COMPUTER PROGRAMMING (CIS)

CIS-121 Introduction to Programming Logic (3)

Introduces students to basic computer programming ideas and foundational principles such as problem decomposition and step-wise refinement. Explores problem solving using well-developed programming logic derived with pseudo code, flow charts and related techniques. Focuses on translating student developed solutions into simple programs for testing using an instructor-selected, high-level programming or scripting language. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

CIS-171 Java (3)

Introduces Java programming language focusing on the syntax of the language and the object-oriented model upon which it is based. Teaches to code, test, and debug simple Java applications, creating original classes as well as using classes in the API. Demonstrates the concepts of encapsulation, inheritance, information/implementation hiding, state retention, messages, classes, and polymorphism. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

Prerequisite: Minimum C- in CIS-121, CIS-450 or CSC-142.

CIS-175 Java II (3)

Continues Java. Covers advanced GUI, exception handling, multithreading, multimedia, files and streams, networking, and data structures. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

Prerequisite: Minimum C- either in CIS-171, or in both CIS-335 and CSC-142. Take MAT-102 or MAT-708.

CIS-181 Java III (3)

Provides practical application of server-side Java development. Emphasizes meeting business needs through database integration, web and Internet services, servlets and Java server pages (JSP). Explores development of web interfaces for desktop and mobile devices. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

Prerequisite: Minimum C- in CIS-175 or CIS-176.

CIS-207 Fundamentals of Web Programming (3)

Presents hypertext markup language and cascading style sheets for encoding Web pages. Introduces Server Side Includes and simple JavaScript for enhancing them. Emphasizes a structured approach to page layout, coding and styling, exposing students to a variety of software tools. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

CIS-238 Front End Development I (3)

Offers practical front-end programming, utilizing JavaScript to enhance the user experience of web applications. Explores the implementation and modification of various JavaScript libraries and related technologies to create interactive, user-friendly, and dynamic front end web applications. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

Prerequisite: Minimum C- in CIS-121, CIS-450 or CSC-142. Minimum C- in CIS-207.

CIS-241 Introduction to Blockchain with Java (3)

Explores the fundamentals of blockchain using the Java language. Teaches about blockchain ledgers, transactions, mining, and consensus protocols by building and testing a simple cryptocurrency in a multithreaded application. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

CIS-249 Web Languages (3)

Introduces concepts and methods for implementing advanced web languages used in web programming to produce dynamic websites. Focuses on the following languages: advanced HTML 5 and CSS3, JS Frameworks, SASS or LESS, and introduces Angular JS and jQuery techniques. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

Prerequisite: Take CIS-207.

CIS-263 Web Application Development I (3)

Introduces Server-Side programming, using open-source technologies and software to create dynamic, database-driven Web applications. Teaches the coding, testing, and debugging of both procedural and object-oriented server-side web applications. Includes how to use a server-side scripting language to write applications that interact with a database to provide Internet users with data-driven web sites. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

Prerequisite: Minimum C- in CIS-121, CIS-450 or CSC-142.

CIS-280 Client Side Scripting (3)

Offers in-depth practical Web client script programming. Emphasizes JavaScript and DOM scripting. Explores the use and modification of open-source scripts and script libraries. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

Prerequisite: Minimum C- in CIS-121, CIS-450 or CSC-142. Minimum C- in CIS-207.

CIS-290 Web Content and E-Commerce Systems (3)
Introduces the infrastructure, components and management tools necessary for a successful content-driven website that includes e-commerce solutions. Examines techniques for successful content driven and e-commerce Web sites. Explores a variety of open-source web platforms based on Apache/PHP/MySQL technology. Identifies how to deploy, configure and style these systems to meet a variety of business and client needs. Includes the basic concepts, tools and techniques of Web analytics, search engine optimization, payment systems, content management, security, and legal and privacy issues. Includes laboratory experiences with shopping cart, content management systems, tracking and analytics. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

Pre/corequisite: Take MKT-110.

CIS-326 Business Intelligence Tools (3)
Reviews different business intelligence tools and teaches how to use these tools. Discusses how to apply the tools to move data, search the data for invalid values, and ready the data for display to users in standard formats. Emphasizes understanding of the correct applications and how to use tools by multiple vendors. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

Prerequisite: Take CIS-335.

CIS-327 Applied Analytics and Reporting (3)
Covers the basic tasks used in a reporting career. Focuses on interpreting requests in business terminology for data, generating repeatable and ad hoc reports, identifying questionable data, and basic data cleanup. Teaches how to describe reporting activities to both a technical and non-technical audience. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

Prerequisite: Minimum C- in CIS-335.

CIS-328 Front End Development II (3)
Extends knowledge of front-end programming utilizing JavaScript to enhance the user experience of web applications. Explores the integration of JavaScript APIs, AJAX, React, and relational databases utilizing a Node.Js server-side environment. Topics will also include user authentication, web security, state management, and local storage techniques. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

Prerequisite: Minimum C- in CIS-238. Minimum C- in CIS-335.

CIS-334 PHP/Apache/MySQL (3)
Introduces PHP, Apache and MySQL open source technologies used to create dynamic, database-driven Web applications. Create MySQL databases and use server-side scripting language (PHP) to write applications that interact with the database through Apache Web server technology. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

Prerequisite: Minimum C- in CIS-121. Minimum C- in CIS-207.

Pre/corequisite: Take CIS-335.

CIS-335 Relational Database and SQL (3)
Emphasizes basic concepts and principles of database systems. Introduces database systems and databases, normalization, table creation, and basic system and language support (SQL) for database systems. Focuses on data management and design inquiries to produce information for decision making, data analysis and integration with other software applications. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

Prerequisite: Minimum C- in CIS-121, CIS-450 or CSC-142.

CIS-342 PHP/Apache/MySQL II (3)
Continues instruction on PHP programming language for building Web-based structure. Focuses on the object-oriented method of the PHP programming language as students create reusable assets and modular systems for use on a Web site project. Emphasizes SQL query knowledge and application. Develops knowledge of Apache Web server management through work with a local Apache server. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

Prerequisite: Take CIS-334.

CIS-354 Data Analytics and Reporting Projects (3)
Provides realistic hands-on project experience, building on learned data analytics and reporting skills. Applies strategies and methodologies for database and data warehouse design, implementation, security, and database tuning methods per industry standards in a group setting. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

Prerequisite: Minimum C- in CIS-326. Minimum C- in CIS-327.

CIS-363 Web Application Development II (3)
Continues instruction on server-side programming for building Web-based applications and websites using an MVC framework. Emphasizes object-oriented method of server-side programming, along with the creation of reusable assets and modular systems for use on a Web site project. Includes further instruction on databases for the development of data-driven web applications for both desktop and mobile devices. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

Prerequisite: Minimum C- in CIS-263. Minimum C- in CIS-335.

CIS-370 Fundamentals of 2D Visualizations and Games (3)
Introduces 2D casual game development using freely available programming libraries as well as handwritten code. Includes fundamental game concepts such as game loops, animation cycles, collision detection, user controls and scoring algorithms. Emphasizes learning games and interactive simulations intended to blend entertainment with education-related goals. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

Prerequisite: Minimum C- in CIS-121.

CIS-371 Developing 3D Simulations and Games (3)

Introduces 3D simulations and game development with the Unity Game Engine and the C# programming language. Introduces asset and game editing tools along with the terminology associated with virtual 3D environments. Includes scripting actions, applying physics, multiplayer issues, and the use of animation and effects. Includes walk-through simulations or training games intended to blend entertainment with business-related goals. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

Pre/corequisite: Minimum C- in CIS-121.

CIS-450 PLTW - Computer Science Principles (3)

Develops computational thinking, generates excitement for career paths utilizing computing, and introduces professional tools to foster creativity and collaboration. Develops programming expertise and explores the functionality of the Internet. Offers projects and problem solving associated with computing including application development, visualization of data, cybersecurity and simulation. Arts & Sciences Elective Code: B
Hours per week: 1.0 lecture, 4.0 lab

CIS-504 Structured Systems Analysis (3)

Covers the foundational aspects of system analysis and design, and the role of the systems analyst in a business information systems environment. Teaches the tools, techniques and methodologies used to analyze and design information systems and produce technical solutions for companies' information technology needs. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

Prerequisite: Minimum C- in CIS-335. Minimum C- in CIS-622 or CIS-263.

Pre/corequisite: Take CIS-624 or CIS-363.

CIS-622 .NET Development I (3)

Introduces the C# programming language and the Microsoft .NET architecture, the Visual Studio IDE and object-oriented programming with .NET. Emphasizes building stand-alone desktop projects with graphical user interfaces using WinForm components. Focuses on applying the principles of programming and problem solving within an object-based design and event-driven paradigm. Includes interface design, using common libraries and features of the common language runtime. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

Prerequisite: Minimum C- in CIS-121, CIS-450 or CSC-142.

CIS-624 .NET Development II (3)

Extends knowledge of the C# programming language and the Microsoft .NET and related tools. Emphasizes the use of SQL and ADO.NET for the creation of stand-alone and distributed database applications to solve common business problems. Covers issues related to n-tier design, network communications, error handling and the production of flexible database reports. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

Prerequisite: Minimum C- in CIS-335. Minimum C- in CIS-622.

CIS-626 .NET Development III (3)

Provides a practical introduction to Internet programming with the C# programming language and the Microsoft .NET MVC framework. Emphasizes development of websites and web services with ASP.NET and related tools. Focuses on creating multi-tier business web applications. Includes basic ASP.NET web controls and script integration, along with server-side issues such as authentication, state management and database connectivity. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

Prerequisite: Minimum C- in CIS-624.

CIS-802 Software Development Capstone (3)

Requires application of knowledge gained from programming design and systems analysis classes in the analysis, design, scheduling and implementation of a complete systems development effort. Note: Capstone should be taken in the final semester. Arts & Sciences Elective Code: B
Hours per week: 2.0 lecture, 2.0 lab

Prerequisite: Minimum C- in CIS-504. Minimum C- in CIS-624 or CIS-363.

Pre/corequisite: Take CIS-626 or CIS-328.

CIS-924 Honors Project (1)

Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Arts & Sciences Elective Code: B; Comments: Requires approval of supervising professor and dean
Hours per week: 1.0 lecture

CIS-928 Independent Study (1-3)

Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Arts & Sciences Elective Code: B; Comments: Permission of instructor, dean
Hours per week: 1.0 lecture