Information Technology (IT)

IT 1200. Scripting for Administrators. (3 Credits)
Prerequisite(s): MAT 1010 or higher; INFO 1120 recommended
Introduces the fundamentals of script design and implementation with an emphasis on the automation of administrative tasks. Covers modular script design and the use of file input and output. Emphasizes interaction of a script with other scripts, utilities, and the operating system to form more complex systems. Manipulates values of variables (both numbers and strings). Introduces simple GUI interfaces.
Lab access fee of $45 applies.

IT 1510. Introduction to System Administration--Linux/UNIX. (3 Credits)
Prerequisite(s): INFO 1120 recommended
Introduces administering Linux/UNIX Operating Systems including managing of software and services, configuration of kernel modules, network parameters, storage, cloud and virtualization technologies. Explores OS/software installation, managing daemons, user creation, file management, permissions, authentication, troubleshooting, system properties and processes, automation, scripting, orchestration, and security/server best practices.
Lab access fee of $45 for computers applies.

IT 1600. Computer Architecture and Systems Software. (3 Credits)
Prerequisite(s): INFO 1120 recommended
Provides a thorough grounding in computer hardware, system software, and contemporary information system architecture. Examines hardware structure, operating systems theory, and systems software as part of a technical foundation for enterprise systems development and IT infrastructure procurement and management.
Lab access fee of $45 for computers applies.
Canvas Course Mats $153/TstOut applies.

IT 1700. Cybersecurity Essentials. (3 Credits)
For non-Information Technology and non-Information Systems majors. Introduces cybersecurity and its role in society in a nontechnical way. Explores cybersecurity topics, including protecting accounts, securing data, and avoiding phishing scams. Discusses current hacking and cybersecurity events. Identifies best practices for personal cybersecurity. Provides basic introduction to cybersecurity tools.
Lab access fee of $45 applies.

IT 2400. Voice and Data Cabling Fundamentals. (3 Credits)
Prerequisite(s): INFO 1120 or INFO 1200 or CS 1030 or CS 1400
For students interested in the physical aspects of voice and data network cabling and installation. Focuses on cabling issues related to data and voice connections and provides an understanding of the industry and its worldwide standards. Covers types of media and cabling, physical and logical networks, as well as signal transmission. Focuses on best practices and safety using copper and fiber-optic cabling. Requires students to install a complete cable infrastructure for a simulated telecommunications room. Enforces industry and worldwide standards. Requires a community project and portfolio based on voice/data cabling skills.
Lab access fee of $45 for computers applies.
Course lab fee of $24 for equipment applies.

IT 2530. Introduction to System Administration--WIndows Client. (3 Credits)
Prerequisite(s): IT 1600
Introduces operation management of operating systems using Microsoft Windows. Introduces installation methods and troubleshooting, hardware device installation and management, storage management, disaster recovery planning and management. Aids the student in the development, understanding, and working knowledge of the Windows networking framework including peer-to-peer, workgroups, user profiles, domains, NTFS, and share-level permissions.
Lab access fee of $45 for computers applies.

IT 2600. Data Communication Fundamentals. (3 Credits)
Prerequisite(s): INFO 1120 recommended or IT 1600 recommended or CS 1400 recommended
Provides an in-depth knowledge of data communications and enterprise networking including networking and telecommunications technologies, hardware, and software. Emphasizes underlying technologies and protocols. Design topics include wired and wireless architectures; topologies, models, standards and protocols; and operation of bridges, routers, switches, and gateways. Includes lab assignments covering TCP/IP implementations. May be delivered hybrid.
Lab access fee of $45 for computers applies.

IT 281R. Internship. (1-4 Credits)
Prerequisite(s): Department Approval
Provides opportunities to apply classroom theory on the job. Requires work as paid employees in a job that relates to their careers while enrolled at the university. Requires students to meet at least monthly with the Departmental Internship Coordinator. Requires completers to meet individually set goals. May be repeated for a maximum of three credits toward graduation. May be graded credit/no credit.

IT 290R. Current Topics in Information Technology. (1-3 Credits)
Prerequisite(s): Departmental Approval
Provides exposure to current and emerging information technologies. May be used to provide content to prepare students to take industry-recognized IT certification exams, such as CompTIA Linux+, CompTIA A+, Apple Certificated Professional, Certified Fiber Optic Technician, IC3, CompTIA Network +, CompTIA CTP+, Access Data Certified Examiner, MCSA, Cisco CompTIA Security+, Certified Ethical Hacker, etc. Varies each semester. May be repeated for a maximum of 6 credits toward graduation.
Lab access fee of $45 for computers applies.

IT 3200. Cloud Foundations. (3 Credits)
Prerequisite(s): (INFO 1120 or CS 1400) and IT1600 and (IT 2600 or CS 2600) [all with a grade of C- or higher within the past five years] and University Advanced Standing
Covers the business value of cloud computing, cloud architecture and design, maintenance and optimization of cloud environments. Explores the effect of cloud adoption on IT service management, as well as the risks and consequences of implementing cloud solutions. Investigates cloud deployment models, infrastructure needs, cloud applications, and cloud and data security.

IT 3400. Data Cabling Signal Characteristics. (3 Credits)
Prerequisite(s): INFO 1120 or INFO 1200 or CS 1030 or CS 1400 or MECH 1200
For EART/Mechatronics majors or students interested in the physical aspects of data network signal characteristics, cabling and installation for those signals. Focuses on cabling issues related to data and voice connections and provides an understanding of the industry and its worldwide standards. Covers types of media and cabling, physical and logical networks, as well as signal transmission. Focuses on best practices and safety using copper and fiber-optic cabling. Requires students to install a complete cable infrastructure for a simulated telecommunications room. Enforces industry and worldwide standards. Requires a community project and portfolio based on voice/data cabling skills. Requires a research paper.

IT 3510. Advanced System Administration--Linux/UNIX. (3 Credits)
Prerequisite(s): [(INFO 1200 or CS 1400) and IT 1510 and (IT 2600 or CS 2600) all with a grade of C- or higher within the past five years] and University Advanced Standing
Explores enterprise systems administration using the UNIX/Linux operating system. Students learn advanced administrative tasks including server installation, network configuration and user management, file management, network services deployment, server security, back up and recovery, Shell scripting, source compilation, performance monitoring and tuning, troubleshooting, and managing hardware and component changes. Requires a community project and portfolio based on advanced server management skills.
Lab access fee of $45 for computers applies.

IT 3530. Advanced System Administration--Windows Server. (3 Credits)
Prerequisite(s): [INFO 1200 and IT 2530 and (IT 2600 or CS 2600) all with a grade of C- or higher within the past five years] and University Advanced Standing
Explores enterprise systems administration using the Microsoft Windows Server operating system. Students learn advanced administrative tasks including server installation; hardware change management; software application management; network configuration and user management; file management; printing; network services deployment; server security; back up and recovery; scripting; performance monitoring, tuning, and troubleshooting.
Lab access fee of $45 for computers applies.

IT 3540. Supporting Apple Technologies. (3 Credits)
Prerequisite(s): [INFO 1200 and IT 1510 and (IT 2600 or CS 2600) all with a grade of C- or higher within the past five years] and University Advanced Standing
Explores the macOS, iOS, and related Apple technologies. Provides the skills to troubleshoot and correct problems that may arise by users. Teaches installation and configuration of the macOS and iOS, recovering iPhones and iPads, configuring apps and security on Apple technologies. Lab access fee of $45 for computers applies.

IT 3600. Internetworking and Router Management. (3 Credits)
Prerequisite(s): [(INFO 1200 or CS 1400) and (IT 2600 or CS 2600) all with a grade of C- or higher within the past five years] and University Advanced Standing
Teaches the theory and implementation skills and techniques needed to configure, troubleshoot and support reliable TCP/IP internetworks. Discusses security and management issues. Offers the opportunity to build an internetwork with cables, network cards, and routers. Emphasizes the analysis and design of networks in organizations. Includes lab assignments covering TCP/IP implementations and router configurations.
Lab access fee of $45 for computers applies.

IT 3650. Information Storage and Management. (3 Credits)
Prerequisite(s): IT 1600, IT 2600, and University Advanced Standing
Presents concepts, principles, and deployment considerations across all technologies that are used for storing and managing information. Describes challenges and solutions for data storage and data management, intelligent storage systems, and storage networking. Studies backup, recovery, and archive processes. Discusses business continuity, disaster recovery, storage security and virtualization, and managing and monitoring the storage infrastructure.
Software fee of $192 applies.
Lab access fee of $45 for computers applies.

IT 4300. IoT-Internet of Things. (3 Credits)
Prerequisite(s): IT 3510 and IT 3530 and IT 3600 [all with a grade of C- or higher within the past five years] and University Advanced Standing
Introduces basic concepts and applications of Internet of Things (IoT) technology in smart environments. Covers IoT application, design, and the list of capabilities that an IT professional can dial up or down depending on tradeoffs and decisions made in IoT design. Emphasizes IoT design considerations regarding the domain, requirements, cost, mobility, and network design.

IT 459R. Current Topics in Information Technology. (3 Credits)
Prerequisite(s): (Junior Standing or Department Approval) and University Advanced Standing
Provides exposure to emerging technologies and topics of current interest in information technology. Varies each semester depending upon the changes in the information technology discipline or to address a focused area within the information technology discipline. May be repeated for a maximum of 9 credits toward graduation.
Lab access fee of $45 for computers applies.

IT 4600. Enterprise Network Architectures and Administration. (3 Credits)
Prerequisite(s): IT 3600 and University Advanced Standing
Examines management of resources used in enterprise computing environments from a practical, applied viewpoint. Extends the student's understanding of these concepts through hands-on application of real-world network, server, and software management techniques and addresses the problems associated with providing a secure, stable, reliable enterprise computing infrastructure. Includes principles of IT enterprise infrastructure management; configuration, analysis, and troubleshooting of virtual servers; redundancy and failover; directory service integration, access control and security; uptime monitoring and notification; backup and recovery; Storage Area Networking; Cloud computing platform choices, functionality, cost, deployment, flexibility, and adaptability.
Lab access fee of $45 for computers applies.

IT 4750. Information Technology Operations Capstone. (3 Credits)
Prerequisite(s): IT 4600, CYBR 4700 and University Advanced Standing
Senior-level, capstone experience course. Enhances student IT knowledge with operational and business applications. Focuses on integrating IT principles as an organic part of an organization's processes. Covers barriers to implementing information technology solutions, policies, and building a business case for IT initiatives, and how to incorporate IT project management and DevOps to integrate and automate the work of software development and IT operations. Requires student project presentations.
Lab access fee of $45 for computers applies.

IT 481R. Internship. (1-3 Credits)
Prerequisite(s): (IT 3510 or IT 3530 or IT 3540 or IT 3600 or CYBR 3700 or department approval) and University Advanced Standing
For Information Technology bachelor's degree students. Provides opportunities to apply upper-division classroom theory while students work as employees in a job that relates to their careers. Requires the student to meet periodically with a Departmental Internship Coordinator. Requires written department chair approval to apply more than three credits toward a Bachelor of Science Degree in Information Technology. May be graded credit/no credit. May be repeated for a maximum of 3 credits toward graduation.

IT 489R. Undergraduate Research in Information Technology. (1-4 Credits)
Prerequisite(s): Department approval and University Advanced Standing
Provides the opportunity to conduct research under the mentorship of a faculty member. Practices the theoretical knowledge gained in prior major courses. Creates a significant intellectual or creative product that is characteristic of the Information Technology discipline and worthy of communication to a broader audience. May be repeated for a maximum of 6 credits toward graduation.

IT 497R. Independent Study. (1-3 Credits)
Prerequisite(s): Department chair approval and University Advanced Standing
For bachelor degree students and other interested persons. Offers independent study as directed in reading, in individual projects, at the discretion and approval of the department chairperson. May be repeated for a maximum of 9 credits toward graduation.

IT 6300. Principles of Cybersecurity. (3 Credits)
Prerequisite(s): Acceptance into Graduate Certificate or Master of Science in Cybersecurity or Departmental Approval
Provides foundational knowledge of cybersecurity for graduate-level studies. Covers information security theories, terminology, and implementation. Includes networking and system fundamentals, cryptography, malware, authentication, authorization, access control, physical security, attacker profiles, appropriate threat responses, and the human elements of cybersecurity. Introduces multiple aspects of cybersecurity and various career paths within the field.

IT 6330. Cybersecurity Operations. (3 Credits)
Prerequisite(s): Acceptance into Graduate Certificate or Master of Science in Cybersecurity or Departmental Approval
Focuses on operational aspects of cybersecurity. Includes incident response, network monitoring, change management, configuration management, and resource protection. Emphasizes the role of cybersecurity in the enterprise. Integrates sound cybersecurity principles into various aspects of IT operations. Includes information on secure server administration and open source security software. Teaches cybersecurity standards for government and industry sources and the application of those standards.

IT 6350. Law/Ethics/Privacy in Cybersecurity. (3 Credits)
Prerequisite(s): Acceptance into Graduate Certificate or Master of Science in Cybersecurity or Departmental Approval
Explores legal, ethical, and privacy issues as they apply to cybersecurity. Includes the legalities and ethics of hacking, corporate information security and use policies, and the government's role in cybersecurity. Emphasizes the roles and responsibilities of individual cybersecurity practitioners as well as corporate entities, including vulnerability disclosure and correcting software defects. Teaches privacy policies and regulations as they relate to cybersecurity and information systems.

IT 6370. Penetration Testing and Vulnerability Assessment. (3 Credits)
Prerequisite(s): Acceptance into Graduate Certificate or Master of Science in Cybersecurity or Departmental Approval
Pre- or Corequisite(s): IT 6300
Explores advanced topics in ethical hacking, penetration testing, vulnerability assessment, and other offensive network and system techniques. Teaches network scanning, target identification, application exploitation, antivirus evasion, physical security, social engineering, phishing, and privilege escalation. Contains hands-on labs providing experience from the perspective of an attacker.

IT 6660. Advanced Network Forensics. (3 Credits)
Prerequisite(s): Acceptance into Graduate Certificate or Master of Science in Cybersecurity or Departmental Approval
Pre- or Corequisite(s): IT 6300
Provides a standard methodology for conducting digital forensic analysis in a network environment. Teaches the importance of network forensic principles and development of an understanding of the technologies, protocols, laws, regulations, ethics, and procedures for network forensics. Incorporates demonstrations and laboratory exercises covering the identification, acquisition, authentication, preservation, analysis, and reporting of evidence for prosecution purposes.

IT 6740. Advanced Network Defense and Countermeasures. (3 Credits)
Prerequisite(s): Acceptance into Graduate Certificate or Master of Science in Cybersecurity or Departmental Approval
Pre- or Corequisite(s): IT 6300
Explores advanced topics in network defense, server hardening, vulnerability assessment, and mitigation scanning. Teaches students about network scanning, asset identification, Linux and Windows server hardening, anti-malware tools, intrusion detection, physical security, perimeter security, and cybersecurity awareness training. Contains hands-on labs providing experience from the perspective of a defender.

IT 6750. Reverse Engineering and Malware Analysis. (3 Credits)
Prerequisite(s): Acceptance into Graduate Certificate or Master of Science in Cybersecurity or Departmental Approval
Pre- or Corequisite(s): IT 6300
Explores the analysis tools and techniques for identifying malicious programs and recovering compromised operating systems. Provides a standard methodology for reverse engineering and eradicating malware. Includes setting up isolated malware labs and utilizing a selected set of forensic tools, such as system and network monitoring utilities, disassemblers, and debuggers for analyzing malware characteristics and the impact that malware may have on compromised systems.

IT 6760. Case Studies in Cybersecurity. (3 Credits)
Prerequisite(s): Acceptance into Graduate Certificate or Master of Science in Cybersecurity or Departmental Approvall
Pre- or Corequisite(s): IT 6300
Discusses current trends and issues in cybersecurity. Reflects current global events related to cybersecurity. Includes data breaches, cyber warfare, and emerging threats. Emphasizes the changing and transformative nature of cybersecurity threats, including geographical, institutional, and cultural evolution. Provides guest lecturers from industry with perspectives on the state of cybersecurity. Examines real-world examples of the application of cybersecurity principles and requires critical analysis of each case.

IT 6770. Cybersecurity Management. (3 Credits)
Prerequisite(s): IT 6300 or Departmental approval
Teaches management skills applicable to cybersecurity. Includes governance models, business continuity, disaster recovery, risk management, organizational security, cybersecurity life cycle management, and interactions between information technology and business units. Focuses on policies, procedures, and guidelines based on industry and government standards to fulfill legal, regulatory, and operational requirements.

IT 6780. Secure Coding. (3 Credits)
Prerequisite(s): IT 6300 or departmental approvall
Focuses on fundamentals of secure coding and current topics in application security. Includes the implementation of secure development lifecycle principles, identifying and mitigating issues in existing applications, and common security issues. Covers the most frequently encountered application security risks and how to address each of them. Includes web applications, mobile applications, and traditional desktop applications.

IT 6900. Cybersecurity Capstone. (3 Credits)
Prerequisite(s): IT 6330, IT 6350, IT 6370, IT 6740, and IT 6770
Provides culmination of cybersecurity in a self-directed research or practical project that showcases student's mastery of cybersecurity topics. Provides an opportunity to conduct research and/or implement systems that incorporate topics from previous courses. Requires students to present their work at the end of the semester.