

COMPUTER INFORMATION SCIENCE (CIS)

CIS 523 Data Processing and Database Management

This course entails analysis and evaluation of database designs in relation to the strategic mission of the project. Topics include database systems, database architectures, and data-definition and data-manipulation languages. Also included are logical and physical database design, database models (e.g., entity-relationship, relational), normalization, integrity, query languages including SQL, and relational algebra, in addition to social and ethical considerations and privacy of data. This course incorporates case studies and a project using a relational DBMS.

CIS 540 Network Theory

Lecture/theory course considers the current methods, practices, and standards used to enable communication on computer and voice networks. This includes a study of the physical layers, architectural layers, design, operation, management, and ISO standards, with particular consideration given to many of the IEEE 802 standards, various protocols in the TCP/IP suite, and telephony technologies. Both local and wide area networks are examined.

CIS 619 Crisis Management and Business Continuity

This course explores the area of Risk Management with particular emphasis on Business Continuity Management. Risk Management involves assessing threats which may lead to disastrous events, evaluating control alternatives and implementing solutions. Potential threats include terrorist, criminal, industrial, natural, technological, environmental, economic and political. Practical solutions to enable an organization to protect assets, mitigate risk, manage crisis and recover after a disaster will be discussed. The role of business and government will be explored, as well as professional practices, standards and strategies. The course is designed to expose the student to all aspects of a holistic Business Continuity & Crisis Management program and to determine the most appropriate requirements.

CIS 621 Client Interface Development

This course addresses the design and development of standards-based client interfaces for Web applications. The course includes Web-based standards and tool sets that support these standards. Application development emphasizes client Web interface scripting to serve as a general introduction to computer programming. The specific tool set used will depend on the types of interfaces to be developed, considering technology trends. Examples of possible tools include XHTML, CSS, and JavaScript. This course may be waived if the student has prior experience in client interface development.

CIS 626 Web Services Development

This course focuses on the development of Web services for use by many different types of Web applications. The course develops basic programming techniques to implement the server side function of the application. The course uses a non-Windows interface for the tools set.

CIS 627 Web Database Services Development

This course is an extension to CIS 623. It encompasses programming models that support database access, including ADO.NET. It covers client/server and multitiered architectures; development of database applications; Internet and intranet database design and implementation; database-driven Web sites; and use of XML syntax related to databases. Examples of the possible tool sets for this tool set are PHP and MySQL on either a Linux or Windows server. The course also considers privacy of data and data protection on servers. Prerequisite(s): CIS 523, CIS 622, or CIS 626

CIS 629 Mobile Development

This course covers development of mobile applications and integration with existing systems on the devices. Students will extend development of mobile solutions with enhancements to views, layouts, and intents including interaction with the location-based services, messaging services, multimedia interfaces, and sensors available on the mobile device. The applications will manage data sources, both locally and from database providers. The applications will be tested in an emulation environment and prepared for deployment in a mobile marketplace.

CIS 633 Data Analysis with R

This course will require students to learn the R programming language and assess how to use it and find interesting features in data. Students will learn about R and statistical best practices and how to display data in a manner that will help you explain your findings to those who do not have a technical background. Moreover, the course introduces students to modeling and simulation. Topics may include basic queueing theory, the role of random numbers in simulations, and the identification of input probability distributions.

CIS 654 Artificial Intelligence

This course introduces students to the field of artificial intelligence (AI). Students will learn how big data and data mining techniques are utilized by machines to create the AI models used by autonomous aircraft and automobiles, personal assistants, IT security software, fraud investigations and credit bureaus. The course will review the history, present day use, and future of artificial intelligence. Through case studies and current events, students will examine the benefits and risks associated with AI. The course will cover issues related to AI and privacy, ethics, and machine bias. Neuromorphic computing, the Open Neural Network Exchange (ONNX), and data analytics will also be discussed.

CIS 658 Data Mining

This course introduces the field of data mining, with specific emphasis on its use for Machine Learning algorithms. Techniques covered may include conceptual clustering, learning decision rules and decision trees, case-based reasoning, Bayesian analysis, genetic algorithms, and neural networks. The course covers data preparation and analysis of results. Skills in Microsoft Excel are useful. Prerequisite(s): CIS 523

CIS 685 CIS Capstone (Every semester as needed)

Students culminate their learning with a capstone project under the supervision of a faculty advisor. Some students partner with an external company or work on a project associated with their employer as a project deliverable for that company. Students are expected to complete the capstone with a grade of B or better in order to graduate from the program. Prerequisite(s): All Core courses