IN500: Survey of Modern Data Analytics
In this course, you will examine current methods and tools for the collection, storage, processing, and analysis of data in modern organizations. You will study industry-relevant technologies such as Hadoop; MapReduce; structured, semi-structured, and unstructured data sources; distributed data systems; relational and NoSQL databases; and analytics software platforms. Data selection, retrieval, and formatting are also covered. Additionally, you will examine the V's of Big Data - volume, velocity, variety, veracity, valence, and value - and will learn how each impacts data collection, monitoring, storage, analysis, and reporting.
Quarter Credit Hours: 4 | Prerequisite: None

IN501: Fundamentals of Computer Programming
This course is designed to teach the fundamentals of computer programming. You will formulate steps and logic (algorithms) that define the requirements for computer programs and use fundamental programming constructs like input/output, data types, variables, decisions, iteration, and data structures to carry out the tasks of creating computer programs. An Integrated Development Environment (IDE) and the Python programming language is used to apply these fundamentals. The awareness of secure programming techniques is maintained throughout the course.
Quarter Credit Hours: 4 | Prerequisite: None

IN502: Python and R Statistics Tools
This course is designed for you to use Python and R and additional add-on tools to analyze multiple datasets using standard statistical methods. Standard statistical methods include descriptive statistics, linear and logistic regression, and probability, including Bayes theorem. The datasets used will be of varying sizes and multiple questions will be addressed related to the datasets.
Quarter Credit Hours: 4 | Prerequisite: None

IN503: Introduction to AI: Machine Learning and Deep Learning
This course examines the broad field of artificial intelligence and two of that field's main divisions: machine learning and deep learning. The course covers using tools such as Python, TensorFlow, and Keras, and topics such as the Turing test, bioinformatics, supervised and unsupervised learning, classification algorithms, neural networks, and natural language processing. Statistical tools are employed in the discussion of these topics.
Quarter Credit Hours: 4 | Prerequisite: None

IN504: Advanced Applications of Python
This course furthers your ability to examine large datasets and answer significant questions related to these datasets. You will delve deeper into the use of Python and the related add-ons to resolve more complex inquiries and problems. You will learn object-oriented concepts in Python, explain and apply analytical libraries, and review how to integrate Python programs into the technical ecosystem.
Quarter Credit Hours: 4 | Prerequisite: None

IN505: Security for Analytics
This course focuses on the security issues that are unique to big data and analytics. Some of these security issues include distributed data and distributed processing, non-relational databases that are designed more for flexibility than security, broad access to data required, and big data processing in cloud environments. You will explore the data security considerations related to storing and mining big data and will learn methods to properly secure big data. Emphasis will also be paid to securing data warehouses and data lakes.
Quarter Credit Hours: 4 | Prerequisite: None

IN506: Data Visualization and Knowledge Representation
This course integrates data modeling, aggregation, selection, mapping to graphical representations, and visual presentation to enable interpretation of data and problem solving. A variety of datasets will be used to answer questions and report the information appropriately. You will examine strengths and weaknesses of various visual choices, and will think critically about design choices, such as color schemes, shape and chart/graph types, and presentation options. Tools such as Tableau, Power BI, and Excel are used to prepare data analysis to make thoughtful decisions.
Quarter Credit Hours: 4 | Prerequisite: None

IN507: Data Curation
In this course, you will examine the processes of extracting, transforming, and loading (ETL) data from multiple, seemingly unrelated datasets. You will examine the new data to identify and discover new context and new meanings from the resultant datasets. Additionally, you will explore the integration of multi-sourced and independent structured and semi-structured data for analytics. Topics include ETL techniques, transactional databases, data warehouses, data marts, and semi-structured and unstructured data sources.
Quarter Credit Hours: 4 | Prerequisite: IN506

IN508: Advanced Machine Learning and Artificial Intelligence
This course surveys algorithms used in machine learning packages, tree-based methods, clustering, and neural networks. You will complete a small project applying, and modifying as necessary, one of these algorithms to a dataset, finishing with a presentation of the project. The focus will be more in-depth than simply applying the packages, such that you understand the pseudocode or math used to build the algorithm.
Quarter Credit Hours: 4 | Prerequisite: IN508

IN509: Advanced Deep Learning
This course is designed to practically apply neural networks of all types. In the process, you will analyze computation. Additionally, you will practice image, audio, video, and language processing and classification. You will gain hands-on experience with these tasks, concepts, and necessary tools in working with neural networks.
Quarter Credit Hours: 4 | Prerequisite: None

IN510: Secure Software Design
This course will introduce you to secure software design principles used to develop secure software applications. You will learn to incorporate security into all phases of the development life cycle. Additionally, you will explore well-known software algorithms that can be used when designing software.
Quarter Credit Hours: 4 | Prerequisite: Completed undergraduate degree in STEM or approval from the Dean
IN511: Secure Coding
This course will introduce you to secure coding practices. You will learn how to avoid coding vulnerabilities and how to implement security controls. You will be introduced to a variety of software vulnerabilities resulting from insecure coding. You will develop various types of programs demonstrating secure coding standards and will examine existing code to detect and fix vulnerabilities.
Quarter Credit Hours: 4 | Prerequisite: IN510

IN512: Advanced Secure Coding
In this course you will learn advanced secure coding techniques. This includes advanced programming concepts and secure coding standard usage. You will also learn to use secure coding practices to prevent various types of vulnerabilities.
Quarter Credit Hours: 4 | Prerequisite: IN511

IN513: System and Security Testing
This course introduces you to software testing techniques. This includes techniques to adequately verify the security of software applications. Some topics covered will be unit testing, functional testing, regression testing, load testing, vulnerability scanning, and penetration testing.
Quarter Credit Hours: 4 | Prerequisite: IN512

IN514: Secure Development and Operations - SecDevOps
This course introduces you to the collaboration of development and operations teams and how the integration of security in all facets of the software lifecycle results in secure development and operations (SecDevOps). By implementing SecDevOps in an organization, you will help to deliver software that is more secure and of quality. In addition, you will learn about supply chain analysis and procurement and how this plays a part in delivering secure software systems.
Quarter Credit Hours: 4 | Prerequisite: IN513

IN515: AWS Academy Cloud Foundations
Amazon Web Services (AWS) Academy Cloud Foundations is intended to help you seek an overall understanding of cloud computing concepts, independent of specific technical roles. It provides a detailed overview of cloud concepts, AWS core services, security, architecture, pricing, and support.
Quarter Credit Hours: 4 | Prerequisite: None

IN516: AWS Academy Cloud Architecting
Amazon Web Services (AWS) Academy Cloud Architecting covers the fundamentals of building information technology (IT) infrastructure on AWS. The course is designed to teach solutions architects how to optimize their use of the AWS Cloud by understanding AWS services and how they fit into cloud-based solutions. Although architectural solutions can differ depending on the industry, type of application, and size of the business, this course emphasizes best practices for the AWS Cloud that apply to all of them. It also recommends various design patterns to help you think through the process of architecting optimal IT solutions on AWS. Throughout the course, you will explore case studies that showcase how some AWS customers have designed their infrastructures and the strategies and services that they have implemented. Finally, this course provides opportunities for you to build a variety of infrastructures through a guided, hands-on approach.
Quarter Credit Hours: 4 | Prerequisite: None

IN517: AWS Academy Cloud Operations
Amazon Web Services (AWS) Academy Cloud Developing is designed to help you gain technical expertise in development using cloud technologies and prepare you to take the AWS Certified Developer - Associate exam. The curriculum is delivered through instructor-led classes, knowledge assessments, and hands-on labs. You will also have access to course manuals, online knowledge assessments, a free practice certification exam, and a discount voucher for the certification exam. While the course may provide you with the knowledge necessary to sit for an examination, the University cannot guarantee your eligibility either to take an exam or to become certified.
Quarter Credit Hours: 4 | Prerequisite: IN510

IN518: AWS Academy Data Analytics Lab
Amazon Web Services (AWS) Academy Data Analytics Lab is a series of lab exercises that teach you how to conduct big data analysis with practical, real-world examples. You will learn how to analyze extremely large data sets and create visual representations of that data using a case-study approach.
Quarter Credit Hours: 4 | Prerequisite: None

IN519: AWS Academy Cloud Developing
Amazon Web Services (AWS) Academy Cloud Operations is designed to prepare you to pursue entry-level DevOps, support, and cloud operations roles. It will also help prepare you to take the AWS SysOps Administrator - Associate exam. Emphasizing best practices in the AWS Cloud and recommended design patterns, this course will teach you how to solve problems and troubleshoot various scenarios. The course will show you how to create automatable and repeatable deployments of networks and systems on AWS and covers specific AWS features and tools related to configuration and deployment. Through case studies and demonstrations, you will learn how some AWS customers design their infrastructures and implement various strategies and services. You will also have the opportunity to build a variety of infrastructures via guided, hands-on activities. While the course may provide you with the knowledge necessary to sit for an examination, the University cannot guarantee your eligibility either to take an exam or to become certified.
Quarter Credit Hours: 4 | Prerequisite: None

IN555: Statistics for Analytics
This course provides you with an introduction to statistics. Topics include descriptive statistics, slopes and lines, correlation and linear regression, probability, confidence testing and hypothesis testing, and Chi-square inference and ANOVA. You will use software to develop skills in data-based problem solving.
Quarter Credit Hours: 4 | Prerequisite: None

IN596: Master\'s-Level Data Analytics Internship I
The internship provides you with an opportunity to learn about careers in the field of data analytics through practical, real-world experiences and mentoring from data analytics professionals. This experience will improve your professional 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

IN597: Master\'s-Level Data Analytics Internship II
The internship provides you with an opportunity to learn about careers in the field of data analytics through practical, real-world experiences and mentoring from data analytics professionals. This experience will improve your professional skills and your understanding of the expertise needed for career success.
Quarter Credit Hours: 2 | Prerequisite: IN596
IN599: Master's Capstone in Data Analytics
This course synthesizes knowledge gained throughout all courses in your degree plan, and its comprehensive applied project demonstrates your mastery of this knowledge, as well as your relevant skills and abilities. The project will address an analytics case study 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

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

IT503M1: Components of Personal Computing
Evaluate the integral components of personal computing for the IT professional.
Quarter Credit Hours: 1 | Prerequisite: GB512 or IT513; only available as a second-term course for IT students; otherwise, permission from the Dean is required

IT503M2: Web and Software Development Concepts
Develop critical insight into web and software development and related standards.
Quarter Credit Hours: 1 | Prerequisite: GB512 or IT513; only available as a second-term course for IT students; otherwise, permission from the Dean is required

IT503M3: Database Development Standards
Appraise database development standards and security issues.
Quarter Credit Hours: 1 | Prerequisite: GB512 or IT513; only available as a second-term course for IT students; otherwise, permission from the Dean is required

IT503M4: Networks and Security Methods
Assess networks and various system security methods.
Quarter Credit Hours: 1 | 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: None

IT504M1: Business Strategies in Information Technology
Assess business strategies as aligned to technology needs through appropriate communication techniques.
Quarter Credit Hours: 1 | Prerequisite: None

IT504M2: Laws, Rules, Regulations, and Ethical Principles in Information Technology
Defend laws, rules, regulations, and ethical principles relating to technology and the workplace.
Quarter Credit Hours: 1 | Prerequisite: None

IT504M3: Technical Documentation
Prepare documentation for hardware, software, and other client-related technology decisions.
Quarter Credit Hours: 1 | Prerequisite: None

IT504M4: Organizational Functions in Information Technology
Determine hiring, funding, and other functions within an organization.
Quarter Credit Hours: 1 | Prerequisite: None

IT510: Systems 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: IT504

IT510M1: System Planning, Analysis, and Logic Processes
Assess commonly used systems planning, analysis, and logic processes.
Quarter Credit Hours: 1 | Prerequisite: IT504

IT510M2: Data Organization Process
Draft data organization using a variety of industry-standard methods.
Quarter Credit Hours: 1 | Prerequisite: IT504

IT510M3: System Physical Attributes
Evaluate physical attributes of networks and web presence for a system.
Quarter Credit Hours: 1 | Prerequisite: IT504

IT510M4: Written Proposals for System Analysis and Design
Defend systems analysis and decision-making through a formal written proposal.
Quarter Credit Hours: 1 | Prerequisite: 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: IT504

IT511M1: Project Management Framework for Information Technology
Analyze the project management framework.
Quarter Credit Hours: 1 | Prerequisite: IT504

IT511M2: Effective Project Planning Components
Examine the who, what, when, and cost components for effective project planning.
Quarter Credit Hours: 1 | Prerequisite: IT504

IT511M3: Project Management Knowledge Areas
Investigate project management knowledge areas for improving project success.
Quarter Credit Hours: 1 | Prerequisite: IT504
IT511M4: Information Systems Project Plan
Develop an information systems project plan.
Quarter Credit Hours: 1 | Prerequisite: IT504

IT513: Research and Writing 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

IT513M1: Using Professional Language
Illustrate information technology ideas with professional language and attribution.
Quarter Credit Hours: 1 | Prerequisite: None

IT513M2: Preparing Research
Prepare high-level research into information technology concepts with critical assessment and proper attribution.
Quarter Credit Hours: 1 | Prerequisite: None

IT513M3: Developing Research
Develop academic research, idea organization, writing, and formatting standards for a professionally written outcome on an information technology topic.
Quarter Credit Hours: 1 | Prerequisite: None

IT513M4: Synthesizing Solutions
Synthesize solutions to clients’ technology problems using research, appropriate writing styles, and a suitable business format.
Quarter Credit Hours: 1 | 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

IT521M1: Decision Support Systems Methodologies
Compare decision support systems methodologies.
Quarter Credit Hours: 1 | Prerequisite: None

IT521M2: Business Intelligence Systems
Analyze business intelligence systems.
Quarter Credit Hours: 1 | Prerequisite: None

IT521M3: Artificial Intelligence Systems
Examine artificial intelligence systems.
Quarter Credit Hours: 1 | Prerequisite: None

IT521M4: Knowledge Management Concepts
Assess the role of knowledge management in decision support.
Quarter Credit Hours: 1 | 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

IT522M1: Knowledge Concepts
Examine the meaning, creation, and use of knowledge.
Quarter Credit Hours: 1 | Prerequisite: IT521

IT522M2: Knowledge Management Systems Impacts
Evaluate how organizations are impacted by knowledge management systems.
Quarter Credit Hours: 1 | Prerequisite: IT521

IT522M3: Knowledge Management in Organizations
Explain how knowledge is generated, transferred, represented, and exchanged in an organization.
Quarter Credit Hours: 1 | Prerequisite: IT521

IT522M4: The Case for Knowledge Management
Recommend a knowledge management system business case.
Quarter Credit Hours: 1 | 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: None

IT523M1: Data Warehouse Design Concepts
Review data warehouse architectures and modeling techniques.
Quarter Credit Hours: 1 | Prerequisite: None

IT523M2: Data Warehouse Development Techniques
Develop data warehouse development techniques by developing a dimensional data model.
Quarter Credit Hours: 1 | Prerequisite: None

IT523M3: Working With Unstructured Data
Examine data warehousing techniques, tools, and environments for working with unstructured data.
Quarter Credit Hours: 1 | Prerequisite: None

IT523M4: Advanced Data Warehouse Topics
Examine advanced data warehouse topics.
Quarter Credit Hours: 1 | Prerequisite: None
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: None

IT525M1: Data Modeling Concepts
Use data modeling concepts.
Quarter Credit Hours: 1 | Prerequisite: None

IT525M2: Designing Databases Using Entity-Relationship Diagrams
Use entity-relationship diagrams in the design of a database.
Quarter Credit Hours: 1 | Prerequisite: None

IT525M3: Three Normal Forms
Construct relations in first, second, and third normal form.
Quarter Credit Hours: 1 | Prerequisite: None

IT525M4: Advanced Concepts in Database Design
Analyze advanced database concepts.
Quarter Credit Hours: 1 | Prerequisite: None

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: IT525

IT526M1: Using a Relational Database Management System
Use a Relational Database Management System (RDBMS) for effective database installation and manipulation.
Quarter Credit Hours: 1 | Prerequisite: IT525

IT526M2: SQL Single Table Query Commands
Apply SQL single table query commands effectively.
Quarter Credit Hours: 1 | Prerequisite: IT525

IT526M3: Composing Structured Query Language Queries
Compose Structured Query Language (SQL) queries for database information analysis.
Quarter Credit Hours: 1 | Prerequisite: IT525

IT526M4: Designing Structured Query Language Syntax
Design Structured Query Language (SQL) syntax to summarize and group data.
Quarter Credit Hours: 1 | Prerequisite: IT525

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: None

IT527M1: Documenting Business Problems
Outline a business problem to document the sources and types of data needed to address the issue.
Quarter Credit Hours: 1 | Prerequisite: None

IT527M2: Dataset Quality and Formatting
Describe the quality and formatting of datasets used in investigating business problems.
Quarter Credit Hours: 1 | Prerequisite: None

IT527M3: Preparing Datasets for Analysis
Prepare a dataset for analysis by formatting, augmenting or reducing, and transforming variables and observations.
Quarter Credit Hours: 1 | Prerequisite: None

IT527M4: Constructing Data Analytics Models
Construct useable and effective data analytics models incorporating industry-recognized software and standard algorithms.
Quarter Credit Hours: 1 | Prerequisite: None

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

IT528M1: Common Risks and Their Ramifications
Enumerate common types of risks and their potential ramifications for modern business.
Quarter Credit Hours: 1 | Prerequisite: IT527

IT528M2: Assessing Risks
Apply quantitative and qualitative methods to assess, prioritize, and report risks.
Quarter Credit Hours: 1 | Prerequisite: IT527

IT528M3: Addressing Risks
Develop appropriate action plans that address risks.
Quarter Credit Hours: 1 | Prerequisite: IT527

IT528M4: Addressing Ethical Pitfalls
Recommend proactive measures to address ethical pitfalls to risk analytics activities.
Quarter Credit Hours: 1 | 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: None

IT530M1: Business Impact of Virtualization
Examine the business impact of virtualization.
Quarter Credit Hours: 1 | Prerequisite: None

IT530M2: Centralized Server Architecture
Explore a centralized server architecture (client-server model).
Quarter Credit Hours: 1 | Prerequisite: None
IT530M3: Security Groups and Access
Analyze scenarios involving security groups and access to network resources.
Quarter Credit Hours: 1 | Prerequisite: None

IT530M4: Protocols and Topologies
Explore management aspects of protocols and topologies.
Quarter Credit Hours: 1 | Prerequisite: None

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

IT535M1: Routing Protocols
Analyze switching, LAN, and internet routing protocols.
Quarter Credit Hours: 1 | Prerequisite: IT530

IT535M2: Technology Integration Planning
Construct a plan to integrate technology into a computer network.
Quarter Credit Hours: 1 | Prerequisite: IT530

IT535M3: Network Analysis and Design Modeling
Create an analysis and design model for a computer network.
Quarter Credit Hours: 1 | Prerequisite: IT530

IT535M4: Network Management Problems
Assess the impact of network management problems.
Quarter Credit Hours: 1 | 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: None

IT537M1: Documenting Business Problems
Assess appropriate cybersecurity processes for addressing appropriate outcomes.
Quarter Credit Hours: 1 | Prerequisite: None

IT537M2: Dataset Quality and Formatting
Synthesize cybersecurity threats and their potential consequences to assess risk.
Quarter Credit Hours: 1 | Prerequisite: None

IT537M3: Preparing Datasets for Analysis
Analyze technical scenario elements to determine strategy.
Quarter Credit Hours: 1 | Prerequisite: None

IT537M4: Constructing Data Analytics Models
Relate cybersecurity risk or vulnerabilities to effective security solutions.
Quarter Credit Hours: 1 | Prerequisite: None

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: None

IT540M1: Security Policies
Implement a computer network security policy.
Quarter Credit Hours: 1 | Prerequisite: None

IT540M2: Securing Data
Secure computer network data.
Quarter Credit Hours: 1 | Prerequisite: None

IT540M3: Disaster Recovery Planning
Develop a computer network disaster recovery plan.
Quarter Credit Hours: 1 | Prerequisite: None

IT540M4: Regulatory Compliance
Assess computer networks for regulatory compliance.
Quarter Credit Hours: 1 | Prerequisite: None

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

IT541M1: Access Control Methods
Compare access control methods and their enabling policies for effectively securing information systems.
Quarter Credit Hours: 1 | Prerequisite: IT513 and IT540

IT541M2: Computer Malware
Analyze computer malware techniques.
Quarter Credit Hours: 1 | Prerequisite: IT513 and IT540

IT541M3: Information Security Best Practices
Apply basic information security best practices to business scenarios.
Quarter Credit Hours: 1 | Prerequisite: IT513 and IT540

IT541M4: Threat Protection Methods
Evaluate internet threat protection methods.
Quarter Credit Hours: 1 | 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: None

IT542M1: Methods for Reconnaissance and Social Engineering
Analyze the methods used by ethical hackers to perform reconnaissance and social engineering.
Quarter Credit Hours: 1 | Prerequisite: None
IT542M2: Vulnerability Testing
Perform vulnerability tests using computer and network tools and utilities.
Quarter Credit Hours: 1 | Prerequisite: None

IT542M3: Best Practices to Address Threats
Develop best practices to address web server and wireless network threats.
Quarter Credit Hours: 1 | Prerequisite: None

IT542M4: Addressing Security Vulnerabilities
Recommend security solutions to address discovered vulnerabilities.
Quarter Credit Hours: 1 | Prerequisite: None

IT543: Cryptography Concepts and Techniques
Never before has the use of cryptography been so widespread 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

IT543M1: Development and Principles of Cryptography
Examine the historical development and basic principles of cryptography.
Quarter Credit Hours: 1 | Prerequisite: None

IT543M2: Cryptographic Methods
Evaluate various cryptographic methods.
Quarter Credit Hours: 1 | Prerequisite: None

IT543M3: Cryptographic Methods for Secure Communications
Develop secure communications using cryptographic methods.
Quarter Credit Hours: 1 | Prerequisite: None

IT543M4: Implementing Cryptographic Methods
Design an implementation of cryptographic methods for an organization.
Quarter Credit Hours: 1 | Prerequisite: None

IT544: Platforms, Applications, and Data Security
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: None

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: None

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: None

IT550M1: Forensic Methods for Investigating Breaches
Analyze forensic methods used to investigate cybersecurity breaches.
Quarter Credit Hours: 1 | Prerequisite: None

IT550M2: Scenario-Based Investigations
Perform scenario-based investigations for cybersecurity breaches.
Quarter Credit Hours: 1 | Prerequisite: None

IT550M3: Forensic Analysis Tools
Evaluate forensic analysis tools for acquiring and preserving digital evidence during the e-discovery process.
Quarter Credit Hours: 1 | Prerequisite: None

IT550M4: The Impact of Technological Changes
Analyze the impact of technological changes on digital forensics techniques.
Quarter Credit Hours: 1 | Prerequisite: None

IT590: Legal and Ethical Issues in IT
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

IT590M1: Law and Ethics Issues
Analyze legal and ethical issues in the field of information technology.
Quarter Credit Hours: 1 | Prerequisite: IT513 or GB512

IT590M2: Laws and Ethical Computing
Discuss recent legislation related to ethical computing.
Quarter Credit Hours: 1 | Prerequisite: IT513 or GB512

IT590M3: The Relationship of Ethical Conduct to Culture
Compare ethical conduct related to information technology across different cultures.
Quarter Credit Hours: 1 | Prerequisite: IT513 or GB512

IT590M4: Case Studies on Ethical Issues
Evaluate ethical issues in information technology case studies.
Quarter Credit Hours: 1 | Prerequisite: IT513 or GB512

IT591: IT Security Auditing and Assessments
In this course you will appraise all standards and information technology (IT) security audit processes, evaluate security controls, and examine governance of compliance and control responsibilities. Most organizations are required to comply with IT security regulations and/or standards resulting from the establishment of the Sarbanes-Oxley Act, General Computing Controls, the Gramm-Leach-Bliley Act (GLBA), the Federal Information Security Management Act (FISMA), and the Payment Card Industry Data Security Standard (PCI DSS), and you will become familiar with these standards and regulations.
Quarter Credit Hours: 4 | Prerequisite: None

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
This course synthesizes knowledge gained throughout all courses in your degree plan, and its comprehensive applied project demonstrates your mastery of this knowledge, as well as your relevant skills and abilities. The project will address an information technology 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