INFORMATION SYSTEMS AND TECHNOLOGY (IT)

IT503: Principles of Information Technology
This is an introductory course for students entering the Master of Science in Information Technology program without an undergraduate degree or work experience in information technology. You will learn the foundational principles of information technology as they relate to business. The course will address hardware and software components, telecommunications, databases, people, and procedures.
Quarter Credit Hours: 4 | Prerequisite: GB512 or IT513; only available as a second-term course for IT students; otherwise, permission from the Dean is required

IT504: Managing Information Technology in a Business Environment
Business strategies, organizational structures, and information technology must be aligned to achieve organizational goals. In this course, you will identify innovative solutions to business problems. Specific topics include the analysis of cost and benefits found in emerging technologies, the legal and regulatory implications of various information technology infrastructure strategies, and the complexity enterprises face in integrating new technology with existing infrastructure (humans, machines, and processes).
Quarter Credit Hours: 4 | Prerequisite: GB512 or IT513

IT510: System Analysis and Design
This course provides a detailed overview of system analysis and design methodologies. You will examine techniques to develop systems more efficiently, such as the system development life cycle (SDLC) and other processes. System requirements, functional design, display, and end-of-project conclusions and analysis are studied and practiced through a variety of activities.
Quarter Credit Hours: 4 | Prerequisite: IT503 or IT504

IT511: Information Systems Project Management
This course focuses on the key factors in effectively managing information systems projects. You will study project management techniques for information systems projects through detailed case studies and exercises. You will learn how to manage information systems projects through the use of the five project management process groups integrated with the ten project management knowledge areas. Approaches for information systems project management and examples relevant to information systems projects are used throughout the course.
Quarter Credit Hours: 4 | Prerequisite: IT503 or IT504

IT513: Writing and Critical Thinking for the IT Professional
This course helps you develop the ability to research, synthesize, evaluate, discuss, and write about a variety of information technology concepts. Accurate grammar, suitable organization of ideas, and a formal writing style appropriate for IT professionals are emphasized, as well as the application of American Psychological Association (APA) style guidelines for writing, formatting, and citation/referencing. You will receive a comprehensive introduction to graduate-level writing and research while investigating technology topics of interest to you.
Quarter Credit Hours: 4 | Prerequisite: None

IT521: Decision Support Systems
This course provides a detailed overview of decision-making systems, models, and support in business. The course covers many fundamental topics including: analysis and development of decision support systems, business intelligence, knowledge acquisition and representation, knowledge management, intelligent systems over the Internet, and advanced intelligent systems.
Quarter Credit Hours: 4 | Prerequisite: None

IT522: Knowledge-Based Management Systems
This course provides a detailed overview of knowledge-based systems techniques and applications. Topics include symbolic structures and semantics, knowledge representation models, search techniques related to problem solving, knowledge engineering, knowledge and domain classification models, configuration models, and diagnosis and troubleshooting methodologies.
Quarter Credit Hours: 4 | Prerequisite: IT521

IT523: Data Warehousing Design and Development
This course discusses data warehousing. Topics covered in this course include: data warehousing architectures; data warehouse design; data warehouse dimensional modeling; data preparation and pre-processing; extraction, translation, and load (ETL) processing; business intelligence; executive information systems; dashboards; scorecards; drill up/drill down; slice and dice; managing unstructured data warehouses; terminologies, taxonomies, and ontologies and advanced data warehousing concepts. Advanced data warehousing concepts will include data warehouse appliances, big data, and big data technologies.
Quarter Credit Hours: 4 | Prerequisite: IT526

IT525: Database Design and Data Modeling
This course discusses the main tasks in designing a database and will use entity-relationship diagram (ERD) tools in this process. The course covers fundamental design topics including: data modeling, entity-relationship diagrams, enhanced entity-relationship diagrams, the top-down database design methodology, the bottom-up database design methodology, functional dependencies, and the normalization process. The course will also introduce you to advanced topics of database management.
Quarter Credit Hours: 4 | Prerequisite: IT525

IT526: SQL Query Design
This course covers the Structured Query Language (SQL) programming language and its use to retrieve and modify data in a relational database. Methods of ensuring data isolation and consistency are explored. Designing queries for optimum performance is emphasized. Query execution plans will be used as a tool for creating appropriate indexes to improve query performance.
Quarter Credit Hours: 4 | Prerequisite: None

IT527: Foundations in Data Analytics
This course is intended to equip you with foundational skills in data analytics. These skills include problem/question definition, data identification and preparation, statistical and/or logical modeling, and evaluation and deployment. The course covers both categorization and prediction modeling, along with selecting the most appropriate methods for a given question and data set. The course uses industry standard software to enable you to learn analytical approaches, such as descriptive and inferential statistics, clustering and correlation, significance testing, power analysis, and other useful analytic techniques.
Quarter Credit Hours: 4 | Prerequisite: IT513
IT528: Quantitative Risk Analysis
This course teaches you methodologies for using data analytics to detect, identify, and mitigate risk in a variety of forms. A variety of different quantitative risk assessment techniques are presented, including Failure Mode and Effects Analysis, fault tree analysis, expected payoffs, decision trees, and more. The case method is utilized to show real-world applications in finance, engineering, project management, loss/theft, loans, and fraud. The course will focus on formal risk processes. Issues of risk analysis ethics will also be included.
Quarter Credit Hours: 4 | Prerequisite: IT527

IT530: Computer Networks
This course introduces data communications and networking technologies from the business perspective by heavily utilizing case studies and the decision-making process. Topics consist of network operating systems, local and wide area networks, and voice and wireless networks, as well as security and the Internet. The focus will be on practical applications of these concepts, including support issues, administration, and management.
Quarter Credit Hours: 4 | Prerequisite: IT513 or GB512

IT535: Advanced Network Management
Today’s challenges in networking are focused on the design of cost-effective networks and keeping pace with emerging technologies. Topics include analysis and design models, Quality of Service (QoS), high-speed protocols, Voice over IP, and optical networks. This course will include the applied management perspective of advanced networking protocols as it pertains to administration and maintenance of networks.
Quarter Credit Hours: 4 | Prerequisite: IT530

IT537: Introduction to Cybersecurity
This course provides an overview of cybersecurity concepts including data confidentiality, integrity, and availability, and an understanding of systems and applications software necessary for foundational understanding of cybersecurity. You will examine methods for network situational awareness and dynamic decision-making for predicting and assessing the impact of various cyberattacks. Aspects of cyber-strong organizational structures and mitigation are emphasized. The course will also cover various risk assessment methodologies necessary for understanding cyber risk, organizational preparedness and gap areas, and identifying improvement processes for an organization’s decision makers.
Quarter Credit Hours: 4 | Prerequisite: IT530

IT540: Management of Information Security
IT professionals must focus on a wide range of security-related issues and develop security systems that address constantly changing threats. This course takes the approach that security components and business functions work in tandem. Topics like asset identification, human factors, compliance with regulations, personnel security, risk assessment, and ethical considerations are covered, as well as computer and network security tools and methods.
Quarter Credit Hours: 4 | Prerequisite: IT513 and IT530

IT541: Computer and Network Security
In today’s world, protection of data is serious business. This course explains the concepts and techniques involved in keeping computers and networks secure. The course examines fundamentals such as viruses, worms, and other malicious software; authentication and encryption security; file security and shared resources; firewalls and border security; and physical and network topology security.
Quarter Credit Hours: 4 | Prerequisite: IT513 and IT540

IT542: Ethical Hacking and Network Defense
An ethical hacker is a security expert who attacks a system on behalf of the system’s owners. This course focuses on discovering network vulnerabilities that a malicious hacker can exploit. The course explores penetration testing, footprinting and social engineering, scanning and enumeration, operating system weaknesses, and the methods used to hack Web servers and wireless networks. You will perform hands-on projects using state-of-art hacking tools and techniques.
Quarter Credit Hours: 4 | Prerequisite: IT513 and IT541

IT543: Cryptography Concepts and Techniques
Never before has the use of cryptography been so wide spread or so necessary. In this course, you will learn how to protect susceptible networks from attack by implementing encryption techniques. You will examine encryption algorithms, substitution and transposition, block ciphers versus stream ciphers, public key cryptography, hash functions, digital signatures, and authentication protocols. The course offers hands-on projects using modern cryptographic tools.
Quarter Credit Hours: 4 | Prerequisite: None

IT544: Platforms, Applications, and Data Security
This course examines strategies for managing the administration of platforms/operating system software as it pertains to administration and maintenance of networks.
Quarter Credit Hours: 4 | Prerequisite: IT513 and IT541

IT545: Wireless, Mobile, and Cloud Security
This course examines strategies for managing the administration of wireless, mobile, cloud, and disruptive technological environments, such as social networking and the Internet of Things, in the context of cybersecurity.
Quarter Credit Hours: 4 | Prerequisite: IT513 and IT541

IT550: Computer Forensics and Investigations
This course explores the expertise required to conduct digital forensic investigations. Topics include investigation methods, problem-solving techniques, current forensics analysis tools, digital evidence acquisition and control, and impact of ongoing technological changes on digital forensics. Student projects include scenario-based investigations in investigating cybersecurity breaches.
Quarter Credit Hours: 4 | Prerequisite: IT513 and IT541

IT559: IT Security Auditing and Assessments
This course provides a detailed discussion of the legal and ethical issues associated with the information technology age. Topics covered in this course include: ethical theories related to information technology, protection of intellectual property, privacy, computer and network security, cybercrimes, and ethical behavior for working in the computer industry.
Quarter Credit Hours: 4 | Prerequisite: IT513 or GB512

IT591: IT Security Auditing and Assessments
In this course you will appraise platform/operating system software configuration strategies and techniques as related to cybersecurity. You will examine secure application development techniques and the role of application security throughout the software development life cycle (SDLC). This course will also include strategies and techniques for securing data at rest and in motion.
Quarter Credit Hours: 4 | Prerequisite: IT513 and IT541

IT555: Legal and Ethical Issues in IT
This course introduces data communications and networking technologies from the business perspective by heavily utilizing case studies and the decision-making process. Topics consist of network operating systems, local and wide area networks, and voice and wireless networks, as well as security and the Internet. The focus will be on practical applications of these concepts, including support issues, administration, and management.
Quarter Credit Hours: 4 | Prerequisite: IT513 or GB512
IT592: Financial Decision-Making in IT and Security
This course introduces you to budgetary and financial decision-making tools applicable to an organization's information technology and security strategy. Effective use of these decision-making tools will enable future information technology and security leaders to justify resources needed for information technology and security solutions.
Quarter Credit Hours: 4 | Prerequisite: IT540; IT528 recommended

IT595: Master's Capstone in Cybersecurity Management
The Master's Capstone in Cybersecurity Management synthesizes knowledge gained throughout all courses in the degree plan, and its comprehensive project demonstrates your mastery of this knowledge. The project will address a cybersecurity problem in either the research community or industry, and will indicate what you now offer to the industry, upon completion of this program.
Quarter Credit Hours: 4 | Prerequisite: Last term or permission from the Dean

IT596: IT Graduate Capstone Extension Course
This course should only be taken after IT 595: Master's Capstone in Cybersecurity Management or IT 599: Master's Capstone in Information Technology for the specific purpose of capstone project or thesis completion.
Quarter Credit Hours: 0 | Prerequisite: None

IT597: Master's-Level Information Technology Internship I
The internship provides you with an opportunity to learn about IT careers through practical, real-world experiences and mentoring from an IT professional. This experience will improve your technology skills and your understanding of the expertise needed for career success.
Quarter Credit Hours: 2 | Prerequisite: Second to last term and good academic standing, or the permission of the Dean of the School of Business and Information Technology

IT598: Master's-Level Information Technology Internship II
The internship provides you with an opportunity to learn about IT careers through practical, real-world experiences and mentoring from an IT professional. This experience will improve your technology skills and your understanding of the expertise needed for career success.
Quarter Credit Hours: 2 | Prerequisite: IT597

IT599: Master's Capstone in Information Technology
The Master's Capstone in Information Technology synthesizes knowledge gained throughout all courses in your degree plan, and its comprehensive applied project or thesis demonstrates your mastery of this knowledge, as well as your relevant skills and abilities.
Quarter Credit Hours: 4 | Prerequisite: Last term or permission of the Program Chair and/or Dean of the School of Information Systems and Technology