

COMPUTER INFORMATION SYSTEMS (CIS)

CIS 109. Introduction to Programming. 3 Credits.

This course introduces students to fundamental problem-solving and programming concepts using the high-level language Python. Topics covered include data types, variables, constants, decision statements, repetition, functions, strings and lists. Prerequisites: MAT 092 or MAT 096 (corequisite) or placement.

CIS 113. CIS Internship. 3 Credits.

This internship experience will allow students to apply computer information skills, perform information technology tasks and develop professional habits while interacting with professionals in the field. Students must pass a CORI check prior to beginning the internship. Placements may be made at a profit or not-for-profit business. The placement must be a site approved by the professor. The basis for the grade will be a combination of a reflective journal log, student participation, log of hours, and internship supervisor evaluations. Student participation will include sharing their experiences at the internship site, the preparation of a resume, participation in interviewing techniques and mock interviews. The field experience will equal 120 hours. This is a three-credit course. Prerequisite: The completion of 15 credits (9 of which are CIS credits) in one of the CIS degree or certificate programs and a GPA of 3.0 are required.

CIS 118. Introduction to Full Stack Development. 3 Credits.

Students should be comfortable with basic computer skills prior to enrolling in this course. Essential computer skills include utilizing word processing, web browsers and email as well as managing files and folders (save, locate, open, create, copy, paste, delete). Additionally, students should be curious and problem-solving oriented. Learn and practice the foundational concepts of full stack development to create both front end (client side) and back end (server side) web development. This course will include basic HTML, CSS, CSS templates, and JavaScript. Students will also work with servers, databases, and other back end technologies, such as MySQL and Node.js. Prerequisites: ENG 101 and completion of any 100 level math class (or corequisites), or permission of the Dean. Spring.

CIS 121. Spreadsheet Applications. 3 Credits.

Students should be comfortable with basic computer usage prior to enrolling in this course. Essential computer skills include utilizing web browsers and email as well as managing files and folders (save, locate, open, create, delete). This course is designed to develop spreadsheet skills, with an in-depth study of spreadsheet design and analysis as they relate to business applications. Topics include the fundamentals of spreadsheet design, coverage of business formulas and functions, linking multiple worksheets and files, proper layout and design, and an introduction to macros using the Visual BASIC for Applications (VBA) language. Prerequisites: ENG 098, FYE 101, MAT 092 or MAT 096, RDG 098, or placement.

CIS 123. Microcomputer Database Management. 3 Credits.

This course is for students who are already familiar with computer use. Students must know how to use web browsers, email and manage files and folders (save, locate, open, create, delete). This course uses a database software package for a wide range of applications. Students create tables, construct queries, design forms, and generate reports. Students will also utilize constraints, data types, primary and foreign keys; define relationships and database design concepts; as well as import and export external data. Students will create action queries as well as select queries that use aggregate functions, calculated fields, wildcards, keywords, comparison criteria, Boolean terms, and table joins. Prerequisite: MAT 092 or MAT 096.

CIS 128. Introduction to Information Systems. 3 Credits.

This course provides a broad overview of information systems, their components (such as ERP and CRM) and the use of them by business to achieve operational excellence, improve decision making and achieve competitive advantage through the use of social tools, mobile technology, cloud computing, big data and emerging technologies. Spreadsheet and database applications are utilized throughout the course to develop foundational, yet essential data skills for success in business and information technology career paths. Several different types of IT and business professions are explored to assess technical skill, knowledge and education requirements. Prerequisite: ENG 098, RDG 098, FYE 101, or placement.

CIS 129. Data Literacy and Management. 3 Credits.

Students will learn data literacy and data management skills while utilizing a variety of file types and software. Students will study topics such as the four elements of data (Volume, velocity, variety, and veracity), data governance, ownership, and stewardship, as well as data architecture, modeling, and warehouses. Students will also be introduced to data security and privacy concepts. Additionally, students will get hands on experience with data quality, anomalies, and missing and noise values as they import, scrape, clean, and organize data. Prerequisites: FYE 101, MAT 092 or MAT 096, (RDG 098, or placement) and CIS 121 or CIS 128 (or corequisite). Fall.

CIS 131. Linux Programming. 3 Credits.

This course provides students a solid foundation in the fundamentals of the Linux operation system. Students gain system level experience through problem solving exercises at the command line and in the graphical use interface. Students learn the essential

command-line commands necessary to be accomplished users of their Linux workstations, as well as be able to use the GUI when appropriate. Prerequisite: CIS 140.

CIS 133. Data Visualization. 3 Credits.

This course will help students to interpret quantitative information; formulate and support ideas; and present information in a variety of visual formats while utilizing data visualization software such as Tableau. Students will learn basic data literacy skills and how to create visualizations that communicate clearly and effectively. Students will also work with datasets; import different data sources (such as Excel, SQL, XML, CSV, etc.); identify the audience and the related purpose; create calculated fields; use the Data Interpreter; and create multiple visualizations, dashboards, and story lines. Students will also learn to apply filters, joins, blends, clusters, bins, custom territories, and geographic roles. The course will also work with important topics such as aggregation, granularity, and level of detail while utilizing peer review and quality assessment to verify the accuracy of visualizations. Prerequisites: FYE 101, MAT 092 or MAT 096, RDG 098, or placement.

CIS 136. Data Ethics. 3 Credits.

Students will learn about the five principles of data ethics: ownership, transparency, privacy, intention, and outcomes as well as the data ethics tenets set by the Federal Data Strategy Team. Students will focus on ethical standards and practices specifically related to collecting, using, and selling data, security, privacy, policy, advocacy, and legal requirements. Additionally, students will review case studies; identify the importance of working with domain experts; compare strategies such as Data Feminism with traditional approaches; learn how discrimination impacts data and society; utilize visualizations; and complete writing assignments. Prerequisites: ENG 101 and (CIS 121, CIS 128 or CIS 133) or permission from the Dean. Spring.

CIS 140. Microcomputer Networking Applications. 3 Credits.

This course provides students with the necessary knowledge and skills to perform competently in the role of network administrator or system manager. Major topics include networking concepts, setting up user and group accounts, securing network resources, configuring and administering network printers, backup, auditing events, and monitoring network resources. Prerequisites: FYE 101, MAT 092 or MAT 096, RDG 098, or placement.

CIS 141. Supporting Private Clouds. 3 Credits.

This course will instruct future network administrators how to effectively implement and maintain private clouds with a balance of conceptual expertise and hands-on skills. With a focus on server administration, this course will introduce working with Virtual Machines and prepares students to work with large providers such as Amazon, Microsoft, and Google, as well as implement smaller scale cloud computing solutions within their own network environments. Specific topic coverage includes: Introduction to the Private Cloud, Creating and Managing Virtual Machines, Configuring the Hyper-V Environment, Installing and Using Virtual Machine Manager, Installing and Using the Self-Service Portal Using the Virtual Desktop Infrastructure (VDI), Implementing High Availability in the Private Cloud, Managing High-Availability Clusters and Managing the Private Cloud with PowerShell. Prerequisite: CIS 140.

CIS 143. Introduction to Helpdesk Support. 3 Credits.

This course is designed to introduce students to both technical and soft skills needed to work within an entry level IT Helpdesk position. Students will complete tasks which help them to prepare for a customer support role including but not limited to the following: explore potential solutions to a variety of software, hardware, and cloud-based issues; install and upgrade software; identify key elements of user accounts, password procedures and best practices, and Active Directory management; utilize windows services and diagnostic tools; remove viruses and navigate a helpdesk ticket program. Emphasis will be placed on active, hands-on learning and/or working within a virtual environment. Best practices for customer service skills will also be identified throughout the course. Prerequisites: FYE 101, MAT 092 or MAT 096, RDG 098, or placement.

CIS 144. Network Security. 3 Credits.

This hands-on course is designed to prepare students for the security challenges they will face as a networking professional. Specific topic coverage includes designing a secure network framework, securing servers based on function, designing a secure public key infrastructure, securing the network management process, securing network services and protocols, securing Internet information services, securing VPN and extranet communications, securing active directory, securing network resources, and securing network clients. Prerequisite: CIS 140 or permission of division dean.

CIS 150. Computer Science I. 3 Credits.

This course introduces students to Computer Science through software development using an object oriented programming approach. Programming topics include: data types, expressions, conditions, iteration, arrays, methods, classes and objects. Algorithm development, integrated development environments, debuggers, test plans and documentation is also covered. Prerequisites: FYE 101, RDG 098, (or placement); Completion of any 100 Level Math Class with a "C" or higher or permission of the Dean.

CIS 152. Computer Science II. 3 Credits.

This course builds on the concepts covered in Computer Science I. Programming topics include: inheritance, polymorphism, GUI programming, exceptions, recursion, and file and database input/output. Using object oriented programming(OOP) techniques, an

introduction to data structures including stacks and queues is included as well as an introduction to sorting algorithms. Prerequisites: Grade of C or higher in CIS 150 or comparable programming experience. Spring.

CIS 219. Principles Of Information Security. 3 Credits.

This course provides students with a broad overview of information security and serves as the capstone course for the Computer Information Systems degree program. The required networking, database and programming courses for the Information Systems degree program lays a solid foundation for learning information security terminology and measures that protect confidentiality, preserve integrity, and promote availability of data. Topics include security policies, security models, business continuity plans, computer crime and security laws, physical security, operations security, access control, cryptography, Internet security and application development security. Students will complete at least one major research and writing project, at least one oral class presentation, and work on at least one team project. Students should find the topics covered informative and useful for their career in the Information Technology field, and the topics serve as a foundation for advance studies in Information Security. Prerequisite: Completion of 24 CIS credits or permission of division dean.

CIS 224. Database Design and Implementation. 3 Credits.

This course is designed to teach data modeling and SQL skills. Students will be able to define a well-structured relational database; use database design concepts to apply business rules and normalization models while creating Entity Relationship Diagrams (ERDs) and data dictionaries. Students will also write and run scripts; create select queries (using 'where' and 'order by' clauses, aggregate functions, inner and outer joins, and 'having' and 'group by' clauses), as well as action queries to update, delete, and append data. Students will also work with SQL to create a two-layer application. Prerequisites: CIS 150 or CIS 118 (or corequisites). Spring.

CIS 225. Introduction to Data Analytics. 3 Credits.

Students will be introduced to Data Analytics and will utilize a variety of tools while they practice skills to describe, summarize, and make inferences about data sets leading to modeling for decision making. Topics within this course will include: probability and probability distributions, regression analysis, logistic regression, supervised learning (Decision Trees) and unsupervised learning (Clustering). Prerequisites: ENG 101, MAT 143, CIS 121 and (corequisite of CIS 150 or CIS 109) or permission from the Dean. Spring.

CIS 250. Systems Programming. 3 Credits.

This course covers the fundamentals of systems programming. The Linux application programming interface (API) and the C language are used to introduce students to lower-level programming by using system calls and key components of the C library to develop applications and scripts that interface with the operating system. Prerequisites: C or higher in CIS 152, MAT 180. Fall.

CIS 252. Algorithms and Data Structures. 3 Credits.

This course introduces essential data structures and algorithmic analysis for the design of efficient computer programs using an object oriented programming language. Some of the data structures designed and implemented include linked lists, stacks, queues, trees, heaps, hash tables, and graphs. A mathematical framework for evaluating efficiency of algorithms is covered. The analysis of algorithms for searching, traversing trees, hashing, manipulating priority queues, sorting, and finding shortest paths in graphs is included. Recursive algorithms are used when they can improve efficiency. Prerequisites: C or higher in CIS 152, MAT 180. Spring.