

INFORMATION SYSTEMS AND TECHNOLOGY (IN/IT)

IN200: 🌐 Data Governance - Policy and Ethics

This course looks at topics such as business process management, risk management, security, and data quality. You will develop a sample data governance plan. This course also looks at data ownership and the issues of rights, responsibilities, and privacy related to the ownership of data. Legal and ethical issues are also discussed.

Quarter Credit Hours: 5 | Prerequisite: None

IN200M1: Data Governance Roles

Examine the various roles involved in data governance.

Quarter Credit Hours: 1 | Prerequisite: None

IN200M2: Data Governance Plan

Formulate a data governance plan for a small data collection company.

Quarter Credit Hours: 1 | Prerequisite: None

IN200M3: Ethical Requirements for Collecting and Storing Data

Evaluate the ethical requirements when collecting and storing data.

Quarter Credit Hours: 1 | Prerequisite: None

IN200M4: Securing Collected and Stored Data

Describe the importance of securing collected and stored data.

Quarter Credit Hours: 1 | Prerequisite: None

IN200M5: Data Governance Policies

Synthesize the policies of data governance with standard business practices.

Quarter Credit Hours: 1 | Prerequisite: None

IN300: 🌐 Programming for Data Analysis (Python, R, and Java)

This course examines the use of Python, R, and Java to analyze data of all types. Fundamental programming concepts are covered for each language. These include data types, variables, introduction to regular expressions, decisions, iteration, and introduction to collections using arrays, lists, and key-value pairs. The importance of securing data is stressed throughout the course.

Quarter Credit Hours: 5 | Prerequisite: None

IN300M1: Data Expressions, Decisions, and Iteration

Implement expressions, decisions, and iteration in each language.

Quarter Credit Hours: 1 | Prerequisite: None

IN300M2: Data Collections

Apply data collections, including arrays, lists, and key-value pairs, in each language.

Quarter Credit Hours: 1 | Prerequisite: None

IN300M3: Methods for Securing Data

Recommend methods for securing data in each language.

Quarter Credit Hours: 1 | Prerequisite: None

IN300M4: Evaluating Large Datasets

Use each language to evaluate large datasets in each language.

Quarter Credit Hours: 1 | Prerequisite: None

IN300M5: Analyzing Large Datasets

Use each language to report specific analysis of large datasets.

Quarter Credit Hours: 1 | Prerequisite: None

IN301: 🌐 Securing Data

This course covers multiple topics in the sophisticated use of databases and the awareness of database vulnerabilities and potential solutions to those vulnerabilities. Topics include indexing, inference and aggregation (especially with an eye on security), least privilege, activity monitoring, hashing and encryption, data access controls, and data security models versus common database machine administration (DBMA) vulnerabilities. Blockchain, as an advanced database concept, is also examined.

Quarter Credit Hours: 5 | Prerequisite: IT350

IN301M1: Secure Database Development

Investigate methods for developing secure databases.

Quarter Credit Hours: 1 | Prerequisite: IT350

IN301M2: Data Access Controls and Data Encryption

Explain how to implement data access controls and data encryption.

Quarter Credit Hours: 1 | Prerequisite: IT350

IN301M3: Database Vulnerabilities

Evaluate database vulnerabilities in stand-alone and network environments.

Quarter Credit Hours: 1 | Prerequisite: IT350

IN301M4: Countermeasure Design

Design countermeasures for common database vulnerabilities.

Quarter Credit Hours: 1 | Prerequisite: IT350

IN301M5: Blockchain Security Techniques

Evaluate whether blockchain security techniques can be applied broadly to database security.

Quarter Credit Hours: 1 | Prerequisite: IT350

IN302: 🌐 Reporting and Visualization

This course focuses on how to prepare the collected and analyzed data for decision-making through the use of appropriate reporting formats including graphs, charts, diagrams, and so forth. Industry-wide data reporting and visualization tools are examined and evaluated.

Quarter Credit Hours: 5 | Prerequisite: None

IN302M1: Tools for Reporting and Visualizing Data

Examine industry-wide tools used for reporting and visualizing data.

Quarter Credit Hours: 1 | Prerequisite: None

IN302M2: Data Visualizing Techniques

Apply the appropriate visualizing techniques for specific reporting needs.

Quarter Credit Hours: 1 | Prerequisite: None

IN302M3: Deceptive Aspects of Data Visualization

Discuss how data visualization can deceive users.

Quarter Credit Hours: 1 | Prerequisite: None

IN302M4: Formatting Tools for Data Visualization

Analyze the efficacy of formatting tools in visualizing data.

Quarter Credit Hours: 1 | Prerequisite: None

IN302M5: Practical Application of Data Visualization and Reporting

Practice reporting and visualizing data with several industry-wide tools using large datasets.

Quarter Credit Hours: 1 | Prerequisite: None

IN303: 🌐 Data Mining and Data Warehousing

This course discusses the elements of pattern analysis (regular expressions) and machine learning (artificial intelligence and predictive analysis) involved in the concept of mining data. Hadoop, MapReduce, and Spark are examined as tools to aid in the manipulation of large amounts of data. Additional topics include simulation, clustering, high-dimensional data and locality-sensitive hashing, search spam, and data streams. Also, data warehousing and data lakes are shown as preparations for the tasks of analyzing data.

Quarter Credit Hours: 5 | Prerequisite: None

IN303M1: Pattern Analysis and Machine Learning

Discuss the elements of pattern analysis and machine learning.

Quarter Credit Hours: 1 | Prerequisite: None

IN303M2: Data Mining and Warehousing Tools

Examine popular tools used for data mining and warehousing data.

Quarter Credit Hours: 1 | Prerequisite: None

IN303M3: Data Warehouses and Data Lakes

Compare the data warehouse and the data lake and their uses.

Quarter Credit Hours: 1 | Prerequisite: None

IN303M4: Entity Matching Methods

Discuss methods for identifying entity matching within multiple large datasets.

Quarter Credit Hours: 1 | Prerequisite: None

IN303M5: Identifying and Fixing Anomalies and Outliers

Use data-mining techniques to identify and fix anomalies and outliers.

Quarter Credit Hours: 1 | Prerequisite: None

IN304: 🌐 Advanced Programming for Data Analysis

This course continues the study of Python R and Java as tools for the analysis of all types of data. Pandas for Python are introduced as widely used tools for data wrangling. Emphasis is placed on gathering data and using these tools to solve scenario-based problems. Additionally, the Scala language is explored as a modern tool for data science.

Quarter Credit Hours: 5 | Prerequisite: IN300

IN304M1: Add-on Tools for Large Dataset Data Analysis

Use add-on tools to analyze data from large datasets.

Quarter Credit Hours: 1 | Prerequisite: IN300

IN304M2: Analysis Functions for Large Datasets

Use each language to create functions that analyze data from large datasets.

Quarter Credit Hours: 1 | Prerequisite: IN300

IN304M3: Visualizing Data Analysis Results

Use each language to visualize results from data analysis of large datasets.

Quarter Credit Hours: 1 | Prerequisite: IN300

IN304M4: Data Collecting and Cleaning Data

Apply each language to data collecting and cleaning data.

Quarter Credit Hours: 1 | Prerequisite: IN300

IN304M5: Exploring Scala

Explore Scala as an alternate language for data analysis.

Quarter Credit Hours: 1 | Prerequisite: IN300

IN400: 🌐 Artificial Intelligence (AI) - Deep Learning and Machine Learning

This course examines Apache's open source Hadoop and Spark products, MongoDB NoSQL database, and Apache's HBase as tools to store and analyze big data. Additionally, graph and column databases are examined. The concepts of artificial intelligence and machine learning are examined with a focus on deep learning. Statistical analysis is applied to real-world problems.

Quarter Credit Hours: 6 | Prerequisite: None

IN400M1: Comparison of Artificial Intelligence and Machine Learning

Compare artificial intelligence and machine learning.

Quarter Credit Hours: 1 | Prerequisite: None

IN400M2: Development Tools for Artificial Intelligence and Machine Learning Applications

Examine specific tools used in developing artificial intelligence and machine learning applications.

Quarter Credit Hours: 1 | Prerequisite: None

IN400M3: Tools for Managing Big Data

Use specific tools associated with collecting, storing, and analyzing "big data."

Quarter Credit Hours: 1 | Prerequisite: None

IN400M4: Natural Language Processing

Discuss advances in natural language processing.

Quarter Credit Hours: 1 | Prerequisite: None

IN400M5: Artificial Intelligence and Machine Learning Case Studies

Evaluate case studies, in multiple industries, of artificial intelligence and machine learning applications.

Quarter Credit Hours: 1 | Prerequisite: None

IN400M6: Artificial Neuron Networks

Explain artificial neuron networks.

Quarter Credit Hours: 1 | Prerequisite: None

IN401: 🌐 Data Curation Concepts

This course examines the topic of data curation and the role of the data curator. Topics include extraction, transformation, and loading (ETL) of data from one source to another, and the integration, ingestion, and fusion of multiple sets of data from the perspective of the data curator.

Quarter Credit Hours: 6 | Prerequisite: None

IN401M1: Extracting, Transforming, and Loading Data

Examine the processes of extracting, transforming, and loading (ETL) data for different sources.

Quarter Credit Hours: 1 | Prerequisite: None

IN401M2: Curation Issues

Analyze the curation issues when scaling datasets.

Quarter Credit Hours: 1 | Prerequisite: None

IN401M3: The Data Curator

Explain the role of the data curator.

Quarter Credit Hours: 1 | Prerequisite: None

IN401M4: Data Curation Tools

Evaluate tools, and their limitations, used in the process of data curation.

Quarter Credit Hours: 1 | Prerequisite: None

IN401M5: New Discoveries Through Data Curation

Discuss how data curation can lead to new discoveries in disparate data sets.

Quarter Credit Hours: 1 | Prerequisite: None

IN401M6: Curation With Large Datasets

Investigate potential problems related to curating data from large datasets.

Quarter Credit Hours: 1 | Prerequisite: None

IN402: Modeling and Predictive Analysis

This course discusses modeling techniques for both relational and nonrelational databases. Techniques for modeling, including conceptual, logical, and physical designs, along with entity-relationship diagrams (ERD), are examined and used to better understand current data so as to improve performance to provide competitive advantage. Regression techniques, machine learning, and other tools are used to examine data and conduct predictive analysis. Real-world case studies are examined.

Quarter Credit Hours: 6 | Prerequisite: None

IN402M1: Entity-Relationship Diagrams

Use entity-relationship diagrams (ERDs) to model data.

Quarter Credit Hours: 1 | Prerequisite: None

IN402M2: Large Datasets for Predictive Uses

Predict trends and seasonality using large datasets.

Quarter Credit Hours: 1 | Prerequisite: None

IN402M3: Modern Tools for Predictive Analysis

Examine modern tools for predictive analysis.

Quarter Credit Hours: 1 | Prerequisite: None

IN402M4: Predictive Analysis Practical Application

Study examples of predictive analysis in multiple industry applications.

Quarter Credit Hours: 1 | Prerequisite: None

IN402M5: Comparison of Predictive, Prescriptive, and Descriptive Analyses

Compare predictive analysis, prescriptive analysis, and descriptive analysis.

Quarter Credit Hours: 1 | Prerequisite: None

IN402M6: Choosing a Data Model

Determine when and what type of data model is required for different situations.

Quarter Credit Hours: 1 | Prerequisite: None

IN403: Deep Learning and Artificial Intelligence

This broader course is a subset of machine learning that will provide an overview of neural networks and advanced architectures including deep neural networks, convolutional networks, and recurrent networks. The course provides an overview of artificial intelligence achievements, including image, voice, and handwriting recognition, and natural language processing using core Python packages based on long short-term memory (LSTM), automatic speech recognition (ASR), and image classification methods (MNIST). Topics covered include unsupervised learning, random forests, and model training.

Quarter Credit Hours: 6 | Prerequisite: None

IN403M1: Deep Neural Networks

Evaluate deep neural networks.

Quarter Credit Hours: 1 | Prerequisite: None

IN403M2: Bayesian Machine Learning

Explore Bayesian machine learning.

Quarter Credit Hours: 1 | Prerequisite: None

IN403M3: Deep Learning Models

Identify multiple deep learning models.

Quarter Credit Hours: 1 | Prerequisite: None

IN403M4: Deep Learning Case Studies

Analyze multiple case studies involving deep learning.

Quarter Credit Hours: 1 | Prerequisite: None

IN403M5: Deep Learning Application

Develop a deep learning project.

Quarter Credit Hours: 1 | Prerequisite: None

IN403M6: Image Classification in Deep Learning

Examine image classification in deep learning.

Quarter Credit Hours: 1 | Prerequisite: None

IN404: Machine Learning

This course will provide an overview and understanding of key machine learning techniques, mathematical models, and algorithms. The complete process from datasets, features, algorithms, and modeling will be covered. Topics in supervised and unsupervised machine learning, including, but not limited to, linear regression, random forest, core Python packages, as well as descriptive, prescriptive, and predictive analytics, will be highlighted.

Quarter Credit Hours: 6 | Prerequisite: None

IN404M1: Automated Bots in Cyberwarfare

Examine the use of automated bots in cyberwarfare.

Quarter Credit Hours: 1 | Prerequisite: None

IN404M2: Machine Learning Case Studies

Analyze multiple case studies of practical use of machine learning.

Quarter Credit Hours: 1 | Prerequisite: None

IN404M3: Machine Learning Algorithms

Analyze different machine learning algorithms for a specified problem.

Quarter Credit Hours: 1 | Prerequisite: None

IN404M4: Kernel Learning and Time-Series Analyses

Explore kernel learning and time-series analyses.

Quarter Credit Hours: 1 | Prerequisite: None

IN404M5: Machine Learning Application

Develop a machine learning application using common machine learning tools.

Quarter Credit Hours: 1 | Prerequisite: None

IN404M6: Classification and Regression Trees Algorithm

Apply classification and regression trees algorithm to make predictions on data.

Quarter Credit Hours: 1 | Prerequisite: None

IN405: Blockchain, Cryptography, and Hashgraph

This course examines the concepts of blockchain technology. Hashgraph is also studied as an alternative to blockchain technology. The involvement of cryptocurrency and cryptography in both technologies is discussed.

Quarter Credit Hours: 6 | Prerequisite: None

IN405M1: Blockchain and Cryptocurrency Concepts

Describe the history, purpose, and long-term implications of blockchain and cryptocurrency.

Quarter Credit Hours: 1 | Prerequisite: None

IN405M2: Cryptography Concepts

Examine the key concepts of cryptography.

Quarter Credit Hours: 1 | Prerequisite: None

IN405M3: Public Key Infrastructure (PKI) Concepts

Discuss public key infrastructure (PKI) and its implications.

Quarter Credit Hours: 1 | Prerequisite: None

IN405M4: Blockchain, Cryptography, and Hashgraph Case Studies

Explore multiple case studies in various industries discussing blockchain, cryptography, and hashgraph.

Quarter Credit Hours: 1 | Prerequisite: None

IN405M5: Legal and Ethical Dimensions of Blockchain

Evaluate legal and ethical dimensions of blockchain.

Quarter Credit Hours: 1 | Prerequisite: None

IN405M6: Blockchain and Hashgraph

Compare blockchain and hashgraph.

Quarter Credit Hours: 1 | Prerequisite: None

IN406: 🌐 Business Intelligence

This course examines the concepts of business intelligence and the tools often used to provide historical, current, and predictive analysis of the data provided. Best practices for reporting and visualizing data are analyzed. Real-world case studies are used for illustration purposes.

Quarter Credit Hours: 6 | Prerequisite: None

IN406M1: Decision Support Systems, Data Analysis, and Business Intelligence

Compare decision support systems, data analysis, and business intelligence.

Quarter Credit Hours: 1 | Prerequisite: None

IN406M2: Business Intelligence Tools

Evaluate major tools used in business intelligence techniques.

Quarter Credit Hours: 1 | Prerequisite: None

IN406M3: Business Intelligence Legal and Ethical Issues

Examine the legal and ethical issues involved in business intelligence activities.

Quarter Credit Hours: 1 | Prerequisite: None

IN406M4: Business Intelligence Trends

Research current and future trends in business intelligence.

Quarter Credit Hours: 1 | Prerequisite: None

IN406M5: Business Intelligence Reporting and Visualization Tools

Examine reporting and visualization tools used in business intelligence.

Quarter Credit Hours: 1 | Prerequisite: None

IN406M6: Business Intelligence Solutions

Create a complete business intelligence solution to a real-world problem using a large dataset.

Quarter Credit Hours: 1 | Prerequisite: None

IN499: Bachelor's Capstone in Analytics

The Bachelor's Capstone in Analytics is designed to build on the concepts of all analytics courses you have taken as a part of your degree plan.

The capstone project integrates problem-solving techniques and the development and implementation of viable, student-developed solutions to meet an identified data analytics need in a business or institutional environment.

Quarter Credit Hours: 6 | Prerequisite: Last term or permission from the Program Chair

IT104: 🌐 Introduction to Cybersecurity

Entities and organizations must be able to protect not only their network infrastructure, but also their personnel and customers from data loss and identity theft. This course introduces the topic of cybersecurity and how it has evolved over the last several decades. In this course, you will examine the concepts and challenges of cybersecurity from its evolution over the past decades to the increasing cyberthreats that exist today. Evolving trends that impact cybersecurity will be discussed, including the use of mobile devices, cloud computing, and the increased sophistication of attacks. You will study cybersecurity's role in physical and cyber incidents. Cybersecurity design is examined from a high level, as is the role of the cybersecurity professional in today's information technology environment. This course is designed, among other things, to provide you with the foundational knowledge necessary to pursue relevant certifications. 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: 5 | Prerequisite: None

IT104M1: Cybersecurity Overview

Examine the field of cybersecurity, including career opportunities and pathways to cybersecurity certifications.

Quarter Credit Hours: 1 | Prerequisite: None

IT104M2: Security Assessments

Discuss the role of security assessments.

Quarter Credit Hours: 1 | Prerequisite: None

IT104M3: Security Controls

Differentiate the roles of internal and external security controls.

Quarter Credit Hours: 1 | Prerequisite: None

IT104M4: Operations and Personnel Security

Identify operations security and personnel cybersecurity issues.

Quarter Credit Hours: 1 | Prerequisite: None

IT104M5: Current Threats and Future Issues

Explain current cybersecurity threats and the future of cybersecurity.

Quarter Credit Hours: 1 | Prerequisite: None

IT111: 🌐 Programming Concepts

This course exposes you to programming language and concepts. You will practice modularization using a variety of methods; learn the value of creating reusable objects; and apply programming techniques of assignment, iteration, and decision-making.

Quarter Credit Hours: 5 | Prerequisite: None

IT111M1: Elements of Object Programming

Recognize the elements of object programming: classes, objects, and methods to application development.

Quarter Credit Hours: 1 | Prerequisite: None

IT111M2: Parameters and Arguments

Apply the programming constructs of parameters and arguments.

Quarter Credit Hours: 1 | Prerequisite: None

IT111M3: Iteration, Assignment, and Decision-Making

Apply the programming constructs of iteration, assignment, and decision-making.

Quarter Credit Hours: 1 | Prerequisite: None

IT111M4: Functions

Apply the programming constructs of functions.

Quarter Credit Hours: 1 | Prerequisite: None

IT111M5: Storyboards for Design

Implement programming design concepts through creation of storyboards.

Quarter Credit Hours: 1 | Prerequisite: None

IT117: Website Development

In this course, you investigate Internet technologies. You learn the concepts of web development along with web page design. By creating an individual online portfolio or biography using HTML, HTML5, and CSS (Cascading Style Sheets), you develop skills for today and tomorrow. This course will enable you to self-promote and demonstrate your skills to an audience via the web.

Quarter Credit Hours: 5 | Prerequisite: None

IT117M1: Website Project Planning

Complete a detailed plan for a website project in a formal design document.

Quarter Credit Hours: 1 | Prerequisite: None

IT117M2: HTML and Images

Apply HTML and images to create professional web pages.

Quarter Credit Hours: 1 | Prerequisite: None

IT117M3: CSS and HTML

Integrate CSS with HTML to create a visually appealing website.

Quarter Credit Hours: 1 | Prerequisite: None

IT117M4: HTML Forms

Develop HTML forms with form-field validation.

Quarter Credit Hours: 1 | Prerequisite: None

IT117M5: Constructing Functional Websites

Construct a well-designed and fully functional website using HTML and CSS.

Quarter Credit Hours: 1 | Prerequisite: None

IT133: Microsoft Office Applications on Demand

This course teaches you to use the current Microsoft Office suite of applications. Topics include an introduction to Word, Excel, PowerPoint, and cloud-based file management systems. You will also learn how to analyze appropriate software applications to address solutions within a profession.

Quarter Credit Hours: 5 | Prerequisite: None

IT133M1: Operating System and Services

Use the computer operating system and cloud-based services to set preferences and manage files.

Quarter Credit Hours: 1 | Prerequisite: None

IT133M2: Word Processing Skills

Create documents using various functions of word processing software.

Quarter Credit Hours: 1 | Prerequisite: None

IT133M3: Spreadsheet Skills

Create spreadsheets using basic spreadsheet functions.

Quarter Credit Hours: 1 | Prerequisite: None

IT133M4: Computer Presentation Skills

Create computer-generated, on-screen presentations.

Quarter Credit Hours: 1 | Prerequisite: None

IT133M5: Software Solutions and Analysis

Analyze appropriate software application(s) to address solutions within a specific discipline.

Quarter Credit Hours: 1 | Prerequisite: None

IT153: Spreadsheet Applications

This course examines spreadsheet concepts including calculations, formulas, built-in functions, and spreadsheet design. You will create spreadsheets and manipulate data to solve business problems. The course further explores topics such as charts, data tables, pivot tables, and what-if analysis.

Quarter Credit Hours: 5 | Prerequisite: None

IT153M1: Spreadsheets for Business

Create spreadsheets to solve business problems.

Quarter Credit Hours: 1 | Prerequisite: None

IT153M2: Spreadsheet Formulas and Functions

Use formulas and functions to perform calculations.

Quarter Credit Hours: 1 | Prerequisite: None

IT153M3: Spreadsheet Workbooks

Prepare workbooks to consolidate data.

Quarter Credit Hours: 1 | Prerequisite: None

IT153M4: Worksheet Macros

Create macros to automate worksheets.

Quarter Credit Hours: 1 | Prerequisite: None

IT153M5: Spreadsheet Data Analysis

Analyze data using the scenario manager.

Quarter Credit Hours: 1 | Prerequisite: None

IT163: Database Concepts Using Microsoft Access

This course is an introduction to relational database management systems. You will use a relational database management system to create, maintain, and secure a database in order to analyze data. You will create filters, sorts, queries, forms, and reports. The course emphasizes the skills you need to meet user requirements.

Quarter Credit Hours: 5 | Prerequisite: None

IT163M1: Effective Design Concepts

Synthesize database concepts needed to effectively design a database.

Quarter Credit Hours: 1 | Prerequisite: None

IT163M2: Relational Databases

Create relational databases with multiple entities and relationships.

Quarter Credit Hours: 1 | Prerequisite: None

IT163M3: Database Forms

Create forms to input data.

Quarter Credit Hours: 1 | Prerequisite: None

IT163M4: Structured Query Language

Use Structured Query Language (SQL) to manage data.

Quarter Credit Hours: 1 | Prerequisite: None

IT163M5: Database Reports

Construct reports to retrieve data.

Quarter Credit Hours: 1 | Prerequisite: None

IT190: Information Technology Concepts

You will explore concepts of information technology including hardware, software, and networks. You will also gain a practical understanding of how computer hardware and operating systems work. Topics include personal computer configuration and maintenance, along with the essentials of system software installation and administration.

Quarter Credit Hours: 5 | Prerequisite: None

IT190M1: Hardware Components

Describe hardware components.

Quarter Credit Hours: 1 | Prerequisite: None

IT190M2: Software Applications

Explain different types of software applications.

Quarter Credit Hours: 1 | Prerequisite: None

IT190M3: System Software

Discuss the functions of system software.

Quarter Credit Hours: 1 | Prerequisite: None

IT190M4: Computer Network Components

Describe the components of a computer network.

Quarter Credit Hours: 1 | Prerequisite: None

IT190M5: Computer and Network Security

Explain how to secure and protect computers and computer networks.

Quarter Credit Hours: 1 | Prerequisite: None

IT213: Software Development Concepts

This course introduces the fundamentals of software engineering, demonstrating how the fundamentals are the same across multiple programming languages. The core principles found in every programming language are investigated. You will design, develop, debug, and test simple applications using your choice from the programming language options.

Quarter Credit Hours: 5 | Prerequisite: IT117

IT213M1: Software Construction Core Concepts

Create fundamental programs using concepts such as declaring and initializing variables and constants.

Quarter Credit Hours: 1 | Prerequisite: IT117

IT213M2: Decision Structures and Iteration

Create fundamental programs using concepts such as decision statements and iteration.

Quarter Credit Hours: 1 | Prerequisite: IT117

IT213M3: Software Development History and Modeling

Create plans for programs using an understanding of historical development of programming techniques and appropriate modeling techniques.

Quarter Credit Hours: 1 | Prerequisite: IT117

IT213M4: Functions and Arrays

Create fundamental programs using concepts such as functions and arrays.

Quarter Credit Hours: 1 | Prerequisite: IT117

IT213M5: Debugging and Testing

Apply the debugging and testing processes to programs containing fundamental concepts such as decision statements, iteration, functions, and arrays.

Quarter Credit Hours: 1 | Prerequisite: IT117

IT214: Website Implementation

This is a fast-paced course in web design. You will learn intermediate and advanced concepts of web page design. The course begins with a review of planning and design concepts. You will explore elements such as responsive website pages, Cascading Style Sheets (CSS) and JavaScript navigation bars, accessibility, multimedia, website page layouts, search engine optimization, and web security. You will create an individual portfolio for sharing and implement the current versions of Hypertext Markup Language (HTML), CSS, and JavaScript.

Quarter Credit Hours: 5 | Prerequisite: IT117

IT222: Introduction to Cloud Computing

This course takes you beyond the definitions of cloud computing and into the realm of architecture-driven practices and principles. It will lead you from start to finish with the essential concepts and technologies of cloud computing, its history, innovation, and business rationale. The course will use informative case studies to illustrate the rich and real-world landscape of organizational decision making as it relates to cloud adoption and implementation. You will be exposed to cloud architectural models, service requirements, infrastructure, and security.

Quarter Credit Hours: 5 | Prerequisite: IT273

IT222M1: Cloud Computing Concepts

Describe the key terminologies, fundamental concepts, and models that define the cloud computing paradigm.

Quarter Credit Hours: 1 | Prerequisite: IT273

IT222M2: Moving to Cloud Computing

Investigate the business, economic, security, and productivity justifications and issues involved in moving to cloud computing.

Quarter Credit Hours: 1 | Prerequisite: IT273

IT222M3: Foundational Technologies and Architectures for Cloud Computing

Analyze the technologies and architectures that provide the foundation for cloud computing.

Quarter Credit Hours: 1 | Prerequisite: IT273

IT222M4: Cloud Computing Design Patterns and Architecture

Examine basic and advanced cloud computing design patterns and architectures.

Quarter Credit Hours: 1 | Prerequisite: IT273

IT222M5: Financial Considerations for Cloud Adoption

Use performance and cost metrics, as well as pricing models, to make decisions related to cloud adoption and management.

Quarter Credit Hours: 1 | Prerequisite: IT273

IT227: Cloud Infrastructure Administration

You will learn about administering infrastructure in the cloud. You will compare and contrast administering on-premise environments and cloud environments. Finally, you will complete hands-on labs in a cloud environment.

Quarter Credit Hours: 5 | Prerequisite: IT222

IT227M1: Information Technology Infrastructures

Analyze different types of information technology infrastructures.

Quarter Credit Hours: 1 | Prerequisite: IT222

IT227M2: Cloud Architecture Concepts

Summarize the cloud architecture as it relates to infrastructure.

Quarter Credit Hours: 1 | Prerequisite: IT222

IT227M3: Cloud Orchestration Concepts

Summarize cloud orchestration versus locally managed systems.

Quarter Credit Hours: 1 | Prerequisite: IT222

IT227M4: Cloud-Based Analysis

Analyze information after performing hands-on activities in the cloud.

Quarter Credit Hours: 1 | Prerequisite: IT222

IT227M5: Working With a Cloud Provider

Recommend a strategy when using a cloud provider.

Quarter Credit Hours: 1 | Prerequisite: IT222

IT232: 🌐 Software Design and Development Concepts

This is an intermediate course in the design and development of programs offering you a choice of implementation and demonstrating how design and programming concepts are universal. You will apply software design techniques, software process models, object-oriented programming concepts, and secure data-handling techniques. In addition, you will design, develop, debug, and test intermediate-level applications using your choice from the programming language options.

Quarter Credit Hours: 5 | Prerequisite: IT213 | Corequisite: IT302 (recommended for Bachelor of Science in Information Technology students)

IT232M1: Software Process Models

Explore various software process models.

Quarter Credit Hours: 1 | Prerequisite: IT213 | Corequisite: IT302 (recommended for Bachelor of Science in Information Technology students)

IT232M2: Advanced Design Techniques

Compose software using advanced interface and program design techniques.

Quarter Credit Hours: 1 | Prerequisite: IT213 | Corequisite: IT302 (recommended for Bachelor of Science in Information Technology students)

IT232M3: Secure Data Handling Techniques

Select appropriate secure data handling techniques.

Quarter Credit Hours: 1 | Prerequisite: IT213 | Corequisite: IT302 (recommended for Bachelor of Science in Information Technology students)

IT232M4: Design Requirements

Construct a software test plan for validation and verification of design requirements.

Quarter Credit Hours: 1 | Prerequisite: IT213 | Corequisite: IT302 (recommended for Bachelor of Science in Information Technology students)

IT232M5: Object-Oriented Programming Concepts

Examine object-oriented programming concepts.

Quarter Credit Hours: 1 | Prerequisite: IT213 | Corequisite: IT302 (recommended for Bachelor of Science in Information Technology students)

IT234: 🌐 Database Concepts

This course prepares you to learn database programming. You will be exposed to the essential concepts of database management systems and SQL programming language. This course will provide you with the business context in which data is used and how it is transformed into information. You will identify the information needs and general usage of data within the modern business context and link the use of relational database management systems to the data needs of the organization.

Quarter Credit Hours: 5 | Prerequisite: IT163

IT234M1: Database Management Concepts

Demonstrate the fundamental concepts of Database Management systems.

Quarter Credit Hours: 1 | Prerequisite: IT163

IT234M2: Data Definition Language

Explore data definition language (DDL) statements to define the database structure or schema.

Quarter Credit Hours: 1 | Prerequisite: IT163

IT234M3: Data Manipulation Language

Explore data manipulation language (DML) statements to manage data within schema objects.

Quarter Credit Hours: 1 | Prerequisite: IT163

IT234M4: Advanced SQL

Discover more advanced SQL such as security commands and logins.

Quarter Credit Hours: 1 | Prerequisite: IT163

IT234M5: Analytical and Non-Relational Database Alternatives

Investigate analytical and nonrelational database alternatives.

Quarter Credit Hours: 1 | Prerequisite: IT163

IT244: 🌐 Python Programming

This course examines basic programming concepts using the Python language as the tool. Concepts studied include variables, data types, decision making, logical and relational operators, iteration, arrays, and other data structures. Additional course topics include file management and security, classes and related topics, and modules and other built-in tools.

Quarter Credit Hours: 3 | Prerequisite: None

IT244M1: Python Programming Fundamentals

Apply the basic concepts of programming using the Python language.

Quarter Credit Hours: 1 | Prerequisite: None

IT244M2: Python Functions and Classes

Analyze user-defined functions and classes in Python.

Quarter Credit Hours: 1 | Prerequisite: None

IT244M3: Python Tools and Modules

Examine Python versions, available system interfaces, built-in tools, and user-defined modules.

Quarter Credit Hours: 1 | Prerequisite: None

IT247: Fundamentals of Web Graphics

You will learn how to create appropriate web graphics using popular image editing tools. Throughout the course, you will create a collection of custom graphics that will be displayed in an e-Portfolio layout. Topics will include resizing, resolution, optimization, digital photo enhancement, custom banner and button creation, and more.

Quarter Credit Hours: 5 | Prerequisite: IT214

IT261: Desktop Administration

This course prepares networking students to install, configure, and administer a desktop operating system. You will learn to automate operating system installation, set up and manage user accounts, and configure local file systems. You will learn to configure and troubleshoot both local and network printers, manage and troubleshoot access to shared folders, and recover from system failures.

Quarter Credit Hours: 5 | Prerequisite: IT190

IT262: 🌐 Certified Ethical Hacking I

This course covers the tools and procedures needed to perform ethical hacking. Ethical hacking, which is also known as penetration testing, is a procedure employed by organizations where the tester attempts to penetrate or compromise a computer or network. In so doing, organizational vulnerabilities are brought to light, which allows the organization to mitigate the vulnerabilities uncovered. This course is designed, among other things, to provide you with the foundational knowledge necessary to continue your studies for the EC-Council Certified Ethical Hacker certification. While the course may provide you with the knowledge necessary to sit for the examination, the University cannot guarantee your eligibility either to take this exam or become certified.

Quarter Credit Hours: 5 | Prerequisite: None

IT262M1: Network and Reconnaissance Results

Interpret network and reconnaissance results.

Quarter Credit Hours: 1 | Prerequisite: None

IT262M2: Enumeration, Scanning, and Packet Capture

Describe steps and techniques to perform enumeration, scanning, and packet capture.

Quarter Credit Hours: 1 | Prerequisite: None

IT262M3: Network and Web Server Attacks

Produce network and web server attacks.

Quarter Credit Hours: 1 | Prerequisite: None

IT262M4: Wireless Attacks and Malware

Produce wireless attacks and malware.

Quarter Credit Hours: 1 | Prerequisite: None

IT262M5: Encryption and Social Engineering Attacks

Explain encryption and social engineering attacks.

Quarter Credit Hours: 1 | Prerequisite: None

IT273:  Networking Concepts

This course introduces the concepts behind today's networks. It outlines current network design, explaining the OSI Model and the methods of carrying data over wired and wireless media. Other topics include network design components, such as topologies and access methods, administration of network operating systems, and troubleshooting methods for data transmission and recovery.

Quarter Credit Hours: 5 | Prerequisite: None

IT273M1: Networking Concepts

Appraise network architectures, models, topologies, and structures used in networking.

Quarter Credit Hours: 1 | Prerequisite: None

IT273M2: Networked Environments

Differentiate between the various types of network media, TCP/IP core protocols, and IPv4 addressing schemes typically used in a networked environment.

Quarter Credit Hours: 1 | Prerequisite: None

IT273M3: Data Transmission

Analyze LAN switching methods and related devices used for data transmission.

Quarter Credit Hours: 1 | Prerequisite: None

IT273M4: Wide Area Networks and Wireless Technologies

Analyze wide area networks and wireless technologies used in organizational or individual computing.

Quarter Credit Hours: 1 | Prerequisite: None

IT273M5: Global Interconnectedness

Practice global interconnectedness as it applies to Information Technology.

Quarter Credit Hours: 1 | Prerequisite: None

IT275:  Linux System Administration

This Linux course prepares you for the Linux Professional Institute's LPIC-1: System Administrator certification. You will learn to install, configure, administer, and secure the Linux operating system. Command-line instructions are heavily emphasized. Emphasis is placed on applied skills that address real-world challenges such as managing file structure, network services, and system security.

Quarter Credit Hours: 5 | Prerequisite: IT273

IT275M1: Linux Software Packaging System

Use the command line and the Linux software packaging system.

Quarter Credit Hours: 1 | Prerequisite: IT273

IT275M2: Configuring the Linux Operating System

Configure the key features of the Linux operating system.

Quarter Credit Hours: 1 | Prerequisite: IT273

IT275M3: Modifying Files

Modify the files in Linux.

Quarter Credit Hours: 1 | Prerequisite: IT273

IT275M4: Creating Accounts


Create user and group accounts within Linux.

Quarter Credit Hours: 1 | Prerequisite: IT273

IT275M5: Configuring Security

Configure security within the Linux operating system.

Quarter Credit Hours: 1 | Prerequisite: IT273

IT277:  Certified Information Systems Security Professional I

This course covers the essential material comprising the first two study domains in the Certified Information Systems Security Professional Common Body of Knowledge (CBK). Domain 1 is about Security and Risk Management; Domain 2 is about Asset Security. The information covered is vital in gaining a threshold understanding of the field of cybersecurity. These two domains will enable you to learn the essentials of security governance, risk management, business continuity planning, laws, regulations and compliance, and the secure protection of assets. This course is designed, among other things, to provide you with the foundational knowledge necessary to pursue CISSP certification. While the course may provide you with the knowledge necessary to sit for the examination, the University cannot guarantee your eligibility either to take this exam or become certified.

Quarter Credit Hours: 5 | Prerequisite: None

IT277M1: The Pillars of Cybersecurity

Examine the three pillars of cybersecurity: confidentiality, integrity, and availability.

Quarter Credit Hours: 1 | Prerequisite: None

IT277M2: Information and Asset Classification

Explain information and asset classification.

Quarter Credit Hours: 1 | Prerequisite: None

IT277M3: Data Security Controls

Differentiate multilevel data security controls.

Quarter Credit Hours: 1 | Prerequisite: None

IT277M4: Cybersecurity Security Models

Distinguish access control, integrity, and information flow security models.

Quarter Credit Hours: 1 | Prerequisite: None

IT277M5: Security Evaluation Criteria

Differentiate various security evaluation criteria.

Quarter Credit Hours: 1 | Prerequisite: None

IT278:  Network Administration

In many organizations, the network administrator is the wizard behind the curtain. Network connections between users and computers seem to magically perform the transmissions required for daily operations. In this course, you are introduced to basic network administration. You install and configure a network operating system in a virtualized environment and practice administrative tasks. You perform hands-on exercises demonstrating server management, user account creation, file access, storage backup, and security settings.

Quarter Credit Hours: 5 | Prerequisite: IT273

IT278M1: Network Operating Systems

Examine the features, editions, roles, and installation methods of a network operating system.

Quarter Credit Hours: 1 | Prerequisite: IT273

IT278M2: Network Access Administration

Administer server roles, features, storage options, file and print services, and file and folder permissions.

Quarter Credit Hours: 1 | Prerequisite: IT273

IT278M3: Active Directory Configuration

Configure Active Directory including domains, organizational units, user accounts, and group policy while ensuring compatibility with global networks.

Quarter Credit Hours: 1 | Prerequisite: IT273

IT278M4: TCP/IP, DNS, and DHCP Configuration

Configure TCP/IP, DNS (Domain Name System), and DHCP (Dynamic Host Configuration Protocol) on a network server.

Quarter Credit Hours: 1 | Prerequisite: IT273

IT278M5: Virtualization Management

Manage virtualization using Hyper-V.

Quarter Credit Hours: 1 | Prerequisite: IT273

IT279: Certified Information Systems Security Professional II

This course covers the essential material comprising three study domains in the Certified Information Systems Security Professional (CISSP) Common Body of Knowledge (CBK). These three domains are security engineering, network security, and software development security. The information covered is vital in gaining a threshold understanding of the field of cybersecurity, and will enable you to assess the vulnerabilities of security solutions, design secure communication channels, and apply security controls in the software development environment. This course is designed, among other things, to provide you with the foundational knowledge necessary to pursue CISSP certification. While the course may provide you with the knowledge necessary to sit for the examination, the University cannot guarantee your eligibility either to take this exam or become certified.

Quarter Credit Hours: 5 | Prerequisite: IT277

IT279M1: Engineering Processes and Secure Design

Examine engineering processes and secure design principles.

Quarter Credit Hours: 1 | Prerequisite: IT277

IT279M2: Cryptosystem Fundamentals

Analyze symmetric and asymmetric cryptosystem fundamentals.

Quarter Credit Hours: 1 | Prerequisite: IT277

IT279M3: Secure Network Architecture

Apply secure design principles to network architecture.

Quarter Credit Hours: 1 | Prerequisite: IT277

IT279M4: Network Attacks and Mitigation

Identify network attacks and mitigation responses.

Quarter Credit Hours: 1 | Prerequisite: IT277

IT279M5: Security in the Software Development Life Cycle

Describe security in the software development life cycle.

Quarter Credit Hours: 1 | Prerequisite: IT277

IT283: Networking with TCP/IP

This course provides a thorough examination of the protocols and services in the TCP/IP protocol suite. Students gain an understanding of how network traffic is encapsulated and transported by TCP/IP on local area networks and on wide area networks, including the Internet. Students learn about message addressing and forwarding, and how network errors are resolved.

Quarter Credit Hours: 5 | Prerequisite: IT273

IT283M1: TCP/IP, IPv4 and IPv6 Addressing, and Basic IP Packet Structures

Examine the TCP/IP networking model, IPv4 and IPv6 addressing, and basic IP packet structures.

Quarter Credit Hours: 1 | Prerequisite: IT273

IT283M2: Lower Layer Protocols

Analyze the protocols that operate at the lower layers of the TCP/IP model.

Quarter Credit Hours: 1 | Prerequisite: IT273

IT283M3: IPv6 Neighbor Discovery, Addressing, and Name Resolution

Analyze IPv6 Neighbor Discovery, and addressing and name resolution on IP networks.

Quarter Credit Hours: 1 | Prerequisite: IT273

IT283M4: TCP/IP Transport Layer Protocols

Examine TCP/IP Transport Layer Protocols.

Quarter Credit Hours: 1 | Prerequisite: IT273

IT283M5: IPv4 and IPv6 Comparison

Differentiate between IPv4 and IPv6 regarding deployment, benefits, and IP security.

Quarter Credit Hours: 1 | Prerequisite: IT273

IT286: Network Security Concepts

This course introduces you to the essential knowledge required to secure today's networks. You will learn to identify threats and vulnerabilities and to apply effective strategies to prevent data breaches. The course discusses topics such as risk assessment; compliance and operational security; access control and authorization management; intrusion detection; application hardening; malicious attacks; and cryptography. It outlines a security professional's responsibilities and discusses the skills needed to protect an organization's data and network infrastructure.

Quarter Credit Hours: 5 | Prerequisite: None

IT286M1: Risk Assessment and Network Monitoring

Examine the process of risk assessment and network monitoring.

Quarter Credit Hours: 1 | Prerequisite: None

IT286M2: Device and Infrastructure Security

Investigate device and infrastructure security, access control, authentication, and authorization.

Quarter Credit Hours: 1 | Prerequisite: None

IT286M3: Protections Measures

Explain the protection of wireless networks and cloud services, and the hardening of hosts and applications.

Quarter Credit Hours: 1 | Prerequisite: None

IT286M4: Cryptography

Examine cryptography methods, vulnerabilities, threats, and malicious attacks.

Quarter Credit Hours: 1 | Prerequisite: None

IT286M5: Security Awareness and Enforcement

Explore social engineering, security administration, disaster recovery, and incident response.

Quarter Credit Hours: 1 | Prerequisite: None

IT288: Security+ Certification Prep

This course focuses exclusively on CompTIA's Security+ Certification exam. Currently the SYO 401 exam consists of six domains. Time will be spent on each of the following: network security, compliance and operational security, threats and vulnerabilities, application data and host security, access control and identity management, and cryptography. This course is designed, among other things, to provide you with the foundational knowledge necessary to continue the pursuit of the Security+ certification. While the course may provide you with the knowledge necessary to sit for the examination, the University cannot guarantee your eligibility either to take this exam or become certified.

Quarter Credit Hours: 5 | Prerequisite: IT286 or permission of the Department Chair

IT296: Associate's-Level Information Technology Internship

This course gives associate's-level students practical job experience in the information technology field. The externship provides you an opportunity to learn about the IT career field through practical, real-world experiences and mentoring from an IT professional. This experience will enrich your technology skills and provide a better understanding of the level of expertise needed to be successful in your career.

Quarter Credit Hours: 5 | Prerequisite: Completion of all core courses; minimum GPA of 2.0

IT299: Associate's Capstone in Information Technology

This course is designed to build on the concepts of all information technology courses you have taken as a part of your degree plan. The capstone course integrates problem-solving techniques and implementation solutions studied in the information technology courses. You will research particular problems or issues you select, analyze the major concerns, and recommend viable information technology solutions to resolve or improve the problems or issues.

Quarter Credit Hours: 5 | Prerequisite: Last term or permission from the Dean

IT301: Project Management I

This course introduces you to the principles of project management. You will gain knowledge of the project management skills and processes needed to select, initiate, and plan a project. You will explore the project management knowledge areas. Topics include creating the project charter, developing project scope statements, creating the project schedule and budget, and risk planning.

Quarter Credit Hours: 6 | Prerequisite: None

IT301M1: Project Management Framework

Analyze the Project Management Framework to identify relationships between process groups and knowledge management areas.

Quarter Credit Hours: 1 | Prerequisite: None

IT301M2: Triple Constraints Management

Create project artifacts to effectively establish project management triple constraints.

Quarter Credit Hours: 1 | Prerequisite: None

IT301M3: Project Risk and Resource Management

Create project artifacts to plan and manage project risk and resources.

Quarter Credit Hours: 1 | Prerequisite: None

IT301M4: Project Execution Management

Create project artifacts to effectively manage and control project execution.

Quarter Credit Hours: 1 | Prerequisite: None

IT301M5: Project Management Ethics and Integrity

Explain why ethics and integrity are important to the field of IT.

Quarter Credit Hours: 1 | Prerequisite: None

IT301M6: Project Management Global Interconnectedness

Practice global interconnectedness as it applies to your field of study.

Quarter Credit Hours: 1 | Prerequisite: None

IT302: Human Computer Interaction

This course introduces you to the field of human computer interaction (HCI). You will survey HCI history and theory, and examine standard principles that are necessary to produce effective interface designs for the consumer. You will also learn about development methodologies, evaluation techniques, task analysis, and prototyping. Activities include observation and analysis of various types of interfaces, plus the use of professional tools to create a new interface design.

Quarter Credit Hours: 6 | Prerequisite: 200-level or above IT course; upper-level students only

IT302M1: HCI Theories and Principles

Examine human-computer interaction theories and principles.

Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT302M2: HCI Principles and the Discovery Process

Evaluate human-computer interaction principles and the discovery process.

Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT302M3: Text and Typography in Design

Relate the value of screen components, color theories, and typography in human-computer interaction.

Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT302M4: Auditory Components

Assess auditory components, accessibility, and redundancy concepts for human-computer interaction.

Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT302M5: Haptics

Assess the future of haptics in interface design.

Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT302M6: Interface Design

Design a user interface with appropriate professional tools.

Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT303: Virtualization and Cloud Security

This computer virtualization course will include hands-on practice and is designed for individuals who have an understanding of operating systems and programming concepts. You will study several methods of applying virtualization locally and in a hosted environment. You will create a workable software program within a virtual server and in a cloud service solution. You will work in several cloud-based environments and learn how to protect their systems from outside and inside security threats.

Quarter Credit Hours: 6 | Prerequisite: IT213, IT222, and IT234

IT303M1: Virtual Operating System Concepts

Describe a virtual operating system and how it works.

Quarter Credit Hours: 1 | Prerequisite: IT213, IT222, and IT234

IT303M2: Implementing Virtual Machines and Applications

Implement virtual machines and applications within organizations.

Quarter Credit Hours: 1 | Prerequisite: IT213, IT222, and IT234

IT303M3: Virtualization Technologies

Analyze several types of virtualization technologies.
Quarter Credit Hours: 1 | Prerequisite: IT213, IT222, and IT234

IT303M4: Cloud-Based Solutions

Analyze several types of cloud-based solutions.
Quarter Credit Hours: 1 | Prerequisite: IT213, IT222, and IT234

IT303M5: Cloud Solution Cost Structures

Investigate the cost structure of cloud solutions as compared to on-premise systems.
Quarter Credit Hours: 1 | Prerequisite: IT213, IT222, and IT234

IT303M6: Addressing Cloud-Based Security Threats

Integrate solutions and strategies for cloud-based security threats.
Quarter Credit Hours: 1 | Prerequisite: IT213, IT222, and IT234

IT304: ☁ Application Development and Scripting in the Cloud

You will learn about the advantages of developing and deploying in cloud environments and compare the most popular cloud development platforms. You will become familiar with administrative and basic application programming in cloud environments using popular scripting languages and create your own scripts. You will evaluate software development lifecycle paradigms and select what best to use in a cloud environment.
Quarter Credit Hours: 6 | Prerequisite: IT213 and IT234; IT303 recommended

IT304M1: Cloud Architecture for Software Development

Investigate cloud architecture for software development.
Quarter Credit Hours: 1 | Prerequisite: IT213 and IT234; IT303 recommended

IT304M2: Scripting Languages Concepts

Investigate scripting languages.
Quarter Credit Hours: 1 | Prerequisite: IT213 and IT234; IT303 recommended

IT304M3: Implementing Scripting Languages in the Cloud

Explain how to use scripting languages for cloud solutions.
Quarter Credit Hours: 1 | Prerequisite: IT213 and IT234; IT303 recommended

IT304M4: Programming Practices

Apply programming practices using scripting languages.
Quarter Credit Hours: 1 | Prerequisite: IT213 and IT234; IT303 recommended

IT304M5: Comparing Scripting Languages

Synthesize information when comparing popular scripting languages.
Quarter Credit Hours: 1 | Prerequisite: IT213 and IT234; IT303 recommended

IT304M6: Cloud-Based Software Development

Recommend a software development life cycle for cloud-based software development.
Quarter Credit Hours: 1 | Prerequisite: IT213 and IT234; IT303 recommended

IT306: ☁ Cloud Services Management

You will explore standards, frameworks, laws, and regulations around cloud services. You will develop processes and procedures for use-case scenarios.
Quarter Credit Hours: 6 | Prerequisite: IT303

IT306M1: Regulating the Cloud Environment

Explore specific laws, regulations, and standards that apply to cloud-based environments.
Quarter Credit Hours: 1 | Prerequisite: IT303

IT306M2: Governance Considerations for Cloud Migration

Explain governance considerations to ensure successful on-premise to cloud migration.
Quarter Credit Hours: 1 | Prerequisite: IT303

IT306M3: Cloud Architecture for Systems

Analyze cloud architecture as it relates to systems for the cloud.
Quarter Credit Hours: 1 | Prerequisite: IT303

IT306M4: Service-Level Agreements

Analyze service-level agreements for cloud providers.
Quarter Credit Hours: 1 | Prerequisite: IT303

IT306M5: Functionality and Security Requirements for Cloud Environments

Synthesize functionality and security requirements for cloud environments that balance performance and security needs.
Quarter Credit Hours: 1 | Prerequisite: IT303

IT306M6: Designing Cloud Services

Recommend effective approaches for planning, designing, and implementing a successful cloud service for various business scenarios.
Quarter Credit Hours: 1 | Prerequisite: IT303

IT316: ☁ Computer Forensics

This course explores the pervasive nature of illegal and unauthorized activity occurring in cyberspace: computer crime. You will learn about the many types of computer crime and the structured procedures deployed in its investigation. This will include a systematic investigative approach of both corporate and criminal-related offenses. You will learn data-retrieval principles including onsite data collection, laboratory data retrieval, and live network data retrieval. You will learn how current computer forensics tools are used for data acquisitions to data analysis. This course will also discuss how computer crimes present unique vulnerabilities to computer systems due to the global nature of the Internet.
Quarter Credit Hours: 6 | Prerequisite: None

IT316M1: Computers and Criminal Behavior

Examine the relationship of computers and criminal behavior.
Quarter Credit Hours: 1 | Prerequisite: None

IT316M2: Computer Forensics as a Profession

Describe the field of computer forensics and investigations as a profession.
Quarter Credit Hours: 1 | Prerequisite: None

IT316M3: Computer Forensics Processes

Analyze the processes involved in computer forensics.
Quarter Credit Hours: 1 | Prerequisite: None

IT316M4: Data Acquisition Methods

Examine various data acquisition methods.
Quarter Credit Hours: 1 | Prerequisite: None

IT316M5: Computer Forensics Tools

Compare current computer forensic tools.
Quarter Credit Hours: 1 | Prerequisite: None

IT316M6: Data Analysis and Validation Techniques

Recommend techniques of data analysis and validation for high-tech investigations.
Quarter Credit Hours: 1 | Prerequisite: None

IT331: 🌐 Technology Infrastructure

This course explores the concepts and purpose of information technology infrastructure. Emphasis is placed on expanding your knowledge of computer networks and data transmissions and applying those concepts to an organization's technology requirements.
Quarter Credit Hours: 6 | Prerequisite: 200-level or above IT course; upper-level students only

IT331M1: Networking Skills for Project Success

Describe how networking skills can improve project success.
Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT331M2: Key Infrastructure Components

Analyze the functions of key components in information technology Infrastructure.
Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT331M3: IT Infrastructure Planning

Plan an effective IT infrastructure based on the needs of an organization.
Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT331M4: Wide Area Network Technologies

Evaluate Wide Area Network (WAN) technologies.
Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT331M5: Global Interconnectedness in Technology Infrastructure

Practice global interconnectedness as it applies to your field of study.
Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT331M6: Network Security Design

Formulate a network security design.
Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT332: 🌐 Principles of Information Systems Architecture

This course introduces you to the background of information systems architecture. You will learn a holistic approach to both hardware and software architecture design from a broad systems perspective. Both a business and technical focus will be covered with concrete examples of current technologies and related managerial issues.
Quarter Credit Hours: 6 | Prerequisite: IT331

IT332M1: Binary Language

Analyze the language of computers.
Quarter Credit Hours: 1 | Prerequisite: IT331

IT332M2: The Computer as a System

Analyze the computer as a system.
Quarter Credit Hours: 1 | Prerequisite: IT331

IT332M3: System Architecture Components

Evaluate CPU, RAM, input, output, and peripheral devices as components used in system architecture.
Quarter Credit Hours: 1 | Prerequisite: IT331

IT332M4: Data Communication and Networking

Assess data communication and networking options for a computer system.
Quarter Credit Hours: 1 | Prerequisite: IT331

IT332M5: Data Storage and Protection

Recommend data storage and data protection technology for a computer system.
Quarter Credit Hours: 1 | Prerequisite: IT331

IT332M6: Computer Operating Systems

Differentiate between various computer operating systems.
Quarter Credit Hours: 1 | Prerequisite: IT331

IT333: Emerging Technologies and the Future

This course identifies specific technologies and highlights the dramatic and rapid changes happening in information and knowledge processing and distribution. The course introduces each technology and its basic functionality. You should expect to leave this course with a greater ability to assess and appreciate the impact that these changes will have. You will analyze technologies that affect the future of computing and society. Additionally, you will undertake an introductory investigation into the basic functionality of each. A listing will include, but may not be limited to, the following main areas, each of which breaks down with substantial further classification and detail: advances in cloud computing models, including fog and edge computing; Internet of Things (IOT); machine learning; artificial intelligence (AI); advances in computer architectures, including specialized Systems on Chip (SOCs); graphics processors and neural networks; data science; advanced generations of wireless cellular; blockchain technologies; automation and robotics. You will evaluate and analyze the impacts that these emerging technologies will have in relation to areas, such as world and local economies, privacy and security, work and employment, education and learning, business and entrepreneurship, war and the military, climate and health, government and politics, and the future of society.
Quarter Credit Hours: 3 | Prerequisite: None

IT350: 🌐 Advanced Database Concepts

This course incorporates advanced concepts of the database language Transact-SQL (T-SQL) for creating efficient database implementations. You will use the T-SQL programming language and connect to an MS SQL Server database for displaying organized information to users. You will explore the various fundamental features of the T-SQL language such as DataTypes, Sets, and Builtin functions. You will explore the programmability of SQL by creating stored procedures; learn how to format a result set by sorting, filtering, and grouping; apply advanced SQL query techniques such as subqueries and common table expressions; use Report Builder to generate analytical reports from your data; and examine the use of non-SQL relational databases.
Quarter Credit Hours: 6 | Prerequisite: IT234

IT350M1: SQL Programming Concepts

Apply fundamental SQL programming concepts.
Quarter Credit Hours: 1 | Prerequisite: IT234

IT350M2: Designing Stored Procedures

Design simple stored procedures to meet business needs.
Quarter Credit Hours: 1 | Prerequisite: IT234

IT350M3: Creating Aggregated Business Report Datasets

Create aggregated business report datasets to format output and filter data.
Quarter Credit Hours: 1 | Prerequisite: IT234

IT350M4: Using Subqueries and Common Table Expressions

Explore techniques to ensure the database is secure.
Quarter Credit Hours: 1 | Prerequisite: IT234

IT350M5: Using Report Builder

Use a report builder to display and analyze information generated in an MS SQL server database.

Quarter Credit Hours: 1 | Prerequisite: IT234

IT350M6: Nonrelational Database Alternatives

Explore nonrelational database alternatives.

Quarter Credit Hours: 1 | Prerequisite: IT234

IT358: Intermediate Oracle Query Design

This course covers intermediate to advanced concepts of database query design and reporting tools using Oracle. You will practice Oracle SQL functions and PL/SQL programming, including triggers and stored procedures, to execute queries and functions.

Quarter Credit Hours: 6 | Prerequisite: IT234 or IT350

IT374: Linux Security

This course introduces Kali Linux as a penetration testing and security auditing platform with advanced tools to identify, detect, and exploit any vulnerabilities uncovered in the target network environment. You will explore several security assessment tools necessary to conduct penetration testing in their respective categories, such as target scoping, information gathering, discovery, enumeration, and vulnerability. You will develop practical penetration testing skills by demonstrating hacker tools and techniques that reflect real-world attack scenarios from a business perspective in today's digital age.

Quarter Credit Hours: 6 | Prerequisite: IT275

IT374M1: Linux Installation and Configuration

Configure a Linux installation.

Quarter Credit Hours: 1 | Prerequisite: IT275

IT374M2: Information Gathering Process

Illustrate the information gathering process for a target environment.

Quarter Credit Hours: 1 | Prerequisite: IT275

IT374M3: Vulnerability Assessment Process

Illustrate the vulnerability assessment process.

Quarter Credit Hours: 1 | Prerequisite: IT275

IT374M4: Target Discovery Process

Analyze network and web exploitation.

Quarter Credit Hours: 1 | Prerequisite: IT275

IT374M5: Target Enumeration Process

Analyze privilege escalation and system exploitation.

Quarter Credit Hours: 1 | Prerequisite: IT275

IT374M6: Security Vulnerabilities

Analyze wireless exploitation.

Quarter Credit Hours: 1 | Prerequisite: IT275

IT375: Windows Enterprise Administration

This advanced course in Microsoft Windows enterprise administration prepares you to install, configure, and manage key network services and Active Directory. You will perform administrative tasks such as network service installation and configuration; Active Directory installation; Group Policy design and configuration; and network and Active Directory security configuration. You will learn the theory behind Active Directory design and operation; and complete hands-on labs and projects that develop the skills needed for real-world settings.

Quarter Credit Hours: 6 | Prerequisite: IT278

IT375M1: Windows Server Installation

Install a current version of the Windows operating system into a virtual machine or hardware chassis.

Quarter Credit Hours: 1 | Prerequisite: IT278

IT375M2: Windows Server Advanced Configuration

Configure a current version of the Windows operating system including administration tools.

Quarter Credit Hours: 1 | Prerequisite: IT278

IT375M3: Windows Server Active Directory Configuration

Configure Active Directory and policy functions in a new domain on a current version of the Windows operating system.

Quarter Credit Hours: 1 | Prerequisite: IT278

IT375M4: Network Services and Components

Configure network services and components.

Quarter Credit Hours: 1 | Prerequisite: IT278

IT375M5: Network Policy

Implement network policy and monitoring to specific situations.

Quarter Credit Hours: 1 | Prerequisite: IT278

IT375M6: Security Functions

Apply security functions in a current version of the Windows operating system.

Quarter Credit Hours: 1 | Prerequisite: IT278

IT388: Routing and Switching I

This course is the first of two routing and switching courses that prepare you to design, configure, and maintain network routing and switching.

You learn the basic concepts, protocols, and functions of network routers and switches. Emphasis is placed on hands-on practice of configuration and troubleshooting using live and simulated labs.

Quarter Credit Hours: 6 | Prerequisite: IT283

IT388M1: Network Routing and Switching Concepts

Explain network routing and switching concepts.

Quarter Credit Hours: 1 | Prerequisite: IT283

IT388M2: IP Addressing Concepts

Estimate an IP addressing scheme based on business needs.

Quarter Credit Hours: 1 | Prerequisite: IT283

IT388M3: Router and Switching Configurations

Apply router and switching configurations to meet business needs.

Quarter Credit Hours: 1 | Prerequisite: IT283

IT388M4: Network Routing Protocols

Investigate network routing protocols to meet business requirements.

Quarter Credit Hours: 1 | Prerequisite: IT283

IT388M5: VLAN Design

Design VLANs based on specific situations.

Quarter Credit Hours: 1 | Prerequisite: IT283

IT388M6: Routing and Switching Proposals

Prepare routing and switching proposals for management approval.

Quarter Credit Hours: 1 | Prerequisite: IT283

IT390: Intrusion Detection and Incident Response

This course provides an introduction to intrusion detection systems available to protect networks from cybercriminals. You will explore various security concepts and the basics of security attacks. You will install and configure various intrusion detection system tools. Topics include principles and classifications of intrusion detection systems, incident response process, and response types. Additionally, the course presents insight into intrusion detection and forensics and incident response strategies required to protect critical assets.

Quarter Credit Hours: 6 | Prerequisite: IT286

IT390M1: Principles and Concepts

Discuss intrusion detection and incident response principles and concepts.

Quarter Credit Hours: 1 | Prerequisite: IT286

IT390M2: Comparing Intrusion Detection Systems

Compare intrusion detection systems.

Quarter Credit Hours: 1 | Prerequisite: IT286

IT390M3: Responding to Threats

Analyze the security threat spectrum.

Quarter Credit Hours: 1 | Prerequisite: IT286

IT390M4: Installing and Examining Intrusion Detection Systems

Demonstrate the ability to install and examine intrusion detection system tools.

Quarter Credit Hours: 1 | Prerequisite: IT286

IT390M5: Security Analytics

Interpret various security analytic measures.

Quarter Credit Hours: 1 | Prerequisite: IT286

IT390M6: Incident Response Strategies

Differentiate incident response strategies.

Quarter Credit Hours: 1 | Prerequisite: IT286

IT391: 🌐 Advanced Software Development Including Web and Mobility

This course focuses on advanced design and programming concepts and techniques offering you a choice of implementation and demonstrating how advanced concepts apply across a variety of languages. You will develop advanced software, web, and mobile applications, while applying concepts related to data structures, algorithms, web services, graphics, mobile, and multimedia. You also learn how to create interactive applications across a variety of platforms (traditional applications, websites, and mobile applications).

Quarter Credit Hours: 6 | Prerequisite: IT232, IT234, and IT302

IT391M1: Programming Data Structures

Apply the common linear structures of lists, stacks, and queues.

Quarter Credit Hours: 1 | Prerequisite: IT232, IT234, and IT302

IT391M2: Recursion, Sorting, and Searching

Develop procedures to solve data structures and algorithm problems.

Quarter Credit Hours: 1 | Prerequisite: IT232, IT234, and IT302

IT391M3: User Interface Development and Data Validation

Analyze best practices for interactive user interface design.

Quarter Credit Hours: 1 | Prerequisite: IT232, IT234, and IT302

IT391M4: Multitier Architecture and XML

Analyze the client/server relationship.

Quarter Credit Hours: 1 | Prerequisite: IT232, IT234, and IT302

IT391M5: Web Services Development

Evaluate web services.

Quarter Credit Hours: 1 | Prerequisite: IT232, IT234, and IT302

IT391M6: Mobility Development and Cross-Compiling

Design interactive web or mobile applications.

Quarter Credit Hours: 1 | Prerequisite: IT232, IT234, and IT302

IT395: 🌐 Certified Ethical Hacking II

This course continues concepts introduced in IT262 covering the tools and procedures needed to perform ethical hacking. More advanced penetration testing procedures are covered as well as how to incorporate the knowledge learned into a cohesive set of procedures to help organizations find potential vulnerabilities. This course is designed, among other things, to provide you with the foundational knowledge necessary to continue the pursuit of the EC-Council Certified Ethical Hacker certification. While the course may provide you with the knowledge necessary to sit for the examination, the University cannot guarantee your eligibility either to take this exam or become certified.

Quarter Credit Hours: 6 | Prerequisite: IT262

IT395M1: Social Engineering and Physical Security Attacks

Conduct social engineering and physical security attacks.

Quarter Credit Hours: 1 | Prerequisite: IT262

IT395M2: Trojans, Malware, and Cryptology Attacks

Illustrate Trojans, malware, and cryptology attacks.

Quarter Credit Hours: 1 | Prerequisite: IT262

IT395M3: Web Server and Web Application Attacks

Devise web server and web application attacks.

Quarter Credit Hours: 1 | Prerequisite: IT262

IT395M4: Wireless Network Attacks

Prepare wireless network attacks.

Quarter Credit Hours: 1 | Prerequisite: IT262

IT395M5: Cyberthreat Mitigation Procedures

Formulate organizational cyberthreat mitigation procedures.

Quarter Credit Hours: 1 | Prerequisite: IT262

IT395M6: Ethical Hacking Plans

Develop an ethical hacking plan to test an organization's cybersecurity posture.

Quarter Credit Hours: 1 | Prerequisite: IT262

IT400: 🌐 Ethics in Cybersecurity

New innovations within information technology continue to evolve around the world, creating ethical challenges and concerns for information technology professionals. This course will examine ethical and legal concerns with the use of information technology. Ethical issues will be examined as they relate to common information systems. Additional topics including privacy, regulations, as well as societal and cultural influences on decision making will be examined.

Quarter Credit Hours: 6 | Prerequisite: None

IT400M1: Ethical Issues in Information Technology

Explore the relevance of ethical issues that involve the use of information technology.

Quarter Credit Hours: 1 | Prerequisite: None

IT400M2: Ethical and Legal Topics in Information Technology

Evaluate a broad array of topics including privacy, free speech, information security, and law.

Quarter Credit Hours: 1 | Prerequisite: None

IT400M3: Critical Thinking Methods Related to Cybersecurity Ethics

Develop critical thinking methods addressing cybersecurity ethics.

Quarter Credit Hours: 1 | Prerequisite: None

IT400M4: Privacy and Confidentiality in Information Technology

Explain ethical concerns relating to privacy and confidentiality involving information technology.

Quarter Credit Hours: 1 | Prerequisite: None

IT400M5: Ethical Issues Related to the Use of Information Technology

Examine relevant ethical issues that proliferate the use of information technology.

Quarter Credit Hours: 1 | Prerequisite: None

IT400M6: Ethical Behavior and Laws in the Use of Information Technology

Discuss laws and regulations involving ethical behavior of individuals and organizations using information technology.

Quarter Credit Hours: 1 | Prerequisite: None

IT401: Project Management II

This course is the second of two project management courses and explores more advanced topics. You will gain knowledge of the project management skills and processes needed to execute, control, and close a project. Topics include planning project resources, developing the project team, conducting procurements, measuring project performance, controlling work results, and applying professional responsibility.

Quarter Credit Hours: 6 | Prerequisite: IT301

IT402: IT Consulting Skills

This course will introduce you to the theory and practice of IT consulting. You examine the processes and techniques associated with the consulting field. Business aptitude skills will be taught including communication, ethics, presentation, and leadership skills. Additionally, project definition and analysis, project planning, gathering user and project requirements, executing projects, time management, and the history of consulting will be examined. Through case studies, you prepare a project proposal and a persuasive presentation for an organization.

Quarter Credit Hours: 6 | Prerequisite: 200-level or above IT course; upper-level students only

IT402M1: Consulting and Ethics

Justify ethical decisions with IT consulting.

Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT402M2: Time and Resource Management

Generate time management and analysis representations.

Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT402M3: Interpersonal Skills

Develop skills for negotiation, decision-making, and other people-related processes with IT consulting.

Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT402M4: Consulting History and Global Views

Appraise historical and international facets of IT consulting.

Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT402M5: The Consulting Project Proposal

Create a project proposal with a unique vision.

Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT402M6: Persuasive Presentations

Generate persuasive materials for IT consulting.

Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT403: Advanced Cloud Security

You will investigate cloud security to include vetting cloud providers.

The course content helps you examine information assurance, risk management, and governance of cloud security.

Quarter Credit Hours: 6 | Prerequisite: None

IT403M1: Cloud Architecture Security

Explore security as it relates to cloud architecture.

Quarter Credit Hours: 1 | Prerequisite: None

IT403M2: Provider Regulations and Standards

Explore regulations and standards available from various cloud providers.

Quarter Credit Hours: 1 | Prerequisite: None

IT403M3: Cloud-Based Risk Assessment Concepts

Explain risk assessment in a cloud environment.

Quarter Credit Hours: 1 | Prerequisite: None

IT403M4: Risk Assessment Practices

Explore attack vectors in a cloud environment.

Quarter Credit Hours: 1 | Prerequisite: None

IT403M5: Security Factors for Cloud Migrations

Synthesize the security factors to consider during migration of systems, applications, data, and databases to a cloud environment.

Quarter Credit Hours: 1 | Prerequisite: None

IT403M6: Recommended Cloud Solutions and Security

Recommend appropriate cloud solutions and cloud security for various business scenarios.

Quarter Credit Hours: 1 | Prerequisite: None

IT404: Security Testing for Cloud Applications

You will identify applications and instances to test and select the appropriate tools to perform security testing. You will execute the tests and communicate the results to stakeholders.

Quarter Credit Hours: 6 | Prerequisite: IT304 and IT403

IT404M1: Software Development Testing Techniques

Investigate software development testing techniques.

Quarter Credit Hours: 1 | Prerequisite: IT304 and IT403

IT404M2: Security Testing Techniques

Investigate security testing techniques for cloud-based systems.

Quarter Credit Hours: 1 | Prerequisite: IT304 and IT403

IT404M3: Testing Procedures for Cloud-Based Applications

Explain the differences in testing cloud-based applications as compared to traditional software applications.

Quarter Credit Hours: 1 | Prerequisite: IT304 and IT403

IT404M4: Security Testing for Cloud Applications

Perform security testing on cloud applications.

Quarter Credit Hours: 1 | Prerequisite: IT304 and IT403

IT404M5: Security Testing Strategy Alignment

Synthesize security testing strategies based on project requirements.

Quarter Credit Hours: 1 | Prerequisite: IT304 and IT403

IT404M6: Security Testing Strategies

Recommend a strategy for security testing of a cloud-based application.

Quarter Credit Hours: 1 | Prerequisite: IT304 and IT403

IT410: 🌐 Certified Information Systems Security Professional III

This course primarily addresses two domains in the Certified Information Systems Security Professional CBK (Common Body of Knowledge). The two domains are (1) security assessment and testing and (2) security operations. The security assessment and testing domain explores vulnerability assessments and secure software testing strategies. The domain of security operations details how to manage change and respond to incidents. There will also be a discussion of two important topics that were not examined in Domain 1 of the CISSP I course. These topics are professional ethics and legal and regulatory issues. This course is designed, among other things, to provide you with the foundational knowledge necessary to pursue CISSP certification. While the course may provide you with the knowledge necessary to sit for the examination, the University cannot guarantee your eligibility either to take this exam or become certified.

Quarter Credit Hours: 6 | Prerequisite: IT279

IT410M1: Assessment and Test Strategies

Discriminate assessment and test strategies.

Quarter Credit Hours: 1 | Prerequisite: IT279

IT410M2: Security Control Testing

Analyze security control testing.

Quarter Credit Hours: 1 | Prerequisite: IT279

IT410M3: Security Operations Concepts

Examine foundational security operations concepts.

Quarter Credit Hours: 1 | Prerequisite: IT279

IT410M4: Incident Prevention and Response Strategies

Determine incident prevention and response strategies.

Quarter Credit Hours: 1 | Prerequisite: IT279

IT410M5: Disaster Recovery Planning and Physical Security

Generalize key issues related to disaster recovery planning and physical security.

Quarter Credit Hours: 1 | Prerequisite: IT279

IT410M6: Legal Issues and Professional Ethics in Information Security

Distinguish legal issues and professional ethics in information security.

Quarter Credit Hours: 1 | Prerequisite: IT279

IT411: 🌐 Digital Forensics

In this course, students learn about computer forensics and techniques used to perform computer forensics examinations. Students learn how to gather and protect evidence used in prosecuting computer crimes. Topics in this course include acquiring digital evidence, bookmarking data, file signature analysis, hash analysis, and other forensic techniques. This course is designed, among other things, to provide the student with the requisite knowledge to sit for the EnCase Certified Examiner (EnCE) exam. While the course may provide the student with the knowledge necessary to sit for the examination, the University cannot guarantee the student's eligibility either to take this exam or become certified.

Quarter Credit Hours: 6 | Prerequisite: IT286

IT411M1: Digital Forensic Concepts and Techniques

Examine digital forensic concepts and techniques.

Quarter Credit Hours: 1 | Prerequisite: IT286

IT411M2: Securing Digital Evidence

Plan appropriate methods to secure digital evidence.

Quarter Credit Hours: 1 | Prerequisite: IT286

IT411M3: Examining Forensic Data

Apply various types of forensic analysis tools for data recovery to forensic scenarios.

Quarter Credit Hours: 1 | Prerequisite: IT286

IT411M4: Audits and Investigations

Prepare audits and investigations of electronic computing devices.

Quarter Credit Hours: 1 | Prerequisite: IT286

IT411M5: Analyzing System Files and Artifacts

Analyze forensic data from computers to investigate security breaches.

Quarter Credit Hours: 1 | Prerequisite: IT286

IT411M6: Current Practices and Trends

Investigate current practices and trends in digital and network forensics.

Quarter Credit Hours: 1 | Prerequisite: IT286

IT412: 🌐 Information Systems Security

Businesses must be able to protect their networks and infrastructures from security attacks. In this course, you learn to investigate system vulnerabilities and implement security solutions. Topics in this course include access control, application security, business continuity and disaster recovery planning, cryptography, information security and risk management, compliance and investigations, operations security, physical security, security architecture and design, telecommunications, and network security. This course is designed, among other things, to provide you with the requisite knowledge to sit for the Certified Information Systems Security Professional exam. While the course may provide the knowledge necessary to sit for the examination, the University cannot guarantee your eligibility either to take this exam or become certified.

Quarter Credit Hours: 6 | Prerequisite: IT286

IT412M1: Information Security Concepts

Examine information security concepts.

Quarter Credit Hours: 1 | Prerequisite: IT286

IT412M2: System Vulnerability and Threats

Analyze system vulnerabilities and threats.

Quarter Credit Hours: 1 | Prerequisite: IT286

IT412M3: Cryptography Techniques

Choose data encryption techniques and confidentiality best practices.

Quarter Credit Hours: 1 | Prerequisite: IT286

IT412M4: Operational Security and Incident Planning

Employ solutions that provide protection against system attacks.

Quarter Credit Hours: 1 | Prerequisite: IT286

IT412M5: Disaster Recovery Planning

Develop information backup and data persistence procedures.

Quarter Credit Hours: 1 | Prerequisite: IT286

IT412M6: Network Security Policies and Procedures

Design network security policies and procedures.

Quarter Credit Hours: 1 | Prerequisite: IT286

IT413: 🌐 Migrating Data and Applications to the Cloud

You will analyze various scenarios regarding data/database and application migrations to a cloud environment. Lab environments provide hands-on experience related to migration scenarios.

Quarter Credit Hours: 6 | Prerequisite: None

IT413M1: Application and Data Migration in the Cloud

Explore cloud architecture as it relates to application and data migration.

Quarter Credit Hours: 1 | Prerequisite: None

IT413M2: Application and Data Migration Strategies

Explore data and application migration strategies and practices for on-premise systems to the cloud.

Quarter Credit Hours: 1 | Prerequisite: None

IT413M3: Cloud Migration Concepts

Apply migration strategies for moving data to the cloud.
Quarter Credit Hours: 1 | Prerequisite: None

IT413M4: Migration Procedures

Explain the procedure and processes for migrating data and applications to the cloud.
Quarter Credit Hours: 1 | Prerequisite: None

IT413M5: Business Requirements for Migrations

Synthesize business requirements as they relate to migrating a system(s) to the cloud.
Quarter Credit Hours: 1 | Prerequisite: None

IT413M6: Recommended Cloud Migration Strategies

Recommend a migration strategy for a cloud-based system(s).
Quarter Credit Hours: 1 | Prerequisite: None

IT414: 🌐 Software Development Operations in Cloud Environments

You will examine the software development life cycle (SDLC) and development operations in a cloud. This includes the ability to implement and manage continuous delivery systems and methodologies.
Quarter Credit Hours: 6 | Prerequisite: None

IT414M1: Cloud Architecture and Software Development

Review cloud architecture as it relates to software development.
Quarter Credit Hours: 1 | Prerequisite: None

IT414M2: Development Operations

Explore development operations for software development.
Quarter Credit Hours: 1 | Prerequisite: None

IT414M3: Continuous Delivery Concepts

Analyze continuous delivery as it relates to software development in the cloud.
Quarter Credit Hours: 1 | Prerequisite: None

IT414M4: Managing Software Development in the Cloud

Explain the differences and similarities when managing cloud-based software development products and/or services compared to on-premise software development products and/or services.
Quarter Credit Hours: 1 | Prerequisite: None

IT414M5: Software Development Operations

Synthesize software development operations based on different types of cloud products and/or services.
Quarter Credit Hours: 1 | Prerequisite: None

IT414M6: Business Practices for Cloud-Based Software Development

Recommend business practices for cloud-based software development operations.
Quarter Credit Hours: 1 | Prerequisite: None

IT441: Directed Studies, School of Information Technology

In this course, students in the School of Information Technology will engage in an independent, directed-study project focused on a student-submitted topic of inquiry. The student will select a topic of inquiry that is of interest and relevant to his or her professional goals.
Quarter Credit Hours: 1 | Prerequisite: CM220; upper-level students only

IT442: Directed Studies, School of Information Technology

In this course, students in the School of Information Technology will engage in an independent, directed-study project focused on a student-submitted topic of inquiry. The student will select a topic of inquiry that is of interest and relevant to his or her professional goals.
Quarter Credit Hours: 2 | Prerequisite: CM220; upper-level students only

IT443: Directed Studies, School of Information Technology

In this course, students in the School of Information Technology will engage in an independent, directed-study project focused on a student-submitted topic of inquiry. The student will select a topic of inquiry that is of interest and relevant to his or her professional goals.
Quarter Credit Hours: 3 | Prerequisite: CM220; upper-level students only

IT444: Directed Studies, School of Information Technology

In this course, students in the School of Information Technology will engage in an independent, directed-study project focused on a student-submitted topic of inquiry. The student will select a topic of inquiry that is of interest and relevant to his or her professional goals.
Quarter Credit Hours: 4 | Prerequisite: CM220; upper-level students only

IT445: Directed Studies, School of Information Technology

In this course, students in the School of Information Technology will engage in an independent, directed-study project focused on a student-submitted topic of inquiry. The student will select a topic of inquiry that is of interest and relevant to his or her professional goals.
Quarter Credit Hours: 5 | Prerequisite: CM220; upper-level students only

IT446: Directed Studies, School of Information Technology

In this course, students in the School of Information Technology will engage in an independent, directed-study project focused on a student-submitted topic of inquiry. The student will select a topic of inquiry that is of interest and relevant to his or her professional goals.
Quarter Credit Hours: 6 | Prerequisite: CM220; upper-level students only

IT458: Oracle Database Administration

This course covers database administration using Oracle tools. You will focus on the following: installing database management software and utilities, controlling access to data and resources, troubleshooting an Oracle database, the backup and recovery of Oracle databases, and resolving common performance problems using Oracle.
Quarter Credit Hours: 6 | Prerequisite: IT358

IT460: 🌐 Systems Analysis and Design

This course provides an overview of the system development life cycle (SDLC), including the modification and design process. You will learn to choose a system development methodology and evaluate the impact on the organization's strategic plan. It emphasizes the factors for effective communication with users and team members and all those associated with development and maintenance of the system.
Quarter Credit Hours: 6 | Prerequisite: 200-level or above IT course; upper-level students only

IT460M1: Information Systems Concepts

Compare various types of information systems.
Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT460M2: Developing Logical Systems Models

Develop logical models for a proposed system.
Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT460M3: Object Modeling

Apply object-oriented modeling tools and techniques in designing information systems.
Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT460M4: Development Strategies

Implement the systems development life cycle (SDLC) framework for project exploration.
Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT460M5: Systems Architecture

Integrate models and diagrams.

Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT460M6: Systems Implementation

Design systems implementation.

Quarter Credit Hours: 1 | Prerequisite: 200-level or above IT course; upper-level students only

IT471: 🌐 Routing and Switching II

This course is the second of two routing and switching courses and explores more advanced topics. You will design, configure, reconfigure, and maintain network routing and switching devices. You will also learn advanced concepts in protocols, resource access, and disaster recovery. Emphasis is placed on planning, proposing, and securing network infrastructure.

Quarter Credit Hours: 6 | Prerequisite: IT388

IT471M1: IP Addressing Schemes

Prepare an IP scheme for a small network to submit for management approval.

Quarter Credit Hours: 1 | Prerequisite: IT388

IT471M2: Routing and Switching Configuration

Configure routing and switching devices per plans and specifications.

Quarter Credit Hours: 1 | Prerequisite: IT388

IT471M3: Advanced Routing and Switching Concepts

Explore advanced network routing and switching concepts.

Quarter Credit Hours: 1 | Prerequisite: IT388

IT471M4: Network Design

Prepare network designs based on specific criteria.

Quarter Credit Hours: 1 | Prerequisite: IT388

IT471M5: Disaster Recovery with WANs

Prepare a disaster recovery plan for a routed infrastructure.

Quarter Credit Hours: 1 | Prerequisite: IT388

IT471M6: Network Health

Prepare routing and switching proposals for management approval.

Quarter Credit Hours: 1 | Prerequisite: IT388

IT473: Bachelor's Capstone in Cloud Computing and Solutions

The Bachelor's Capstone in Cloud Computing and Solutions builds on the concepts of all information technology and cloud computing courses you have taken as a part of your degree plan. The capstone project integrates problem-solving techniques and the development and implementation of viable, student-developed solutions to meet an identified technology or design need in a business or institutional environment. You will demonstrate mastery of cloud computing and solutions by completing a course-long project.

Quarter Credit Hours: 6 | Prerequisite: Last term or permission from the Program Chair

IT478: Web Servers and Security

This course teaches you to install and configure popular web server software. You will learn to determine user access levels, as well as server authentication and server-side programming. Various issues involving web security are discussed, including web/client security and intrusion detection and recovery.

Quarter Credit Hours: 6 | Prerequisite: IT273

IT479: Bachelor's-Level Cybersecurity Internship

This course is taken at the conclusion of the cybersecurity degree and incorporates practical job experience with the skills and knowledge gained from prior coursework. You will work with instructors and other students on real-world projects that may include security system design, forensic analysis, or recommendations for an organization's security infrastructure. This course will enable you and your team members to practice your problem-solving talents. Along with timelines and project plans, your team will consider other business constraints. As is a requirement for most information technology projects, each security project may include evaluation mechanisms, hands-on demonstrations, examples for stakeholders, and a final roll-up of future project improvements. Internships must be preapproved by the Dean prior to the start of the term. Students who fail this course on the first attempt may not reenroll in this course without the Dean's approval.

Quarter Credit Hours: 6 | Prerequisite: Last term or permission from the Dean

IT481: 🌐 Advanced Software Development

This course addresses advanced software design and development concepts, offering you a choice of implementations demonstrating how the concepts apply across a variety of languages. You will apply analysis and benchmarking, database creation and usage, data in motion and data at rest security, threading, reentrancy, and advanced testing concepts. You will also learn how to package software for distribution.

Quarter Credit Hours: 6 | Prerequisite: IT350 and IT391

IT481M1: Distributed and Collaborative Development Concepts

Describe distributed and collaborative development concepts.

Quarter Credit Hours: 1 | Prerequisite: IT350 and IT391

IT481M2: Database Schema Implementation

Implement a database schema with security and optimization.

Quarter Credit Hours: 1 | Prerequisite: IT350 and IT391

IT481M3: System Testing and Quality Assurance

Plan system testing and quality assurance activities.

Quarter Credit Hours: 1 | Prerequisite: IT350 and IT391

IT481M4: Algorithms for Analysis and Optimization

Implement algorithms that allow analysis and optimization.

Quarter Credit Hours: 1 | Prerequisite: IT350 and IT391

IT481M5: Software Development Best Practices

Integrate the best practices of software development.

Quarter Credit Hours: 1 | Prerequisite: IT350 and IT391

IT481M6: Software Distribution

Prepare software for distribution.

Quarter Credit Hours: 1 | Prerequisite: IT350 and IT391

IT484: 🌐 Cybersecurity Policies

This course teaches you how to defend organizational resources by implementing and maintaining cybersecurity policies. Cybersecurity policies are used to support defense of data availability, integrity, and confidentiality. By establishing and applying effective security policies, organizations can keep valuable data safe. Topics include applying cybersecurity policies to access controls, cybersecurity operations and administration, risk analysis, incident response, and recovery. This course also teaches you cybersecurity policies for securing publicly available resources and Web applications.

Quarter Credit Hours: 6 | Prerequisite: IT388

IT484M1: Access Controls and Security Technologies

Evaluate access controls and security technologies supported by cybersecurity policies used to protect network resources and ensure data availability.

Quarter Credit Hours: 1 | Prerequisite: IT388

IT484M2: Security Operations and Administration Procedures

Create security operations and administration procedures related to data privacy and cybersecurity policy.

Quarter Credit Hours: 1 | Prerequisite: IT388

IT484M3: Risk Management and Compliance

Evaluate risk management and compliance in regard to cybersecurity policy and industry standards.

Quarter Credit Hours: 1 | Prerequisite: IT388

IT484M4: Incident Response Planning

Create an incident response plan, integrated with cybersecurity policy, which assists with organizational recovery.

Quarter Credit Hours: 1 | Prerequisite: IT388

IT484M5: Protecting Private Information

Evaluate cryptology, network, and communications technology used to protect private information from public disclosure and supported by cybersecurity policies.

Quarter Credit Hours: 1 | Prerequisite: IT388

IT484M6: Organizational System and Application Security Procedures

Evaluate organizational system and application security procedures related to cybersecurity policies and industry standards.

Quarter Credit Hours: 1 | Prerequisite: IT388

IT488: 🌐 Software Product Development Using Agile

This project-based course concludes the multiplatform software development series of courses and allows you to apply your learning to the development of a software product in an agile team software development environment. You will explore the concepts of agile development and then implement those concepts as you work on an agile development team, designing and developing a software product using an agile software development life cycle, from concept to packaged product.

Quarter Credit Hours: 6 | Prerequisite: IT481 and IT350

IT488M1: Software Development Using Agile Development Practices

Determine agile development practices.

Quarter Credit Hours: 1 | Prerequisite: IT481 and IT350

IT488M2: Software Development Using Agile Project Development and Communication

Engage in agile project teamwork and communication.

Quarter Credit Hours: 1 | Prerequisite: IT481 and IT350

IT488M3: Continuous Integration Environment

Demonstrate software development skills in a continuous integration environment.

Quarter Credit Hours: 1 | Prerequisite: IT481 and IT350

IT488M4: Integration and System Testing

Apply integration and system testing skills in an agile environment.

Quarter Credit Hours: 1 | Prerequisite: IT481 and IT350

IT488M5: Software Application Creation

Create a software application from a concept to a finished product.

Quarter Credit Hours: 1 | Prerequisite: IT481 and IT350

IT488M6: Software Project Release Packaging

Create a distribution package of software product for release to the end-user market.

Quarter Credit Hours: 1 | Prerequisite: IT481 and IT350

IT489: Bachelor's-Level Information Technology Internship

This course gives you practical job experience in the information technology field. The internship provides you with an opportunity to learn about the IT career field through practical, real-world experiences and mentoring from an IT professional. This experience will enrich your technology skills and provide a better understanding of the level of expertise needed to be successful in your career. Internships must be preapproved by the Dean prior to the start of the term. Students who fail this course on the first attempt may not reenroll in this course without the Dean's approval.

Quarter Credit Hours: 6 | Prerequisite: Last term or permission from the Dean

IT497: Bachelor's Capstone in Cybersecurity

The Bachelor's Capstone in Cybersecurity is designed to build on the concepts of all information technology and security courses you have taken as a part of your degree plan. The capstone project integrates problem-solving techniques and the development and implementation of viable, student-developed solutions to meet an identified technology or design need in a business or institutional environment. You will be directed to work collaboratively to achieve the learning objectives for this course.

Quarter Credit Hours: 6 | Prerequisite: Last term or permission from the Program Chair

IT499: Bachelor's Capstone in Information Technology

The Bachelor's Capstone in Information Technology is designed to build on the concepts of all information technology courses you have taken as a part of your degree plan. The capstone project integrates problem-solving techniques and the development and implementation of viable, student-developed solutions to meet an identified technology or design need in a business or institutional environment.

Quarter Credit Hours: 6 | Prerequisite: Last term or permission from the Program Chair