applications involving database development, user interface design, and asynchronous client-side programming.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**MSIS 3393 Advanced Spreadsheet Modeling and Programming****Prerequisites:** MSIS 2103 and permission of instructor.**Description:** This class provides students with advanced spreadsheet skills, including the ability to formulate math programming models, simulations, risk analysis, and other business decision-making tools. The class will also provide students with an introduction to spreadsheet programming (VB, macros, etc.), building decision support systems in spreadsheets, etc.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**MSIS 3931 Diversity Impacts in Information Systems (D)****Description:** Critical analysis of the impact of technology on socially-defined classifications such as race, ethnicity, age, gender, sexuality, and disability; and how those groups affect technology industries. Through reading, observation, discussion, and writing; students will have their own perceptions challenged to better understand technology interaction through and with diverse populations, and how relationships between those groups may be improved or worsened as a result of mediated communications.**Credit hours:** 1**Contact hours:** Lecture: 1 Contact: 1**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**General Education and other Course Attributes:** Diversity**MSIS 4003 Systems Analysis and Design****Prerequisites:** MSIS 3363.**Description:** This course covers the core concepts and skills for developing software in an organizational context, including agile software development techniques, as well as the socio-cultural aspects of the systems analysis and design process. May not be used for degree credit with MSIS 5653. Course previously offered as MSIS 3303 and MGMT 3033.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**MSIS 4010 Applied Analytics and Information System Studies****Prerequisites:** Data analytics majors only.**Description:** Structured internship, field study or independent project with supporting academic study. Offered for variable credit, 1-6 credit hours, maximum of 6 credit hours.**Credit hours:** 1-6**Contact hours:** Contact: 1-6 Other: 1-6**Levels:** Undergraduate**Schedule types:** Independent Study**Department/School:** Mgmt Sci & Info Sys

**MSIS 4020 Applications Software Tools and Techniques**

**Prerequisites:** Permission of instructor and/or department.

**Description:** Hands-on experience with selected software-based tool or programming languages such as SAP, SQL, PERT/CPM, etc. Offered for variable credit, 1-3 credit hours, maximum of 3 credit hours.

**Credit hours:** 1-3

**Contact hours:** Lecture: 1-3 Contact: 1-3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 4033 Information Systems Project Management and Communication**

**Description:** This class discusses the multi-faceted dimensions critical to successfully leading information systems projects. Topics will include behavioral, strategic, technical, quantitative and communications issues faced by those directing projects. May not be used for degree credit with MSIS 5033. Course previously offered as MSIS 3033.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 4053 Supply Chain Security and Risk Analysis**

**Description:** This course examines the threats and vulnerabilities to an organization's supply chain and identifying controls that can be used to mitigate such threats. Physical and cyber will be examined.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 4111 Technology Success Skills Application**

**Prerequisites:** MIS or data analytics majors only.

**Description:** Advanced professional development and networking for information systems and analytics students.

**Credit hours:** 1

**Contact hours:** Lecture: 1 Contact: 1

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 4123 Information Assurance Management**

**Description:** A broad investigation of the elements of information assurance and security with an emphasis on the management impact to corporations and businesses engaged in the information services and e-commerce. Students should come away from the course with the ability to advise management on the risks and mitigation for all types of threats to information and privacy. May not be used for degree credit with MSIS 5123. Previously offered as MSIS 3123.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 4133 Information Technologies for Electronic Commerce**

**Prerequisites:** MSIS 4003.

**Description:** The Internet and web-based technologies, systems and applications that allow organizations to overcome the barriers of time and distance for conducting commerce. Scripting and markup languages, web programming tools, and the connectivity technologies for designing and developing electronic commerce and systems.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 4153 Supply Chain Systems and Technologies**

**Description:** This course covers the underpinning technologies, systems, platforms and models that enable the design, management and control of digitally connected supply chains.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 4233 Applied Information Systems Security**

**Prerequisites:** MSIS 4123, MSIS 4523.

**Description:** An investigation into the various technical aspects of attacking and guarding against attacks and failures in various types of information systems. Course content may vary but will generally include computer, network, and data protection technologies (e.g. firewalls, packet filters, proxy servers, user authentication and validation techniques, encryption, backup methodologies, system and component redundancies, etc.). Various threats and attack methods will be examined. May not be used for degree credit with MSIS 5233.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 4243 Digital Forensics and Auditing**

**Prerequisites:** MSIS 4123.

**Description:** Procedures for identification, preservation and extraction of electronic evidence. Auditing and investigation of network and host system intrusions, analysis and documentation of information gathered, and preparation of expert testimonial evidence. Forensic tools and resources for system administrators and information system security offices. Ethics, law, policy and standards concerning digital evidence. May not be used for degree credit with MSIS 5243.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 4253 System Certification and Accreditation****Prerequisites:** MSIS 4123.**Description:** Introduction to the certification and accreditation process. Risk analysis, system security analysis, and other topics. Previously offered as MGMT 4253. May not be used for degree credit with MSIS 5253.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**MSIS 4263 Business Intelligence and Predictive Analytics****Description:** Applied knowledge management tools and techniques for organizational decision support. Predictive analytics, machine learning, and other emerging techniques.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**MSIS 4273 Legal and Ethical Issues in Information Systems****Description:** Reviews the current status of information systems law in regard to rights of privacy, freedom of information, confidentiality, work product protection, copyright, security, legal liability, ethical issues, and a range of additional legal and information policy topics. Investigates the legal difficulties that technological innovations are causing in all of these areas. Legal options for dealing with the conflicts caused by technological change and likely adaptations of the law over time in response to societal changes will be explored. May not be used for degree credit with MSIS 5273.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**MSIS 4283 Operating Systems for Information Assurance****Description:** Operating Systems (OS) concepts for security. Vulnerabilities and threats. Security models. User authentication. Smart cards: architectures, technologies, application environments, and case studies. System availability. Software and data integrity. Auditing. Sensitive data confidentiality. Access control. Secure OS development: design principles, design methodologies, security certification. Case studies: Unix/Linux, MS/Windows XP/2000.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**MSIS 4333 Data Wrangling****Prerequisites:** MSIS 3293 and MSIS 3333.**Description:** Advanced data wrangling skills relevant to the data science field. This includes the use of advanced data structures, data cleaning and outlier detection, webscraping, the use of API's, and the inclusion of XML and RDMS files, among other topics.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**MSIS 4363 Advanced Application Development****Prerequisites:** MSIS 4003 and MSIS 3363.**Description:** Managing the software development pipeline. Topics include creating build/release pipelines for continuous integration/deployment, containerizing applications and emerging DevOps topics.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**MSIS 4373 Advanced Topics in Management Information Systems****Prerequisites:** Senior standing and consent of instructor.**Description:** Current and emerging advanced topics in the field of management information systems. Advanced network management, advanced electronic commerce issues, international management information systems and legal and regulatory issues in telecommunications.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**MSIS 4443 Advanced Topics in Analytics****Prerequisites:** Permission of instructor.**Description:** Emerging topics in analytics, including simulation, business dynamics, blockchain/cryptocurrency, artificial intelligence, supply chain, among others. Previously offered as MGMT 4443.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**MSIS 4523 Infrastructure Development****Description:** Broad coverage of network types and protocols used to drive the diverse voice, video and data needs of today's business. Network vocabulary and the understanding of how telecommunications components function are stressed. May not be used for degree credit with MSIS 5203. Previously offered as MGMT 4523.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**MSIS 4623 Data Science Programming****Description:** Programming concepts and applications for data science, analytics, and business intelligence. May not be used for degree credit with MSIS 5193.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Undergraduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys

**MSIS 4673 Data Visualization**

**Description:** This course will provide an understanding of the role of descriptive analytics, visualization, and dashboarding in direct support of managerial decision making (business intelligence and analytics). May not be used for degree credit with MSIS 5673.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 4713 Scripting Essentials**

**Description:** Application of scripting languages (e.g. BASH, PowerShell, Python) for general business, data and information assurance solutions. May not be used for degree credit with MSIS 5713.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 4943 Decision-Making Tools for Sports Management**

**Prerequisites:** Instructor permission.

**Description:** This course is designed as an elective for MGMT students enrolled in the Sports Management option. Useful decision tools such as statistical inference, decision analysis, mathematical programming, forecasting and simulation are used to address decisions faced by sports administrators and decisions made during sporting contests. Current 'hot' issues in sports decision-making will also be examined.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 5020 Advanced Applications Software Tools**

**Description:** Advanced hands-on experience with selected software-based tool or programming languages such SAP, SQL, PERT/CPM, etc. For graduate credit only. Offered for variable credit, 1-3 credit hours, maximum of 3 credit hours.

**Credit hours:** 1-3

**Contact hours:** Lecture: 1-3 Contact: 1-3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**Additional Fees:** Business Graduate Program fee of \$6 per credit hour applies.

**MSIS 5033 Information Systems Project Management**

**Prerequisites:** Graduate standing.

**Description:** This class covers the important multi-faceted dimensions of directing and leading information systems projects. Topics will include behavioral, strategic, technical and quantitative issues faced by information system project teams. May not be used for degree credit with MSIS 4033.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 5123 Enterprise Resource Planning**

**Prerequisites:** Admission to a graduate program.

**Description:** Challenges of data integration and redesign of processes in organizations. Introduction to enterprise resource planning (ERP) concepts, software, and practices. ERP issues architecture, planning, design, implementation, and project management. Extensions of ERP Technologies for managing supply chains and customer relationships. Emerging trends. May not be used for degree credit with MSIS 4123.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 5133 Advanced Web Based Application Development**

**Prerequisites:** Graduate standing and MSIS 5643 or equivalent.

**Description:** Development of n-tier web-based applications, including concepts and technologies relating to the presentation, business, and data tiers. Technologies include (but are not limited to) browser and other client programming, server-side programming, data tier programming and XML technologies.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 5193 Programming for Data Science and Analytics I**

**Prerequisites:** Graduate standing and computer programming proficiency, or consent of instructor.

**Description:** Programming concepts and applications for data science, analytics, and business intelligence covering data manipulation, data derivation, web content mining, visualization, text mining, and other topics. May not be used for degree credit with MSIS 4623.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**Additional Fees:** Business Graduate Program fee of \$6 per credit hour applies.

**MSIS 5203 Advanced Infrastructure Development**

**Description:** Broad coverage of the underlying infrastructure necessary for information systems operation. Understanding and experience with essential network connectivity as well as server and service architecture to support information systems is emphasized. May not be used for degree credit with MSIS 4523.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys



**MSIS 5213 Information Assurance Management**

**Description:** A broad investigation of the elements of information assurance and security with an emphasis on the management impact to corporations and businesses engaged in information services and electronic commerce. Students should come away from the course with the ability to advise management on the risks and mitigation for all types of threats to information and privacy. Course previously offered as TCOM 5223. May not be used for degree credit with MSIS 4123.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**Additional Fees:** Business Graduate Program fee of \$6 per credit hour applies.

**MSIS 5223 Programming for Data Science and Analytics II**

**Prerequisites:** MSIS 5193 and graduate standing.

**Description:** Programming concepts and applications for data science, analytics, and business intelligence.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**Additional Fees:** Business Graduate Program fee of \$6 per credit hour applies.

**MSIS 5233 Applied Information Systems Security**

**Prerequisites:** MSIS 5213 and MSIS 5203.

**Description:** An investigation into the various technical aspects of attacking, and of guarding against attacks and failures in various types of information systems. Course content may vary but includes computer, network, and data protection technologies (e.g., firewalls, packet filters, proxy servers, user authentication and validation techniques, encryption, backup methodologies, system and component redundancies, etc.). Various threats and attack methods examined. May not be used for degree credit with MSIS 4233.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 5243 Information Technology Forensics**

**Prerequisites:** MSIS 5213.

**Description:** Review of systems for vulnerabilities and analysis of systems that have been breached. This course will cover the many related issues and have a heavy hands-on component. May not be used for degree credit with MSIS 4243. Course previously offered as TCOM 5243.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 5253 Advanced System Certification and Accreditation**

**Prerequisites:** MSIS 5213.

**Description:** Preparing information systems for operational status requires significant planning and sound execution. Covers the key components of the certification and accreditation process, including risk assessment and mitigation, system security analysis, controls and system documentation. May not be used for degree credit with MSIS 4253. Course previously offered as TCOM 5253.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**Additional Fees:** Business Graduate Program fee of \$6 per credit hour applies.

**MSIS 5263 Information Assurance Offense**

**Prerequisites:** MSIS 5233 and graduate coordinator permission.

**Description:** Learning successful computer attacks so as to recognize and apply appropriate security controls for system vulnerabilities.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 5273 Legal and Ethical Issues in Information Technology**

**Description:** This course reviews the current status of information systems law in regard to rights of privacy, freedom of information, confidentiality, work product protection, copyright, security, legal liability, ethical issues and a range of additional legal and information policy topics. May not be used for degree credit with MSIS 4273. Course previously offered as TCOM 5273.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**Additional Fees:** Business Graduate Program fee of \$6 per credit hour applies.

**MSIS 5283 Secure Information Systems Administration**

**Prerequisites:** MSIS 5213 and MSIS 5773 and graduate coordinator permission.

**Description:** Introduction to basic concepts and technologies relevant to secure information systems administration. The topics covered in this course include, but are not limited to, operating system (OS) hardening, securing servers, network protection, and various access control mechanisms.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 5293 Information Assurance Capstone**

**Prerequisites:** Final semester in program; graduate coordinator permission.

**Description:** This capstone course takes a strategic view of corporate information assurance. The goal is to provide an overarching view of an information assurance program to include physical, personnel, operational, and cyber security, including the underlying legislation and Federal and state regulations that drive corporate IA programs and policy.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 5303 Prescriptive Analytics**

**Prerequisites:** Admission to a SSB graduate program.

**Description:** Application of prescriptive analytic techniques to business problems. Some descriptive analytics may also be covered.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**Additional Fees:** Business Graduate Program fee of \$6 per credit hour applies.

**MSIS 5313 Supply Chain Analytics**

**Prerequisites:** Graduate standing.

**Description:** Introduction to supply chain analytics including forecasting, scheduling, inventory, distribution, site selection, and other analytical tools and techniques.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 5393 Advanced Spreadsheet Modeling**

**Description:** Advanced spreadsheet modeling skills critical to business problem solving. Presentation, analysis, solution and communication facets are emphasized.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 5410 Advanced Topics in Information Assurance**

**Prerequisites:** Graduate standing and consent of program director.

**Description:** Advanced topics in information assurance and security. Course previously offered as TCOM 5410. Offered for fixed credit, 3 credit hours.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 5413 Advanced Data Science Applications**

**Prerequisites:** Graduate standing and permission of instructor.

**Description:** Special topics with an emphasis on emerging tools and techniques in the broad field of data science.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 5503 Statistics for Data Science**

**Prerequisites:** Graduate standing.

**Description:** Data Science focuses on the analysis of large secondary data sets. This course focuses on understanding and applying statistical models and techniques to obtain useful information from large data sets. These techniques are part of supervised statistical machine learning.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**Additional Fees:** Business Graduate Program fee of \$6 per credit hour applies.

**MSIS 5600 Special Projects in Business Information Systems**

**Prerequisites:** Consent of MS in MIS director.

**Description:** Study of advanced topics not covered directly in other classes or directed study under the supervision of a faculty member. Offered for variable credit, 1-12 credit hours, maximum of 12 credit hours.

**Credit hours:** 1-12

**Contact hours:** Contact: 1-12 Other: 1-12

**Levels:** Graduate

**Schedule types:** Independent Study

**Department/School:** Mgmt Sci & Info Sys

**Additional Fees:** Business Graduate Program fee of \$6 per credit hour applies.

**MSIS 5613 Advanced Supply Chain Analytics**

**Prerequisites:** MSIS 5313.

**Description:** Advanced tools and analytic techniques used in the supply chain field.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 5623 Information and Network Technology Management**

**Prerequisites:** Admission to a SSB graduate program or consent of MBA director.

**Description:** Major principles and impact of information technology from a manager's perspective in relation to the operation and success of businesses in today's global digital economy. Topics include the Internet, networks and wireless systems, database management systems, decision support systems, social media and e-business applications.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 5633 Predictive Analytics Technologies****Prerequisites:** Graduate standing.**Description:** A comprehensive analysis of contemporary business intelligence tools and techniques used in managerial decision-making, including decision support systems, data and text mining, knowledge management, expert systems, neural networks, and other tools and techniques.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**Additional Fees:** Business Graduate Program fee of \$6 per credit hour applies.**MSIS 5643 Advanced Database Management****Prerequisites:** Graduate standing.**Description:** Advanced theoretical and practical foundations of database systems. Brief review of classical issues surrounding design, analysis, and implementation of databases. Overview and use of modern database systems. Current and emerging issues in the database field. May not be used for degree credit with MSIS 3333.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**MSIS 5653 Advanced Systems Analysis and Design****Prerequisites:** Graduate standing.**Description:** Systems thinking. Systems life cycle, modeling approaches, methods, tools, and techniques of systems analysis and design for the development of modern organizational information systems. May not be used for degree credit with MSIS 4003.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**MSIS 5663 Advanced Data Wrangling****Description:** Provides an introduction of the major activities involved in data engineering. These activities include understanding fundamental principles and concepts, design principles, and prototype development to include table definitions, ETL logic, and example report definitions.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**Additional Fees:** Business Graduate Program fee of \$6 per credit hour applies.**MSIS 5673 Descriptive Analytics and Visualization****Description:** This course will provide an understanding of the role of descriptive analytics, visualization, and dashboarding in direct support of managerial decision making (business intelligence and analytics). Specifically, knowledge about managerial decision making, business intelligence, analytics, decision support systems and how they relate to other types of information systems; knowledge about human visual processing in relation to data presentation; knowledge of dashboard design and management; and knowledge about software packages and hands-on capabilities. May not be used for degree credit with MSIS 4673.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**Additional Fees:** Business Graduate Program fee of \$6 per credit hour applies.**MSIS 5683 Big Data Advanced Analytics Technologies****Prerequisites:** MSIS 5223, MSIS 5643.**Description:** The astounding growth of data in all aspects of life in the form of emails, weblogs, tweets, sensors, video and text has necessitated the use of Big Data and advanced analytics techniques to support large scale data analytics. This course brings together key Big Data tools on a Hadoop platform to show how to efficiently manage data with three main characteristics: volume, velocity and variety. Topics include the Hadoop platform, social media analytics, link analysis, and stream analytics.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**MSIS 5693 Digital Transformation Strategy****Prerequisites:** Graduate standing.**Description:** This course covers a variety of practical and timely managerial and technical challenges faced by organizations as the new digital society and workplace continues to evolve.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**Additional Fees:** Business Graduate Program fee of \$6 per credit hour applies.**MSIS 5713 Scripting Essentials****Description:** Application of scripting languages (e.g. BASH, PowerShell, Python) for general business, data and information assurance solutions. May not be used for degree credit with MSIS 4713.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**Additional Fees:** Business Graduate Program fee of \$6 per credit hour applies.



**MSIS 5773 The Upper Layers of Telecommunications Systems**

**Description:** This course is designed to develop a solid and deep understanding of data/telecommunications networks. The course covers various technical components and their functions in today's communication networks, with a special focus on the upper layers of the TCP/IP protocol suite (i.e., Network, Transport, and Application). The topics covered in the course will include, but not be limited to IP packet delivery, forwarding, and routing, UDP and TCP, dynamic host configuration (DHCP), domain name (DNS) lookup, and other widely used Internet applications (e.g., Web and email). Course previously offered as TCOM 5123.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 5793 Business Applications of Artificial Intelligence**

**Prerequisites:** Graduate Standing.

**Description:** Project-based study of advanced practical business applications of Artificial Intelligence.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 5900 Practicum in Management Information Systems**

**Prerequisites:** Consent of director of and admission to the MS in MIS program.

**Description:** Application of MIS-related methods and skills in a business environment. Integration of knowledge through real-world problem solving situations in organizational contexts. Offered for variable credit, 1-6 credit hours, maximum of 6 credit hours.

**Credit hours:** 1-6

**Contact hours:** Contact: 1-6 Other: 1-6

**Levels:** Graduate

**Schedule types:** Independent Study

**Department/School:** Mgmt Sci & Info Sys

**Additional Fees:** Business Graduate Program fee of \$6 per credit hour applies.

**MSIS 5950 Advanced Practicum**

**Prerequisites:** Consent of director of and admission to the MS in MIS program.

**Description:** Application of MIS-related methods and skills in a business environment beyond the normal practicum/internship timeframe. Offered for variable credit, 1-6 credit hours, maximum of 6 credit hours.

**Credit hours:** 1-6

**Contact hours:** Contact: 1-6 Other: 1-6

**Levels:** Graduate

**Schedule types:** Independent Study

**Department/School:** Mgmt Sci & Info Sys

**Additional Fees:** Business Graduate Program fee of \$6 per credit hour applies.

**MSIS 5990 Directed Studies in Information Assurance**

**Prerequisites:** Graduate standing and consent of program director.

**Description:** Special advanced topics, projects and independent study in information assurance and security. Course previously offered as TCOM 5990. Offered for variable credit, 1-6 credit hours, maximum of 6 credit hours.

**Credit hours:** 1-6

**Contact hours:** Lecture: 1-6 Contact: 1-6

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 6200 Advanced Topics in Management Information Systems**

**Prerequisites:** Doctoral student status and consent of instructor.

**Description:** Special advanced topics in management information systems for doctoral students. Offered for variable credit, 3-6 credit hours, maximum of 12 credit hours.

**Credit hours:** 3-6

**Contact hours:** Contact: 3-6 Other: 3-6

**Levels:** Graduate

**Schedule types:** Independent Study

**Department/School:** Mgmt Sci & Info Sys

**MSIS 6300 Contemporary Topics in MSIS Research**

**Prerequisites:** Doctoral standing.

**Description:** In depth study in one or more topics in MSIS field. An ongoing conversation about major issues in the field. Topics related to any one of the areas within the broad, interdisciplinary field of management science and information systems, such as management information systems, management science, telecommunications, and operations management. Offered for variable credit, 1-12 credit hours, maximum of 12 credit hours.

**Credit hours:** 1-12

**Contact hours:** Lecture: 1-12 Contact: 1-12

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 6303 Overview of Information Systems Research**

**Prerequisites:** Doctoral Standing.

**Description:** The purpose of this seminar is to become familiar with research streams and domains within Information Systems including theory, methods, paradigms, and various perspectives. Students will develop critical thinking and logical reasoning skills, as well as oral and written communication.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 6313 Privacy and Security Research in Information Systems**

**Prerequisites:** Doctoral Standing.

**Description:** The purpose of this seminar is to develop an understanding of the research domains of privacy and security in Information Systems. Potential topics covered include conceptualization of concepts (e.g. intention vs. behavior, traits and states), contextual influences (e.g. e-commerce, healthcare, social media, data breaches), and methods (e.g. behavioral economic vs. hypothetical).

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Mgmt Sci & Info Sys

**MSIS 6323 Seminar on Qualitative and Mixed-Methods Research****Prerequisites:** Doctoral Standing.

**Description:** The purpose of this seminar is to provide an introduction to qualitative and mixed methods and their use in scholarly research. Drawing upon well regarded courses by top IS scholars, the course balances understanding qualitative research with the application of that understanding to business research. Within a seminar class format, this course develops skills in designing, evaluating, and understanding qualitative research methods.

**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**MSIS 6333 Overview of MSIS Research****Prerequisites:** Doctoral standing.

**Description:** Recent research studies that fall within the broad, interdisciplinary field of management science and information systems. An introduction to the academic "way of life", focusing on research productivity.

**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**MSIS 6343 Advanced Methods in MSIS Research****Prerequisites:** Doctoral standing.

**Description:** Development of advanced methodological skills necessary to carry out research in the chosen area of study within the field of MSIS. Skills related to any one of the areas within the broad, interdisciplinary field of management science and information systems, such as management information systems, management science, telecommunications, and operations management. Same course as BADM 6343.

**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys**MSIS 6353 Seminar in Data Analytics****Prerequisites:** Doctoral Standing.

**Description:** The objective of this course is for the PhD student to develop an in-depth understanding and appreciation of business analytics and data science as viable research streams.

**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Mgmt Sci & Info Sys