Computer Science (CS)

Courses

CS 134   Programming Fundamentals (4 Hours)
In this introductory course, students will create computer applications that perform tasks and solve problems. Students will utilize fundamental logic, problem-solving techniques, and key programming concepts to design, develop and test modular applications using a professional high-level programming language. 3 hrs. lecture, 2 hrs. open lab /wk.

CS 200   Concepts of Programming Algorithms Using C++* (4 Hours)
Prerequisites : (CS 134 with a grade of "C" or higher or CIS 142 with a grade of "C" or higher or department waiver test and MATH 131 or higher) or MATH 241 or department approval.
This course emphasizes problem solving using a high-level programming language and the software development process. Algorithm design and development, programming style, documentation, testing and debugging will be presented. Standard algorithms and data structures will be introduced. Data abstraction and an introduction to object-oriented programming will be studied and used to implement algorithms. 3 hrs. lecture, 2 hrs. lab by arrangement/wk.

CS 201   Concepts of Programming Algorithms using C#* (4 Hours)
Prerequisites : (CS 134 with a grade of "C" or higher or CIS 142 with a grade of "C" or higher or department waiver test and MATH 131 or higher) or MATH 241 or department approval.
This course emphasizes problem-solving using a high-level programming language and the software development process. Algorithm design and development, programming style, documentation, testing and debugging will be presented. Standard algorithms and data structures will be introduced. Data abstraction and an introduction to object-oriented programming will be studied and used to implement algorithms.

CS 202   Concepts of Programming Algorithms using Python* (4 Hours)
Prerequisites : (CS 134 with a grade of "C" or higher or CIS 142 with a grade of "C" or higher or department waiver test and MATH 131 or higher) or MATH 241 or department approval.
This course emphasizes problem-solving using a high-level programming language and the software development process. Algorithm design and development, classes and inheritance, programming style, documentation, testing and debugging will be presented. Standard algorithms and data structures will be introduced. Data abstraction and object-oriented programming will be studied and used to implement algorithms. 3 hrs. lecture, 2 hrs. lab by arrangement/wk.

CS 205   Concepts of Programming Algorithms using Java* (4 Hours)
Prerequisites : (CS 134 with a grade of "C" or higher or CIS 142 with a grade of "C" or higher or department waiver test and MATH 131 or higher) or MATH 241 or department approval.
This course emphasizes problem-solving using a high-level programming language and the object-oriented software development process. Algorithm design and development, classes and inheritance, programming style, documentation, testing and debugging will be presented. Standard algorithms and data structures will be introduced. Data abstraction and object-oriented programming will be studied and used to implement algorithms. 3 hrs. lecture, 2 hrs. lab by arrangement/wk.

CS 210   Discrete Structures I* (3 Hours)
Prerequisites : MATH 171 with a grade of "B" or higher or a higher level MATH course with a grade of "C" or higher.
This course focuses on the study of topics in Discrete Structures aimed at applications in Computer Science. Students will study logic, methods of proof including induction, set theory, relations, functions and Boolean algebra. They will develop general problem-solving skills.

CS 211   Discrete Structures II* (3 Hours)
Prerequisites : CS 210 with a grade of "C" or higher.
This second course in Discrete Structures is aimed at solving problems in Computer Science. Students will study computation, induction, recursion, integers, counting, graphs and trees. They will develop general problem-solving and programming skills.

CS 235   Object-Oriented Programming Using C++* (4 Hours)
Prerequisites : CS 200 or CS 201 or CS 205.
This course emphasizes programming methodology and problem solving using the object-oriented paradigm. Students will develop software applications using the object-oriented concepts of data abstraction, encapsulation, inheritance, and polymorphism. Students will apply the C++ techniques of dynamic memory, pointers, built-in classes, function and operator overloading, exception handling, recursion and templates. 3 hrs. lecture, 2 hrs. lab by arrangement/wk.

CS 236   Object-Oriented Programming Using C#* (4 Hours)
Prerequisites : CS 201.
This course prepares students to develop object-oriented, C# applications that solve a variety of problems. Students will apply object-oriented concepts including inheritance, function overloading and polymorphism, and will utilize available classes as well as design their own. Event-driven programming, Windows applications, web development, common data structures, database access and frameworks will be presented. 3 hrs. lecture, 2 hrs. open lab/wk.

CS 250   Basic Data Structures using C++* (4 Hours)
Prerequisites : CS 235 or (CS 200 and CS 210 or CS 236 or CS 255 or CIS 240 or MATH 242).
This course continues developing problem solving techniques by focusing on object-oriented styles using C++ abstract data types. Basic data structures such as queues, stacks, trees, dictionaries, their associated operations, and their array and pointer implementations will be studied. Topics also include recursion, templates, fundamental algorithm analysis, searching, sorting, hashing, object-oriented concepts and large program organization. Students will write programs using the concepts covered in the lecture. 3 hrs. lecture, 2 hrs. lab by arrangement/wk.

CS 252   Basic Data Structures Using Python* (4 Hours)
Prerequisites : CS 202.
This course continues developing advanced problem-solving techniques through object-oriented programming using Python. Basic data structures including stacks, queues, trees, and dictionaries will be studied and implemented. Additional topics include recursion, fundamental algorithm analysis, searching, sorting, and large program organization. 3 hrs. lecture, 2 hrs. lab by arrangement/wk.

CS 255   Basic Data Structures Using Java* (4 Hours)
Prerequisites : CS 205 or CS 236 or CIS 240.
This course will cover advanced programming topics using Java. Files, recursion, data structures and large program organization will be implemented in projects using object-oriented methodology. Students will write programs using queues, stacks, lists and other concepts covered in the lecture. 3 hrs. lecture, 2 hrs. lab by arrangement/wk.