CSC - COMPUTER SCIENCE

CSC 144 **3 credit hours (lecture: 3 | lab: 0)**
Discrete Mathematics
Course introduces mathematical induction and recursion; set theory; relations and functions; logic, combinatorics, graph theory and trees; Boolean Algebra, probability, matrices and analysis of algorithms. Credit toward graduation cannot be received for both MAT 144 and CSC 144.
Prerequisite: MAT 140 with a minimum grade of C or an appropriate score on the Mathematics Assessment Test.
IAI General Education: M1 905
IAI Major: CS 915
Instruction Type: In-Person | Online | Hybrid

CSC 155 **3 credit hours (lecture: 3 | lab: 1)**
C++ Computer Science I
A first course in computer programming from basic through intermediate levels. Content includes designing, implementing and debugging maintainable C++ programs, and demonstrating problem solving and algorithm development for applications from business and computer science. Abstract data types and object-oriented methods enhance study of elementary data structures.
Prerequisite: MAT 095 (formerly MAT 110) or any higher MAT course with minimum grade of C, or appropriate score on the Mathematics Placement Test.
IAI Major: CS 911
Instruction Type: In-Person | Online Fee: $10
Term Typically Offered: Fall | Spring | Summer

CSC 156 **3 credit hours (lecture: 3 | lab: 1)**
Java Computer Science I
A first course in computer programming from basic through intermediate levels. Introduces a disciplined approach to problem-solving and algorithm development using the Java programming language for applications from business and computer science. Abstract data types and object-oriented methods enhance study of elementary data structures. Covers: selection, repetition, and sequence control structures; program design, testing, and documentation using good programming style; block-structured high-level programming language; and arrays, records, and files.
Prerequisite: MAT 095 (formerly MAT 110) or any higher MAT course with minimum grade of C, or appropriate score on the Mathematics Placement Test.
IAI Major: CS 911
Instruction Type: In-Person | Online Fee: $10
Term Typically Offered: Fall | Spring | Summer

CSC 157 **3 credit hours (lecture: 3 | lab: 1)**
Python Computer Science I
A first course in computer programming from basic through intermediate levels. Content includes designing, implementing and debugging maintainable Python programs, and demonstrating problem solving and algorithm development for applications from business and computer science. Abstract data types and object-oriented methods enhance study of elementary data structures.
Prerequisite: MAT 095 (formerly MAT 110) or any higher MAT course with minimum grade of C, or appropriate score on the Mathematics Placement Test.
IAI Major: CS 911
Instruction Type: In-Person | Online Fee: $10
Term Typically Offered: Fall | Spring | Summer

CSC 170 **2 credit hours (lecture: 2 | lab: 1)**
Introduction to Numerical Methods
An introduction to the tools available for solving numerically intensive applications that occur in scientific and engineering fields. The study of numerical algorithms will be supported by the use of a computer algebra system. Network utilities will enable students to use the Internet for communication and learning purposes.
Prerequisite: MAT 250 or higher and concurrent enrollment in any of CSC 171, CSC 173 or CSC 174.
IAI Major: CS 911
Instruction Type: In-Person | Online | Hybrid Fee: $25
Term Typically Offered: Fall | Spring | Summer

CSC 171 **1 credit hours (lecture: 1 | lab: 0)**
C++ Programming for Engineers
Course introduces C++ programming language. Content focus is on solving numerically intensive applications present in scientific and engineering fields. Numerical algorithms implemented using object-oriented programming tools and elementary data structures.
Prerequisite: CSC 170 or concurrent enrollment in CSC 170.
IAI Major: CS 911
Instruction Type: Online Fee: $25
Term Typically Offered: Fall | Spring | Summer

CSC 173 **1 credit hours (lecture: 1 | lab: 0)**
Java Programming for Engineers
Course introduces Java programming language. Content focus is on solving numerically intensive applications present in scientific and engineering fields. Numerical algorithms implemented using object-oriented programming tools and elementary data structures.
Prerequisite: CSC 170 or concurrent enrollment in CSC 170.
IAI Major: CS 911
Instruction Type: Online Fee: $25
Term Typically Offered: Fall | Spring | Summer

CSC 174 **1 credit hours (lecture: 1 | lab: 0)**
Python Programming for Engineers
Course introduces Python programming language. Content focus is on solving numerically intensive applications present in scientific and engineering fields. Numerical algorithms implemented using intermediate programming tools and elementary data structures.
Prerequisite: CSC 170 or concurrent enrollment in CSC 170.
IAI Major: CS 911
Instruction Type: In-Person | Online Fee: $25
Term Typically Offered: Fall | Spring | Summer

CSC 180 **3 credit hours (lecture: 3 | lab: 1)**
Introduction to Artificial Intelligence
Introduction to concepts involving the fundamentals of artificial intelligence for solving real world applications. Machine Learning (ML) problems will be emphasized including data science for analyzing and manipulating data, supervised and unsupervised learning, deployment of machine learning models as web services, and neural networks. Course includes use of the Python programming language and its fundamental ML libraries.
Prerequisite: CSC 155, CSC 156, CSC 157 or CSC 170 with a minimum grade of C, or consent of program coordinator.
Instruction Type: In-Person | Online | Hybrid Fee: $10
Term Typically Offered: Fall | Spring | Summer

CSC 204 **3 credit hours (lecture: 3 | lab: 1)**
Computer Architecture and Organization
A survey of the various levels of hierarchical computer architectures and design. The analysis of internal and external memory models, busses, I/O devices, and CISC/RISC processor strategies are covered. Additional topics include the instruction formats and addressing schemes of architectures such as Intel, MIPS, ARM, and the JVM; parallel and vectorized multiprocessors and multicomputer systems; pipelining; parallel programming; secure and optimized programming techniques; coding and compression schemes; assembly programming in MIPS and MARIE.
Prerequisite: CSC 155, CSC 156, CSC 157 or CSC 170 with a minimum grade of C, or consent of program coordinator.
Instruction Type: In-Person | Online Fee: $10
Term Typically Offered: Fall | Spring | Summer

CSC 206 **3 credit hours (lecture: 3 | lab: 1)**
Software Cybersecurity
An introductory course of computer security principles and practices with applications to databases and software systems. An emphasis is placed on securing database authentication and authorization processes; and, securing systems through responsible software development and scripting techniques. Credit toward graduation cannot be received for both CIS 206 and CSC 206.
Prerequisite: CSC 155, CSC 156, CSC 157 or CSC 170 with a minimum grade of C, or consent of program coordinator.
Instruction Type: In-Person | Online | Hybrid Fee: $20
Term Typically Offered: Fall | Spring | Summer

CSC 208 **3 credit hours (lecture: 3 | lab: 1)**
Data Science
Course serves as an overview of the foundations of data science. Specific topics include a synopsis of data management, data collection, information extraction and reporting, basic data visualization and presentation procedures, exploratory and predictive data analysis. Emphasis will be placed on real-world problem-solving techniques using various mathematical and scientific concepts. This course includes the use of various technological tools and the Python programming language with its standard libraries and supplemental predeveloped libraries.
Prerequisite: CSC 155, CSC 156, CSC 157 or CSC 170 with a minimum grade of C, or consent of program coordinator.
Instruction Type: In-Person | Online | Hybrid Fee: $10

CSC 240 **3 credit hours (lecture: 3 | lab: 1)**
C++ Data Structures
A second course in computer programming using the C++ programming language that provides a survey of data structures including files, lists, sets, trees, tables, queues, stacks, graphs, and other classes. Content covers: utilization of object-oriented design techniques to implement solutions for large-scale problems; program verification and complexity analysis; dynamic concepts; sorting and searching algorithms; abstract data types; recursion.
Prerequisite: CSC 155 or CSC 170 and CSC 171 with minimum grades of C.
IAI Major: CS 912
Instruction Type: In-Person | Online Fee: $10
Term Typically Offered: Fall | Spring | Summer

CSC 241 **3 credit hours (lecture: 3 | lab: 1)**
Java Data Structures
A second course in computer programming using the Java programming language that provides a survey of data structures including files, lists, sets, trees, tables, queues, stacks, graphs, and other classes. Content covers: utilization of object-oriented design techniques to implement solutions for large-scale problems; program verification and complexity analysis; dynamic concepts; sorting and searching algorithms; abstract data types; recursion.
Prerequisite: CSC 156 or CSC 170 and CSC 173 with minimum grades of C.
IAI Major: CS 912
Instruction Type: In-Person | Online Fee: $10
Term Typically Offered: Fall | Spring | Summer

CSC 242 **3 credit hours (lecture: 3 | lab: 1)**
Python Data Structures
A second course in computer programming using the Python programming language that provides a survey of data structures including files, lists, sets, trees, tables, queues, stacks, graphs, and other classes. Content covers: utilization of object-oriented design techniques to implement large-scale problems; program verification and complexity analysis; dynamic concepts; sorting and searching algorithms; abstract data types; recursion.
Prerequisite: CSC 157 or CSC 170 and CSC 174 with minimum grades of C.
IAI Major: CS 912
Instruction Type: In-Person | Online | Hybrid Fee: $10
Term Typically Offered: Fall | Spring | Summer

CSC 255 **3 credit hours (lecture: 3 | lab: 1)**
Objects and Algorithms
An intermediate programming course that continues the development of object-oriented techniques using data structures with an emphasis on graphs, sets, maps/tables, heaps, and trees; foundational analysis and design of various algorithms that exhibit recursion, backtracking, divide and conquer, greedy strategies and dynamic programming techniques; random number generation; cryptography; introductory parallel programming techniques; includes an analysis of time and memory complexity using discrete metrics; sorting and searching techniques. The course is offered with an option for choice of programming languages (C++ or Java or Python).
Prerequisite: CSC 240, CSC 241 or CSC 242 with a minimum grade of C.
Recommended: CSC 144 or MAT 144 with a minimum grade of C.
Instruction Type: In-Person | Online Fee: $10
Term Typically Offered: Fall | Summer

CSC 290 **1-4 credit hours (lecture: 1-4 | lab: 1-4)**
Topics In Computer Science: Code Elevate
Course covers a variety of different topics during different semesters. Topics will be selected from among current advances in hardware and software technology. Typical course concentrations might be Introduction to Parallel Programming or Artificial Intelligence. Check with Instructor and latest college class listings for details. Course may be repeated up to three times. Fee Varies. Prerequisite may vary by topic.
Instruction Type: In-Person | Online
Term Typically Offered: Summer