COMPUTER SCIENCE/ INFORMATION TECHNOLOGY (CSIT)

CSIT 110 Introduction to Computers and Computer Applications 3 cr.
The course familiarizes students with the interaction of computer hardware, software, and ethics. Students will gain a fundamental understanding of personal computers and computer networking. Microsoft Windows and the Internet, an introduction to Microsoft Office, computer security, ethical and safe uses of technology, safety, and popular word processing, spreadsheet, and database tools. Emphasis in this course is on developing practical applications for personal productivity and safety. The course assumes no prior computing experience. Code 3 course fee.

CSIT 115 Introduction to Computer Game Development 3 cr.
This course is an overview of game development. Students will analyze games and gameplay elements, examine genres and trends in games and formulate their own proposal for an original game. The course will also discuss the history of videogames, the current state of electronic gaming, as well as possible future developments. Open lab time required. Code 3 course fee.

CSIT 123 Integrated Office Software 3 cr.
This course is designed to teach the skills necessary to design, produce and integrate documents, worksheets, databases and professional presentations. The course will emphasize a hands-on project-oriented approach to problem solving. Students will use the MS Office Suite on a personal computers in a Windows environment. Working knowledge of Microsoft Windows is suggested. Open lab time work is required. Code 3 course fee.

CSIT 124 Introduction to Programming 3 cr.
This course addresses general programming concepts appropriate for all students (both non-STEM and STEM), who will use programming as a tool within their career field. Students are presented basic programming concepts and then exercise them with contextualized real-world problems. The application of programming theory will be done using computational programs such as Python and MatLab. Some prior programming experience is helpful, but not required, for students taking this course. Code 3 course fee.

CSIT 126 Intermediate Spreadsheets and Database 3 cr.
This course expands on the introductory spreadsheet and database concepts presented in Integrated Office Software. Applications include the use of personal computers and integrated software (Microsoft Excel, Access) to solve contemporary non-discipline specific information processing problems. Open lab time required. Code 3 course fee.
Prerequisite(s): CSIT 123

CSIT 131 Multimedia for the Web 3 cr.
This course is designed to provide an overview of Multimedia concepts and applications using the most prevalent software for Multimedia design. This course will concentrate on creating graphics and small animations for use in conjunction with web design, gaming, and other applications. Discussion of vector versus raster graphic design will be stressed. File types will be compared and contrasted in order to provide the student with the skills needed to ascertain the best method for file storage; and which type to use in order to minimize file size and save time in the download process. Students will work in 2-D and will explore 3-D space, building on the previous lessons to gain insight into the new dimension graphics. The course will improve the skills and knowledge of current, as well as aspiring, graphic designers. Open lab time required. Code 3 course fee.

CSIT 133 Web Development Fundamentals 3 cr.
This course is designed to meet the needs of students who wish to enter the field of Internet Development. It will provide a rigorous treatment of Hypertext Markup Language (HTML) using the current XHTML standard. Other topics include Cascading Style Sheets (CSS) [external and embedded Style]; CSS1 and CSS2; design elements and applications that enhance web pages; and saving and editing files on a remote server. Students will complete hands on projects as part of the requirements for the course. Open lab time required. Code 3 course fee.

CSIT 144 Introduction to Operating System Using Unix 3 cr.
This course is designed to enable the student to use the UNIX operating system. Topics include basic commands, compilers, editors, text processors, shell and awk programming, file system organization and basic system administration. Students will have access to the Mac computers and a UNIX server housed in the Technology building. Open lab time required. Code 3 course fee.

CSIT 145 Computing Fundamentals 3 cr.
This course provides a deep understanding of hardware, operating systems, software troubleshooting, basic networking knowledge basic security concepts, mobile devices, virtualization Type 1-2, and cloud computing. Designed around the CompTIA A+ certification, this course will discuss all of the hardware components of computers, such as Central Processing Units (CPUs), Random Access Memory (RAM), Motherboards, Power Supplies, and Mass storage devices consisting of Solid-State Drives (SSDs) and Hard Drives. Code 3 course fee.

CSIT 146 Introduction to Cybersecurity 3 cr.
This introductory course focuses on the importance cybersecurity, cybersecurity principles, and the impact technology has in the field of security. The course will cover legal and ethical concerns, capabilities and limitations of communications, history, current methodology, system operating environments, existing and emerging security technology, security policies, and the growing need for cybersecurity. As an introduction course, students will enter with various degrees of cybersecurity knowledge and will be expected to improve their knowledge of professional cybersecurity practice. This course will focus on building student's knowledge base of cybersecurity, recognize the fundamentals of cybersecurity, and grant hands on knowledge of cybersecurity application. Code 3 course fee.

CSIT 154 After Effects 3 cr.
This course examines principles, tools, and techniques utilized in the design of motion graphics. Discussions focus on creating animated shapes, imagery, video, story boards and text, all of which form the basis of motion graphics projects. Emphasis is also placed on creating dynamic and visually interesting moving pieces, including, but not limited to, logo animations, kinetic typography, and title sequences, through the use of Adobe After Effects. Students will develop finished, rendered works capable of delivery on CD, DVD, Broadcast, and the World Wide Web. Knowledge of Adobe Photoshop will be beneficial to a student enrolling in this course. Code 2 course fee.
Prerequisite(s): CSIT 131 or instructor permission

CSIT 160 Introduction to Visual BASIC 3 cr.
This course is an introduction to structured procedural and object oriented/event driven programming using Visual Basic. Students will use a current integrated development environment to build applications for Microsoft Windows personal computers and mobile devices. Working knowledge of Microsoft Windows required. Open lab time is required. Code 3 course fee.

CSIT 163 Introduction to Programming Using C++ 4 cr.
This course introduces the student to the fundamental techniques used in the development of software applications. The course teaches basic programming concepts and principles using C/C++. Students will learn good programming practices in an integrated and interactive software development environment. The topics covered include classes, objects, algorithms, data types, control structures, one-dimensional arrays, attributes, and methods. Working knowledge of windows required. Open lab time required. Code 3 course fee.

CSIT 165 Programming I 4 cr.
This course introduces the student to the fundamental techniques used in the development of software applications. The course teaches object-oriented programming concepts and principles using Java employing an interactive visual system interface. Students will learn good object-oriented practices through the development of graphic programs and simulations using sound object-oriented practices in an integrated and interactive software development environment. The topics covered include classes, objects, object interaction, algorithms, data types, control structures, one-dimensional arrays, attributes, methods, and messages. Working knowledge of windows required. Open lab time required. Code 3 course fee.

CSIT 166 Programming II 4 cr.
This course continues the study of software development using the Java programming language. The course extends the development and growth of object-oriented paradigms through discussions of patterns, use of Unified Modeling Language (UML), and case studies. Students shall develop proficiency in debugging and test-driven development. Additional topics include files, arrays, collections, enumeration, recursion, sorting and searching. Open lab time required. Code 3 course fee.
Prerequisite(s): CSIT 165 with a grade of C or better

CSIT 168 Introduction to Python Programming 2 cr.
This course introduces the student to the fundamental techniques used in the development of software applications. The course teaches students with prior programming experience how to apply basic programming concepts and principles using Python. Students will learn the Python programming language in an integrated and interactive sofware development environment. The topics covered include classes, objects, algorithms, data types, control structures, arrays, attributes, and methods. Working knowledge of Windows required. Open lab time required. Code 3 course fee.
Prerequisite(s): Grade of C or higher in CSIT 163 OR CSIT 165

CSIT 173 Game Programming With Open GL 3 cr.
This course will build on the topics learned in a prior object-oriented programming language course to provide both theory and practice in game programming as supported by the graphical structures in the Open Graphic Library (GL). This course will provide students with a comprehensive introductory background in interactive game programming. It will explore programming options not offered in traditional programming courses, thus widening the scope of their knowledge, adding to their diversity in the programming sector and enhancing their opportunities within the field of programming. Open lab time required. Code 3 course fee.
Prerequisite(s): CSIT 163 or CSIT 165

CSIT 175 Digital Logic & Circuits 3 cr.
This course introduces the fundamentals of digital logic and logic circuits implementation in digital computers, robotics and electronic control systems. The students will learn the digital concepts, numbering systems, Boolean function, as well as logic gates, combinational logic, sequential logic and their applications in computer CPU, memory, and other devices. Additional topics include concepts of integrated circuits and programmable logic which will be introduced to expand students' vision. The content of this course can work as preparation for Computer Organization and Architecture. Open lab time required. Code 3 course fee.

CSIT 176 Computer Organization & Architecture 3 cr.
This course examines the structure and functions of the components comprising a contemporary computer system. The student will learn the fundamental elements in a computer system including the processor, memory, and interfaces to external components and systems. Additional topics include digital circuits, Boolean algebra, addressing modes, input/output and arithmetic. The course will use an assembly language to strengthen and reinforce the concepts. Open lab time required. Code 3 course fee.
Prerequisite(s): CSIT 165

CSIT 184 Networking Essentials 3 cr.
This course will examine the conceptual and physical structure of industry-wide computer networking standards. The concepts covered in this course will aid the perspective networking professional in a practical understanding of the implementation and fundamentals of a viable network. LANs, WANs, Inter and Intra net, among other topics will be extensively covered within this course. Familiarity with MS DOS and programming is recommended. Code 3 course fee.

CSIT 185 Networking I 3 cr.
This course will provide students with an introduction to fundamental networking concepts. It will place emphasis on concepts such as: networking applications, data delivery and routing, network architecture, layering, and protocols. This course will address the basic principles of wireless networking and network security. Students will gain a greater understanding of increasingly prevalent network technology in the modern world and will learn concepts behind changing network environments. Whenever applicable, concepts will be explained through the use of hands-on exercises that reinforce lecture material. MS DOS and Programming are highly recommended. Code 3 course fee.

CSIT 186 Networking II 3 cr.
This course continues the exploration of the fundamental concepts of computer networks. Topics to be covered include the Network Layer, Linked Layer, Local Area Network, Network Management, Wireless and Mobile Networks, and Multimedia Networking. Network Security will be introduced. Lab activities will provide students with practical experiences in computer networking. It will be centered on implementation, configuration and troubleshooting of a LAN. Open lab time required. Code 3 course fee.
Prerequisite(s): CSIT 185

CSIT 191 Introduction to Artificial Intelligence 3 cr.
This course introduces the student to the emerging field of Artificial Intelligence and its applications. Students will be provided a basic understanding of what comprises the many fields of Artificial Intelligence (AI). Students will also explore how AI is used in Machine Learning and Neural Networks. Topics covered include the various areas of Machine Learning such as Supervised Learning, Unsupervised Learning, and Reinforcement Learning as well as Neural network applications such as Computer Vision and Natural Language Processing. This course will also examine and discuss the impacts of AI in the world, in the student's daily lives, and the potential impacts to their careers. Code 3 course fee.

CSIT 192 Introduction to Machine Learning 3 cr.
This course introduces the student to Machine Learning and how it is used in the development of Artificial Intelligence and other applications. The topics of data modeling, acquisition, and data exploration and why they are important for AI applications will be explained. The course will cover how to use the Python language with various libraries (NumPy, pandas, scikit-learn) and Machine Learning algorithms (supervised, semi-supervised, unsupervised, reinforcement) to solve real-world data science problems. The concepts of classification, regression, and clustering will be explored in conjunction with several Machine Learning algorithms such as k-Nearest Neighbors (KNN), Decision Trees and Linear Models. Open lab time required. Code 3 course fee.
Prerequisite(s): CSIT 191, Take CSIT 165;

CSIT 200 Information Security Fundamentals 3 cr.
This course equips students with fundamental concepts and principles in the area of information security. The course introduces the relationships between and concepts involved in information assets, confidentiality, data integrity and availability, security threats, and information damage. This course analyzes access control, security mechanism, cryptography, vulnerability, and risk management. Key security areas (computer security and network security) will be addressed as integral parts of the complete cyber security umbrella. Code 3 course fee.

CSIT 210 Cyber Operations 3 cr.
This course provides a deep understanding of the knowledge and skills required for handling the tasks, duties, and responsibilities of an associate-level Cybersecurity Analyst in a Security Operations Center. Students will gain an understanding of a variety of topics, including: The Windows and Linux Operating Systems, Network Protocols, Network Security, Network Services, Attackers and their Tools, Common Threats and Attacks, Defensive Measures, Threat Intelligence, Cryptography, Endpoint Protection and Vulnerability Assessment, and Digital Forensics and Incident Analysis and Response. Code 3 course fee.
Prerequisite(s): ,

CSIT 212 Systems Analysis 3 cr.
The focus of this course is the problem solving, communication and design skills utilized in systems analysis. Case studies are used to illustrate the system analysis, design and development activities used in the initial automation and revision of computerized applications. File and database structures are discussed and applied. In addition, documentation techniques are discussed and illustrated. The student will complete a system analysis project. Code 3 course fee.
Prerequisite(s): CSIT 165

CSIT 213 Database Management 3 cr.
A course emphasizing the concepts and structure necessary to design and implement database management systems. Hierarchical network and relational models will be evaluated. The student will design and implement a project using a modern relational database package, report generator and SQL. Open lab time required. Code 3 course fee.
Prerequisite(s): CSIT 165

CSIT 231 Dynamic Flash & Scripting Programming Elements for Web Pages 3 cr.
This course provides an overview of the construction of dynamic and interactive web pages with a concentration on client side, object-oriented core technologies, and server side scripting languages. The course will cover how dynamic content can be provided with plug-in technologies and scripting languages. The course improves the skills of current and aspiring website authors and Internet/Intranet developers. Open lab time required. Code 3 course fee.
Prerequisite(s): CSIT 160 or CSIT 165 and CSIT 133

CSIT 240 Ethical Hacking: Hacker Techniques and Tools 3 cr.
This course explores the fundamental concepts of hacker techniques and tools which are used in the field of Ethical Hacking. Topics to be covered include the planning, sanctioning, assurance and execution of an ethical hack, including an understanding of the critical categories of attack techniques that would be used. The course will also review the various software, application, network, and platform vulnerabilities that would be the focus of the attacks. Lab activities will provide students with practical experiences in ethical hacking. Open lab time is required. Code 3 course fee.
Prerequisite(s): Take CSIT 200 with a grade of C or higher

CSIT 241 Cybersecurity Legal and Regulatory Overview 3 cr.
This course reviews the various government and industry-specific laws, regulations and standards that govern the policies of an enterprise Cybersecurity program. This course prepares students to be both authors and participants in the definition, implementation, execution and assurance of such policies across a range of career areas and roles, included but not limited to Security Specialist, Government Administrator, Human Resources Professional, and Law Enforcement Officer. Code 3 course fee.

CSIT 242 Penetration Testing Fundamentals 3 cr.
Penetration testing fundamentals assesses the most up-to-date penetration testing, vulnerability assessment, and management skills necessary to determine the resiliency of the network against attacks. It will cover fundamental methodologies, techniques, tools to identify vulnerabilities, exploit, assess security risk to networks, operating systems, and applications. Code 3 course fee.
Prerequisite(s): CSIT 165

Corequisite(s): CSIT 185

CSIT 243 Cisco Networking Fundamentals 3 cr.
This course provides a deep dive into the Cisco network. The course introduces network fundamentals (OSI model, IPs, Subnetting, etc.), an overview of Cisco products, hardware components, how to perform Layer 1 and Layer 2 basic Cisco configurations tools, such as PuTTY, TFTP/SFTP/FTP servers, loopback plugs, and Microsoft Windows basic. After this initial understanding (which will cover CCT routing and switching) the course will cover an introduction into basic configurations on Cisco routers work, common switching/routing issues, network/device architectures, outline basic threat defense technologies, and describing the functions and features off Cisco iOS and NX-OS. Code 3 course fee.
Prerequisite(s): CSIT 186

CSIT 244 Digital Forensics Fundamentals 3 cr.
This course introduces the methodology and procedures associated with digital forensic analysis. The objective of this class is to emphasize the fundamentals and importance of digital forensics. Students will learn different techniques and procedures that enable them to perform a digital investigation. This course focuses mainly on the analysis of physical storage media and volume analysis. It covers the major phases of digital investigation such as preservation, analysis and acquisition of artifacts that reside in hard disks and random-access memory. Code 3 course fee.
Prerequisite(s): CSIT 165, CSIT 184

CSIT 265 Data Structures and Analysis 4 cr.
This course examines the representation, implementation and application of data structures and their use in programs developed using the object-oriented paradigm. The data structures include lists, stacks, queues, dequeues, vectors, trees and graphs. Additional topics include array and linked list implementation, recursion, binary search tree, sequences and dictionaries. Algorithms are developed to operate upon these structures. All assignments will be programmed in a modern object oriented programming language. Open lab time required. Code 3 course fee.
Prerequisite(s): CSIT 166

CSIT 275 Data Management Analytics 3 cr.
This course instructs students in reviewing the data challenges businesses confront and how data management and analytics are used to help make sound management decisions and provide informative insights. Two major concepts will be discussed: data integration and data management. Additional concepts such as data modeling, probability, linear regression, and statistical data analysis help students learn how different analytic methods are used to address critical data issues facing an organization and how best to apply those methods. Students learn how to conduct in-depth strategic analytic analysis of business problems and communicate those results to all levels of an organization. Code 3 course fee.
Prerequisite(s): CSIT 200

Corequisite(s): CSIT 213

CSIT 277 Introduction to Cloud Computing 4 cr.
This course provides students with an overview of the field of Cloud Computing, its enabling technologies, main building blocks, and hands-on experience through projects utilizing popular public cloud infrastructures. Cloud computing is the delivery of computing as a service over a network, whereby distributed resources are rented, rather than owned, by an end user as a utility. The course will introduce this domain and cover the topics of cloud infrastructures, virtualization, software defined networks and storage, cloud storage, and programming models. In addition, this course will introduce the motivating factors, benefits and challenges of the cloud, as well as service models, service level agreements (SLAs), security, example cloud service providers, and use cases. Code 3 course fee.
Prerequisite(s): CSIT 185

CSIT 291 Computer Vision 3 cr.
This course introduces the student to Computer Vision and how it is used in current Artificial Intelligence and other applications. The theoretical grounding of the basic concepts and techniques in the Computer Vision domain will be explored. Computer vision concepts covered include pixels, convolutional neural networks, and various vision related AI algorithms. This course will also explain how computers represent, analyze, and recognize images. Students will learn how to use the Intel OpenVino Toolkit to perform image classification and object detection. Open lab time required. Code 3 course fee.
Prerequisite(s): CSIT 192

CSIT 292 Natural Language Processing 3 cr.
This course introduces the student to Natural Language Processing (NLP) and how it is used in current Artificial Intelligence and other applications. The steps involved in NLP data processing such as collection, conversion into a "bag of words", and visualization using the Python language with NLP tools will be demonstrated. The course will cover the various algorithms used in Natural Language Processing and how these algorithms are "trained" to recognize words. Students will use this information learned in this course to develop a language recognition application. Open lab time required. Code 3 course fee.
Prerequisite(s): CSIT 192

CSIT 295 Artificial Intelligence Capstone 3 cr.
This course will provide the student, working with a faculty member and potential industry partner, the opportunity to design, implement, and deploy an Artificial Intelligence based application using the AI Project cycle. The student will use their knowledge of AI to document the project, develop the projects goals, design the application, produce a schedule, build the application, and provide the evaluation criteria for an assessment of how well the application met the stated goals. The student will use the various domains of AI such as natural language processing, computer vision, and machine learning to design and implement the application. The student will prepare a presentation summarizing their application and demonstrate how effective it was in meeting the stated goals to the faculty member. Code 3 course fee.
Prerequisite(s): CSIT 291, CSIT 292