

INFORMATION SYSTEMS (ISMG)

ISMG 5050 - Intermediate Excel for Business (1 Credit)
Spreadsheet software remains one of the essential digital skills required by businesses. In this course, you will learn key Excel skills including creating charts/graphs, filtering information, using pivot tables to summarize data, mastering Excel functions including sumif, countif, and vlookup. Cross-listed with ISMG 3050.
Grading Basis: Letter Grade

ISMG 5060 - Prompt Engineering for Generative AI (1 Credit)
Prompt Engineering for Generative AI is a dynamic and interactive course designed to equip students with the skills and knowledge needed to effectively leverage generative AI for a wide range of business tasks. Throughout the course, students will learn how to harness the power of natural language processing and artificial intelligence to optimize their workflows, enhance productivity, and solve real-world business and IT problems. From resume optimization to website creation, from data analysis to marketing content development, students will explore various applications of generative AI in diverse business contexts. By the end of the course, students will have the proficiency to craft tailored prompts, interact with generative AI efficiently, and maximize the utility of this powerful tool. Cross-listed with ISMG 3060.
Grading Basis: Letter Grade

ISMG 5070 - Introduction to Tableau (1 Credit)
Tableau is a widely used business intelligence (BI) and analytics software that makes it easier for people to explore and understand data. This class introduces data management concepts and terminology, provides basic proficiency in analyzing and exploring data in Tableau. Students will transform raw data to meaningful visualizations and insights, create interactive dashboards and stories, and handle multiple data sources in Tableau. Cross-listed with ISMG 3070.
Grading Basis: Letter Grade

ISMG 5080 - SQL Foundations (1 Credit)
Structured Query Language (SQL or "Sequel") is a special-purpose language designed for managing data in a relational database and is necessary for careers dealing with data across many business roles. This class introduces students to data management concepts and terminology. This class will prepare you to extract data from relational databases using SQL syntax shared by many types of databases, such as PostgreSQL, MySQL, SQL Server, and Oracle. Cross-listed with ISMG 3080.
Grading Basis: Letter Grade

ISMG 5090 - Introduction to Python for Business (1 Credit)
Python is a high-level programming language used by companies like Google, Facebook, and JP Morgan to solve common business and decision problems. This course introduces the Python programming language and the Pandas data analysis package to enable students to write simple data manipulation and analysis programs. The course uses business applied cases and dataset to enable students to increase decision making efficiency and productivity. It introduces algorithmic thinking skills that are beneficial for every manager in today's data-rich economy and can also serve as a starting point for learning more advanced programming skills. Cross-listed with ISMG 3090.
Grading Basis: Letter Grade

ISMG 5939 - Internship (1-3 Credits)
Supervised experiences involving the application of concepts and skills in an employment situation. Repeatable.
Grading Basis: Satisfactory/Unsatisfactory
Repeatable. Max Credits: 9.

ISMG 6020 - Python for Data-Driven Applications (3 Credits)
This course provides a comprehensive introduction to Python and core programming concepts, structured around a data analysis journey. Students will learn to design and develop applications for data retrieval, processing, analysis, and visualization using industry-standard libraries such as requests, Pymongo, NumPy, Pandas, Matplotlib, or other similar Python modules. The course emphasizes practical business applications, secure coding practices, and the integration of generative AI tools in modern software development. Students will gain hands-on experience with networked APIs, SQL and NoSQL databases, and programming strategies that combine traditional Python with AI-assisted development. By the end of the course, students will have created their own data-driven applications and developed the skills to leverage both Python and AI tools for solving real-world business and data challenges. Recommended
Grading Basis: Letter Grade
Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors
Typically Offered: Fall, Spring.

ISMG 6028 - Travel Study Topics (3 Credits)
Join your classmates in an international travel study course to understand the business operations of another culture. Repeatable.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.
Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6060 - Designing Intelligent Systems: Analysis & Modeling for the AI Age (3 Credits)
This course explores advanced systems analysis, modeling, and design methods with a focus on how artificial intelligence (AI) and automation are reshaping modern system development. Students apply traditional and agile approaches within the system development life cycle (SDLC) while learning to integrate AI-driven tools for requirements gathering, data modeling, and intelligent prototyping. Emphasis is placed on translating business needs into technology solutions using low-code and no-code environments, process automation platforms, and intelligent system architectures. Through individual and team projects, students develop both the analytical and strategic skills necessary to design, evaluate, and implement innovative information systems that support data-driven decision-making in contemporary organizations.
Grading Basis: Letter Grade
Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors
Typically Offered: Fall.

ISMG 6080 - Database Management Systems (3 Credits)

The success of today's business often hinges on the ability to utilize critical information to make the right decisions quickly and efficiently. Transforming mountains of data into critical information to improve decision making is a skill every business decision maker must possess. This focus course covers the database design topics with a focus on enabling business decision making. Detailed topics include collecting, capturing, querying and manipulating data (using SQL and QBE) for simple to medium complex business applications. Commercial database products are utilized to demonstrate the design of database applications in management, marketing, finance, accounting, and other business areas. Students will be able to design and implement simple to medium complex database applications after successful completion of this course.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall, Spring.

ISMG 6120 - Network Design and Analysis (3 Credits)

Communication, knowledge sharing, and information acquisition within and between businesses are critical for long term strategic business success. Technological advancements are radically changing the way business communication and knowledge sharing are performed. This course will briefly examine the traditional concepts of local and wide area networks for reference purposes, but then will focus on how newer technologies are changing business practices. Traditional local and wide area network concepts that will be covered in this course include WiFi wide area networks, wireless local area networks, cellular networks, and additional supporting services. Newer technologies that will be covered include social computing, Internet of Things, and artificial intelligence.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Spring.

ISMG 6130 - Ethical Leadership in AI and Emerging Technologies (3 Credits)

This course explores how ethical leadership guides the responsible implementation of emerging technologies such as artificial intelligence, automation, and quantum computing. Students examine how values, culture, and leadership decisions influence fairness, trust, and human impact across the technology lifecycle. Emphasizing human-centered design and decision-making, the course applies ethical frameworks—including stakeholder theory and win/win principles—to complex, real-world business challenges. Students learn to recognize and address bias, balance competing interests, and lead diverse teams through ethical uncertainty and organizational change. Through applied case studies, executive-style projects, and team-based analysis, students develop strategies to embed ethics into products, processes, and culture. The course demonstrates how responsible innovation can become a source of shared value and competitive advantage, aligning the interests of organizations, employees, customers, and society.

Grading Basis: Letter Grade

ISMG 6180 - Artificial Intelligence and Information Systems Strategy (3 Credits)

This course explores the strategic role of Artificial Intelligence (AI) and Information Systems (IS) in shaping digital business transformation and competitive advantage. Grounded in established frameworks for AI and IS strategy, the course provides a top-management perspective on aligning enterprise strategy, intelligent technologies, and value creation in the digital economy. Students will examine how AI-driven IS infrastructures—including intelligent systems, data platforms, and digital architectures—reshape business models, value chains, and organizational agility. Emphasis is placed on how organizations develop AI strategies that leverage predictive analytics, machine learning, and intelligent automation to optimize operational performance and drive innovation. Topics include the co-evolution of AI and IS, AI-enabled platform strategy development, ecosystem thinking, digital value reconfiguration, and AI-embedded decision-making. Students will engage with real-world case studies, analytical frameworks, and strategic exercises to design and evaluate AI-integrated IS strategies across industry sectors. This course is ideal for future digital leaders looking to bridge AI strategy, systems thinking, and emerging intelligent technologies. Cross-listed with BUSN 6610

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall, Spring, Summer.

ISMG 6220 - Business Intelligence, Machine Learning, and AI (3 Credits)

This course covers business intelligence, machine learning, and artificial intelligence technologies. The topics will be discussed using concepts and theories, business cases and applications, and hands-on work. Students will use a leading BI software to perform business intelligence analysis. Students will also use a cloud computing platform and a machine learning programming language to build machine learning models using datasets available in the public domain. The course also covers artificial intelligence topics including neural networks, deep learning, and current developments in artificial intelligence. Note: The recommended prerequisite for this course is ISMG 6080. If you are familiar with SQL and have worked with databases in the past, you satisfy the prerequisite requirement for this course. Students with limited programming experience should consider taking ISMG 6020 before taking this class.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall, Spring.

ISMG 6340 - Cloud Computing Concepts, Tools, and Security (3 Credits)

This course provides an introduction to cloud computing concepts, capabilities, and scenarios where cloud computing technology can be leveraged. Students will learn the basic building blocks of cloud computing, investigate the various types and models of cloud computing, and identify how businesses can implement these technologies. This class uses hands-on labs to give students real-world practice on how to configure and secure a cloud computing environment.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Summer.

ISMG 6430 - Information Systems Security and Privacy (3 Credits)

This course is designed to develop knowledge and skills for security of information and information systems within organizations. This course focuses on concepts and methods associated with planning, designing, implementing, managing, and auditing security at all levels and on all systems platforms, including enterprise systems. This course presents techniques for assessing risk associated with accidental and intentional breaches of security as well as disaster recovery planning. The ethical treatment of data is discussed. Cross-listed with ISMG 4300.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Spring.

ISMG 6450 - IT Project Management (3 Credits)

Focuses on how firms successfully manage the adoption of It. Projects and program management principles are the primary focus of this course. Topics covered include approaches to prioritizing projects, estimating cost and time-to-market, build vs. buy decision, planning, monitoring and controlling implementation, measurement, total cost of ownership, effective management of both behavioral and technical aspects of the project and change management. For the best outcome it is recommended that you complete ISMG 6180 or BUSN 6610 prior to taking this course.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Summer.

ISMG 6470 - Text Data Analytics (3 Credits)

This course equips students with the skills required to analyze text data for business intelligence and decision-making. Students will be introduced into theories, algorithms, and tools necessary for conducting quantitative analyses on unstructured text data. Key topics to be covered include, but are not limited to, Power Law Distribution, Pattern Discovery, Inverse Document Frequency, Sentiment Analysis, Topic Modeling. A significant portion of this course involves weekly hands-on coding exercises using Python. Upon successfully completing this course, students will be able to understand how to preprocess text data, analyze underlying patterns, identify sentiments, and discover topics within text data. Note: The recommended prerequisite for this course is ISMG 6020. If you are familiar with programming and have worked with programming languages in the past, you satisfy the prerequisite requirement for this course.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall.

ISMG 6480 - Data Warehouse and Administration (3 Credits)

Management of large, complex data warehouses and operational databases involves technical skills and background needed by information systems professionals as well as tactical and strategic issues faced by information technology managers. This course provides conceptual knowledge, practical skills, and policy background for prospective information systems professionals and information technology managers. The course covers business aspects, conceptual background, and product material about management of data warehouses and operational databases. Assignments and projects involve Oracle skills for database administration and tactical or strategic issues faced by information technology management.

Grading Basis: Letter Grade

Prereq: ISMG 6080 Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Spring.

ISMG 6800 - Special Topics (3 Credits)

A variety of advanced topics are offered in this course. Past topics include the human-computer interface, software engineering, artificial intelligence, graphical user interface, project management and electronic commerce. Consult the current 'Schedule Planner' for semester offerings. Note: Seldom offered. Repeatable.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6810 - Integration of Artificial Intelligence and Business Intelligence in Healthcare (3 Credits)

Provides students with an overview of how artificial intelligence (AI) and business intelligence (BI) are integrated and used in the healthcare industry to leverage the intelligence-based transformative potential. Students study the evolution of IT to AI in healthcare, including digitization of electronic health records and systems-level integration of AI and BI. Issues, concerns, and challenges around the integration are discussed. Using case studies and hands-on exercises, students learn about different aspects of AI and BI in various subsets of the healthcare industry. Cross-listed with HLTH 6810

Grading Basis: Letter Grade

Restricted to graduate majors and NDGR majors with a sub-plan of NBC within the Business School, graduate majors within the College of Engineering, Design and Computing, and PHCS PhD majors.

Typically Offered: Fall.

ISMG 6820 - Financial Data and Business Intelligence (3 Credits)

This course introduces students to the process of business intelligence in finance, focusing on using Python for financial modeling, data analysis, and decision support. Key financial concepts (e.g., the Time Value of Money, Rate of Return, and Effective Annual Return, among others) will be explored through Python coding examples to simulate financial behaviors. Additionally, students will learn to collect, process, and visualize financial data from various sources, as well as interpret analytical results to support financial decision-making. By the end of the course, students will have developed practical skills in Python for financial modeling and data analysis, and will be able to leverage these analyses to inform business decisions in finance. Cross-listed with FNCE 6750

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6830 - AI Governance (3 Credits)

Centers on the governance of Artificial Intelligence (AI) and Information Technology (IT) in enterprises. Emphasizes leadership, accountability, and oversight mechanisms that ensure the responsible design, integration, and control of intelligent systems. Addresses interrelated governance decisions that define the strategic role of AI and IT, establish integration and standardization requirements for enterprise architectures, and manage shared and enabling services across cloud, SaaS, and outsourced ecosystems. Highlights regulatory compliance, ethical guardrails, and risk management frameworks aligned with global standards, including ISO/IEC 42001, the EU AI Act, and the NIST AI Risk Management Framework. Concludes with a focus on portfolio and investment governance models that support trustworthy, resilient, and sustainable digital transformation. Recommended Prerequisite of ISMG 6180 or BUSN 6610. Recommended

Grading Basis: Letter Grade

Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

ISMG 6835 - Managing the AI Lifecycle (3 Credits)

This course provides a holistic view of how artificial intelligence (AI) systems are designed, deployed, and responsibly managed in organizational settings. Students explore the full AI lifecycle—from data collection and model development to deployment, monitoring, and governance—gaining practical insights into how critical design choices influence AI model performance and ethical outcomes. Emphasizing both technical understanding and managerial application, the course also examines issues of fairness, transparency, explainability, and trust, as well as strategies for effective human–AI collaboration and the organizational integration of AI technologies.

Grading Basis: Letter Grade

ISMG 6840 - Independent Study: ISMG (1-8 Credits)

Instructor approval required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Repeatable.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

ISMG 6860 - Ethical Hacking Concepts and Methodologies (3 Credits)

From a technical perspective, organizations need to know how hackers work so that they can build their security around it and take preemptive measures against future attacks. The goal of ethical hacking is to understand current exploits and assess weaknesses and vulnerabilities of various organizational information systems by attacking them within legal limits. This course is designed to provide students an insight into current hacking tools and techniques used by hackers and security professionals to break into any computer systems. Throughout the course, students will engage in offensive and defensive hands-on exercises stressing ethical hacking and penetration testing that will be conducted in a vendor-neutral virtual environment. Topics include security threats and attack vectors, footprinting and reconnaissance, Google hacking, social engineering, insider threat, network scanning and enumeration techniques, vulnerability assessment, the Dark Web, and attack and defense strategies in emerging technologies, such as the Internet of Things (IoT) and cloud computing. Cross-listed with ISMG 4860.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6865 - Digital Forensics Analysis (3 Credits)

From cyberterrorism to identity theft, the digital age has brought about a change in how crime is being committed. The usage of computers and the Internet in crime has led to the emerging field of digital forensics. Most businesses employ digital forensic experts to identify cyber threats, protect against insider threats, reinforce data loss prevention, reduce the risk of identity theft, fraud, and other digital crimes, and aid in the collection of digital evidence for various investigations. This course is designed to provide students the necessary skills to perform an effective digital forensics investigation. It presents a methodological approach to digital forensics, including searching and seizing, chain-of-custody, acquisition, preservation, analysis, and reporting of digital evidence. It covers major forensic investigation scenarios that enable students to acquire necessary hands-on experience on various forensic investigation techniques and standard forensic tools required to successfully carry out a digital forensic investigation leading to the prosecution of perpetrators. Cross-listed with ISMG 4865.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6890 - IT Risk Management (3 Credits)

This course provides an overview of IT risk management practices. Students will learn the elements of risk management and the data necessary for performing an effective risk assessment. Various risk management models will be introduced to demonstrate the methods that can be implemented to achieve Confidentiality, Integrity, and Availability of information systems. This class uses hands-on labs to give students real-world practice utilizing Security Information and Event Management (SIEM) software to gain an understanding of how to detect and respond to a cyber threat.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Spring.

ISMG 6910 - Design Science Practicum (3 Credits)

This is designed to be one of the final courses in the MS Information Systems degree. "Design Thinking" with user-centered perspectives will serve as a guiding principle to challenge assumptions and refine business problems to perform the final project. The instructor will provide students with tools and methods to identify, define and solve problems. Active discussion and creative presentation are core activities of this capstone course. Students will integrate what they have learned into a final project that can be either real-world problem designed in collaboration with an organization or a research paper on an emerging topic in the field. The final project will have multiple deliverables including a paper and a professional presentation to stakeholders who are directly related with the business problems defined in the project.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall, Spring.

ISMG 6950 - Master's Thesis (1-8 Credits)

Repeatable.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Additional Information: Report as Full Time.