**Management Information Systems**

**MIS 6204** Information Technology for Management (2 semester credit hours) Necessary background to understand the role of information technology and Management Information Systems in today's business environment. Topics include: strategic role of information, organization of information, information decision making requirements, telecommunications and networking, managing information resources, cloud computing distributed processing, and current information systems/technology issues. May not be used to fulfill degree requirements in MS Information Technology and Management. (2-0) S

**MIS 6302 (ACCT 6349)** Managing Digital Strategy (3 semester credit hours) This course explores the strategic management issues associated with the transformation of all businesses into digital businesses. It focuses on developing an understanding of how to develop a business models to implement strategies that are based on digital systems across different industries. This includes understanding how to develop business plans, how to align the business architecture with the digital systems architecture, and appropriately managing the digital systems to maximize business value. The course will deal with assessing and developing business strategies by harnessing contemporary phenomena in the digital world, such as the Internet of Things, Mobility strategies, and include applications of emerging techniques based on machine learning, artificial intelligence and semantic analysis to craft appropriate business strategies for firms. Credit cannot be received for both ACCT 6349 and MIS 6302. (3-0) Y

**MIS 6305 (HMGT 6334)** Healthcare Analytics (3 semester credit hours) The healthcare industry is yet to find ways to make best use of existing data to improve care, reduce costs, and provide more accessible care. This course introduces the use of business intelligence and decision sciences in healthcare industry. Students will develop a conceptual understanding of data mining techniques and decision analysis and hands-on experience with several analytics software which may include coding in R, Rattle, and WEKA (as needed and depending on availability). Prerequisite: OPRE 6301 or SYSM 6303. (3-0) Y

**MIS 6308 (ACCT 6340)** System Analysis and Project Management (3 semester credit hours) Provides the student with an in-depth knowledge of object oriented systems analysis and design procedures. Software project management techniques will be introduced. At the end of the course, the student will be able to analyze business solutions and design computer based information systems using object-oriented methodologies. Prerequisite or Corequisite: MIS 6320 or MIS 6326. (3-0) R

**MIS 6309 (ACCT 6309)** Business Data Warehousing (3 semester credit hours) This course provides the student with in depth knowledge of data warehousing principles, data warehouse techniques, and business intelligence systems. The course introduces the topics of data warehouse design, Extract-Transform-Load (ETL), data cubes, and data marts. Students will create business intelligence using data warehouses with several OLAP and analytical tools. SAP, Business Objects, Cognos, or other data warehousing tools will be used to illustrate data warehousing concepts. (3-0) Y

**MIS 6316** Data Communications (3 semester credit hours) This course covers key aspects of data communications - the fundamentals (including models and standards, throughput and capacity, signaling and transmission, media and wireless basics, encoding schemes and error detection/flow control), switching and networking (including multiplexing and switching, impact of packet size, routing, LANS and
cellular concepts like CDMA), and security (including threats, security requirements, symmetric and public-key encryption schemes). (3-0) Y

**MIS 6317 (HMGT 6323)** Healthcare Informatics (3 semester credit hours) Examines the unique challenges of clinical and patient care delivery in the healthcare industry, including the role of data management, emerging data standards and information technology in improving the quality and cost associated with healthcare. The focus of the course will be on healthcare IT including issues related to governance, data integration, and selection and management of healthcare IT. Credit cannot be received for both courses, **HMGT 6323** and **MIS 6317**. (3-0) T

**MIS 6319 (OPRE 6390)** Enterprise Resource Planning (3 semester credit hours) This course provides students with an understanding of enterprise resource planning systems and practical experience using SAP. The course covers topics including integrated business processes related to procurement, production, sales, finance, and human capital management, hands on transaction experience with SAP ERP modules on ECC6.0 and S/4 Hana platforms, and basic analytics using SAP 4/ Hana. The course also covers ERP development methodologies and managing ERP based projects. (3-0) Y

**MIS 6320 (ACCT 6320 and OPRE 6393)** Database Foundations (3 semester credit hours) The course provides database knowledge for non-MIS business students to function effectively in their functional area. The course covers conceptual data modeling with the entity-relationship diagram, the fundamentals of relational data model and database queries, and the basic concepts of data warehousing. Structured Query Language will be used extensively. Applications of databases for accounting, finance, marketing, and other areas of business will be emphasized. May not be used to fulfill degree requirements in MS Information Technology and Management. Credit cannot be received for more than one of the following: **(ACCT 6320 or MIS 6320 or OPRE 6393)** or **BUAN 6320 or MIS 6326**. (3-0) Y

**MIS 6323** Object Oriented Programming in Java (3 semester credit hours) This course discusses software development concepts and the development of object oriented systems. Topics covered include problem solving techniques, algorithm specifications, debugging, and testing of computer programs. Students solve small programming problems and write their solutions as high quality programs in Java. Credit cannot be received for both course, **MIS 6323** and **MIS 6382**. (3-0) Y

**MIS 6324 (BUAN 6324 and OPRE 6399)** Business Analytics With SAS (3 semester credit hours) This course covers theories and applications of business analytics. The focus is on extracting business intelligence from firms' business data for various applications, including (but not limited to) customer segmentation, customer relationship management (CRM), personalization, online recommendation systems, web mining, and product assortment. The emphasis is placed on the 'know-how' -- knowing how to extract and apply business analytics to improve business decision-making. Students will also acquire hands-on experience with business analytics software in the form of SAS Enterprise Miner. Credit cannot be received for both courses, **MIS 6324** and **MIS 6356**. Corequisite: **OPRE 6301**. (3-0) Y

**MIS 6326** Data Management (3 semester credit hours) Database theory and tools used to manage accounting data and other information are introduced. Topics include relational database theories, Structured Query Language (SQL), database design and conceptual/semantic data modeling. A client/server database environment is developed with a selected SQL server and a database application development tool. **MIS 6320** and **MIS 6326** cannot both be used to satisfy degree requirements. Prerequisite: MS ITM Major or MS BUAN Major. (3-0) Y
MIS 6330 (ACCT 6313) Information Technology Security (3 semester credit hours) This course prepares business decision makers to recognize the threats and vulnerabilities present in current information systems and how to design and develop secure systems. This course introduces the concept of defense-in-depth and covers different layers in a typical security architecture. Topics include security risk management, cyber laws related to security and privacy, access controls, network security, host security, detective controls, cryptography, and communications security. (3-0) Y

MIS 6332 ERP Configurations and Implementation (3 semester credit hours) The course focuses on advanced business processes and configuring a SAP System from start up with hands-on experience with configuring Sales, Material Management, Production, Financial Accounting, and Management Accounting Modules. Several case studies are provided by which students can configure the SAP System to meet the requirements so that products can be produced, purchased, sold, and generate reports. Prerequisite: MIS 6319. (3-0) Y

MIS 6333 Digital Forensics and Incident Management (3 semester credit hours) This course discusses methods and techniques for responding to security incidents and breaches and in-depth coverage of digital forensics of client devices, databases, web servers, application servers, and computer networks. The use and application of data analysis techniques in support of forensic efforts and chain of evidence are also discussed. The course provides students with opportunities to work hands-on utilizing a digital forensics lab. Prerequisite: MIS 6330. (3-0) Y

MIS 6334 (OPRE 6334) Advanced Business Analytics With SAS (3 semester credit hours) This course is SAS based and is part of the 4-course curriculum for the SAS data mining certificate program. It will cover the topics as required by the SAS certificate program including data manipulation, imputation, variable selection, SAS/STA, SAS/ETS, SAS/QC (DOE), and various SAS stat modules. Students will also learn various advanced business intelligence topics including business data analytics, model analytics, customer analytics, web intelligence analytics, business performance analytics, and decision-making analytics. Tool to be used includes SAS. Credit cannot be received for both courses, MIS 6334 and MIS 6357. Prerequisites: OPRE 6301 and MIS 6324. (3-0) Y

MIS 6337 (ACCT 6336 and HMGT 6336) Information Technology Audit and Risk Management (3 semester credit hours) Management's role in designing and controlling information technology used to process data is studied. Topics include the role of internal and external auditors in systems development, information security, business continuity, information technology, internet, change management, and operations. Focus is placed on the assurance of controls over information technology risks and covers topics directly related to the Certified Information Systems Auditor (CISA) exam. (3-0) Y

MIS 6338 (ACCT 6338) Accounting Systems Integration and Configuration (3 semester credit hours) Using SAP or similar software, this course focuses on accounting information systems as part of integrated enterprise systems and modern systems analysis and design of integrated accounting systems and related internal control. Emphasis will be on integrated business processes and related financial transaction flows, system analysis and design methods in SAP with focus on configuration methods. ACCT 2302 will also be counted as a prerequisite or corequisite. Prerequisite or Corequisite: ACCT 6202 or ACCT 6305 or equivalent. (3-0) R

MIS 6339 (ACCT 6384) Analytical Reviews Using Audit Software (3 semester credit hours) This course introduces the theory and tools used to leverage automated auditing software such as ACL and IDEA.
course includes an analytical review of accounting and operational data for internal auditors and hands-on use of audit software and the development of an audit dashboard. The course also explores ways to leverage the enterprise technology and use available technology to monitor controls and detect fraud. (3-0) 

**MIS 6343** Advanced Cybersecurity Management (3 semester credit hours) Security of IT systems and assets has become an important area of focus for organizations. While technology plays a key role in implementing IT security, managing enterprise IT security requires a cross functional set of skills and an understanding of the organization's security framework. Security is implemented as "defense in depth," and requires development of physical, technical, and administrative controls. Managers must have an in-depth knowledge of the eight security domains to plan and implement security for enterprise systems. This course provides an in-depth overview of security issues in enterprise systems. This course allows students to master cybersecurity concepts and topics including security and risk management (legal, regulatory compliance), asset security (data classification, ownership, data security and privacy), security engineering (security architecture, design, and security models), telecommunication and network security (perimeter protection, network attacks, IDS, IPS, firewalls), identity and access management (authentication, authorization, identity as a service), security assessment and testing, security operations (business continuity, disaster recovery, incident management, vulnerability and patch management), and software development security. This course is designed to prepare an individual with major concepts, topics, and their applications as preparation for the Certified Information Systems Security Professional (CISSP) exam. (3-0) 

**MIS 6344** Web Analytics (3 semester credit hours) The course examines the technologies, tools, and techniques to maximize return from web sites. The course includes topics related to web site design issues, web data collection tools and techniques, measurement and analysis of web traffic, visitor tracking, search engine optimization, visitor acquisition, conversion and retention, key performance indicators for web sites, and measurement of online marketing campaigns. The use of web analytics tools such as Google Analytics will be an integral part of the course. (3-0) 

**MIS 6345** (BUAN 6345) High Performance Analytics (3 semester credit hours) This course provides students with in-depth knowledge of In-memory Business Intelligence tools and In-memory databases. Students learn about different options available to speed up the queries and why In-memory tools are important. The course covers both the semantic layer modeling and front-end visualization aspects of the In-memory BI tool used. The course also covers the DML, DDL, and modeling techniques used for the In-memory database used. Students learn such concepts using hands-on exercises and practical assignments. The course requires solid understanding of ER and dimensional modeling. Prerequisite: **MIS 6309**. (3-0) 

**MIS 6346** (BUAN 6346) Big Data (3 semester credit hours) This course covers topics including (1) understanding of big data concepts (20%), (2) manipulation of big data with popular tools (50%), and (3) distributed analytics programming (30%). It is a project-oriented course; thus students will be required to establish a big data environment, perform various analytics, and report findings in their projects. Though concepts and theoretical aspects are addressed, more emphasis will be on actual operations of a big data system. Students will not only manipulate the basic big data software/system, but also use various dedicated big-data tools and perform distributed analytics programming with popular computer languages. Prerequisites: **MIS 6320** or **MIS 6326**. (3-0) 

**MIS 6356** (BUAN 6356 and OPRE 6305) Business Analytics With R (3 semester credit hours) This course
covers theories and applications of business analytics. The focus is on extracting business intelligence from firms' business data for various applications, including (but not limited to) customer segmentation, customer relationship management (CRM), personalization, online recommendation systems, web mining, and product assortment. The emphasis is placed on the 'know-how' -- knowing how to extract and apply business analytics to improve business decision-making. Students will also acquire hands-on experience with business analytics software in the form of R. Credit cannot be received for both courses, MIS 6324 and MIS 6356. Corequisite: OPRE 6301 (3-0) Y

MIS 6357 (BUAN 6357) Advanced Business Analytics Using R (3 semester credit hours) This course is based on the open-source R software. Topics include data manipulation, imputation, variable selection, as well as advanced analytic methods. Students will also learn various advanced business intelligence topics including business data analytics, modeling, customer analytics, web intelligence analytics, business performance analytics, and decision-making analytics. Tool to be used includes R. Credit cannot be received for both courses, MIS 6334 and (BUAN 6357 or MIS 6357). Prerequisites: MIS 6356 and OPRE 6301. (3-0) Y

MIS 6360 Agile Project Management (3 semester credit hours) Provides an in depth examination of project management principles and agile software development practices. The five process groups and ten knowledge areas of the Project Management Body of Knowledge (PMBOK) are examined in the context of agile systems development life cycles. (3-0) Y

MIS 6363 Cloud Computing (3 semester credit hours) This course is designed as a primer for cloud computing which many believe is the third major wave of computing, after mainframe and client-server computing. The course examines this technology from a business perspective. The course is designed to deliver a holistic and balanced view of business model, technological infrastructure, and security issues of cloud computing useful for the technology student to understand the business challenges and the business student to understand the technology challenges. (3-0) R

MIS 6364 Enterprise Architecture: Modeling the Digital Enterprise (3 semester credit hours) Small and big companies are radically transforming themselves to become digital enterprises that are agile, nimble, and competitive in the digital world. This transformation requires the strategic integration of digital technologies into all areas of the business that then drives the optimization of business operations to deliver value to customers. This Enterprise Architecture (EA) course focuses on the development of models, road maps, and blueprints for digital transformation and draws upon best practices from TOGAF and IT4IT. The course discusses how EA practices can help the analysis and design of an enterprise in its current and future states from a strategy, business, and technology perspective. The course emphasizes on the alignment of IT capabilities and resources with business goals and services through the integration of business architecture, data and information architecture, application architecture, and technology architecture. (3-0) R

MIS 6369 (OPRE 6369) Supply Chain Software (3 semester credit hours) The course teaches planning and execution of supply chains with software such as SAP's ERP (R3) and Advanced Planning and Optimization (APO). This software is used in lab exercises that provide students with hands-on, experimental learning. The focus is on the supply planning function of supply chain management. Topics include: fundamentals of ERP and SAP, master and transaction data, MRP, forecasting, supply and demand matching, and integration of ERP and APO modules. This course is intended for graduate students with interests in software-based supply chain management. No SAP experience is required. (3-0) S
MIS 6372 Managing IT-as-a-Service (3 semester credit hours) This course discusses the use of web services, virtualization, orchestration, and containerization that enable the use of software-defined IT infrastructure to design, operate, and manage IT as-a-service using best practices drawn from Lean, DevOps, and ITIL. Using the service lifecycle approach laid out by ITIL, the course helps students understand how companies can utilize IT as-a-service to deliver business services to their customers more efficiently and effectively. The course also examines how DevOps, Lean, and ITIL can influence the culture and processes for IT operations, software development and IT service delivery, and accelerate digital transformation of organizations. (3-0) Y

MIS 6373 Social Media Business (3 semester credit hours) Social Media represents most of the global Internet traffic and mobile apps. This course discusses the landscape of social media, processes and tools and how to leverage these environments through insightful uses of data and analytics to build a business strategy and get closer to customers. Major social media platforms are also examined along with an integrated entrepreneurial project and third-party tools. (3-0) R

MIS 6375 (ENTP 6375 and OPRE 6394 and SYSM 6332) Technology and New Product Development (3 semester credit hours) This course addresses the strategic and organizational issues confronted by firms in technology-intensive environments. The course reflects six broad themes: (1) managing firms in technology-intensive industries; (2) forecasting key industry and technology trends; (3) linking technology and business strategies; (4) using technology as a source of competitive advantage; (5) organizing firms to achieve these goals; and (6) implementing new technologies in organizations. Students analyze actual situations in organizations and summarize their findings and recommendations in an in-depth term paper. The course also introduces concepts related to agile engineering. Case studies and class participation are stressed. (3-0) Y

MIS 6377 (MKT 6338) Enterprise Systems and CRM (3 semester credit hours) This course studies the theory and practice of Customer Relationship Management (CRM) in the modern enterprise. The course explores topics related to strategic customer management, customer analytics, data mining, campaign management, and partner channel management. The course will develop practical skills utilizing the mySAP.com CRM application and CRM analytics and provides a deep understanding of strategic, operational, analytical, and collaborative CRM. (3-0) R

MIS 6380 Data Visualization (3 semester credit hours) This course studies the technologies, techniques and algorithms for the creation of effective data visualization in the context of data science. The course explores topics related to data wrangling, insight modeling, cognitive science, and graphical communication. The course will develop practical skills using data visualization tools including SAP Lumira, Tableau, Excel Powerview, and D3. The primary course objective will be the creation of data visualizations for strategic communication. (3-0) R

MIS 6381 (HMGT 6327) Electronic Health Records Applications (3 semester credit hours) An interactive, experiential course in which students will utilize hands-on, practice-oriented opportunities to learn the core components of clinical information systems used by major healthcare systems in the United States. The course will include a lab-based component in which students will follow guided exercises and assignments using a leading EMR software as well as case analyses. Corequisite: HMGT 6323. (3-0) T

MIS 6382 Object Oriented Programming in Python (3 semester credit hours) This course discusses software development concepts and the development of object oriented systems. Topics covered include
problem solving techniques, algorithm specifications, debugging, and testing of computer programs. Students solve small programming problems and write their solutions as high quality programs in Python. Credit cannot be received for both course, MIS 6323 and MIS 6382. (3-0) Y

MIS 6383 Programming Approaches for Data Management (3 semester credit hours) The course discusses programming approaches for managing data through its lifecycle. Students learn how to use SQL and Javascript to create, retrieve and analyze data that is stored using Relational Databases and non-relational document stores (NoSQL). The course also discusses data management approaches, technologies, and architectures in the contexts of structured and unstructured data, big and small volumes of data, data at rest and streaming data, and costs of various approaches. Students learn how online applications developed in Javascript (using Node.js and Angular) can store, retrieve, and share data that is stored in SQL and/or NoSQL databases. (3-0) Y

MIS 6384 Preparing for Cybersecurity Threats (3 semester credit hours) Threats from cyber criminals always exist, but the level of preparation and investment in cybersecurity varies greatly between organizations. This course discusses the current threat environment and specific risk mitigation countermeasures that should be deployed. Students learn through hands-on lab and analysis of well-publicized hacks, on how to build and manage secure networks, and specific steps necessary to harden the technology environment and reduce vulnerabilities before they can be exploited. (3-0) Y

MIS 6V98 Information Systems Internship (1-3 semester credit hours) Student gains experience and improves skills through appropriate developmental work assignments in a real business environment. Student must identify and submit specific business learning objectives at the beginning of the semester. The student must demonstrate exposure to the managerial perspective via involvement or observation. At semester end, student prepares an oral or poster presentation, or a written paper reflecting on the work experience. Student performance is evaluated by the work supervisor. Pass/Fail only. May be repeated for credit as topics vary (3 semester credit hours maximum). Prerequisite: (MAS 6102 or MBA major) and JSOM Internship Coordinator consent required. ([1-3]-0) S

MIS 6V99 Special Topics in Management Information Systems (1-6 semester credit hours) May be lecture, readings, or individualized study. May be repeated for credit as topics vary (6 semester credit hours maximum). Instructor consent required. ([1-6]-0) S

MIS 7220 Colloquium in Management Information Systems (2 semester credit hours) Issues in current information systems research. May be repeated for credit as topics vary (16 semester credit hours maximum). Instructor consent required. (2-0) R

MIS 7310 Advanced Topics in Knowledge Management (3 semester credit hours) The course will discuss knowledge representations and reasoning techniques. It will focus on (1) conceptual models of knowledge in IT-based systems, (2) automated reasoning mechanisms that are enabled by such representations, and (3) automated discovery of knowledge from data. Applications in decision support systems, expert systems, and personalization and recommendation systems will be discussed. Necessary background in data models and information theory will be provided. (3-0) T

MIS 7330 MIS Teaching Practicum (3 semester credit hours) Individual sessions with a supervising coach. The student will have responsibility for handling all of the instructional duties for a course, including designing the syllabus, and all assessment. Feedback and guidance will help the student develop their
teaching skills. May be repeated for credit as topics vary (15 semester credit hours maximum). Department consent required. (3-0) S

**MIS 7340** Independent Study in MIS (3 semester credit hours) The student studies in depth a topic of interest to them in MIS (Management Information Systems) under the guidance of an instructor. May be repeated for credit as topics vary. Instructor consent required. (3-0) S

**MIS 7420** Seminar in Management Information Systems (4 semester credit hours) Survey of theoretical issues and research in information systems. May be repeated for credit as topics vary (16 semester credit hours maximum). Instructor consent required. (4-0) R