COMPUTER SCIENCE (CS)

CS G102   **4 Units (54 lecture hours; 54 lab hours)**
Computer Software Development, Introduction
Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU.

This course will introduce students to the basic principles of computers and software development. Computer architecture concepts and principles of operation, operating systems basics, file management, and software development principles will be discussed, demonstrated and practiced. Common programming languages, including Java, C, C++, and Visual Basic will be discussed and small programs in each language will be written. Graded or Pass/No Pass option.

CS G130   **4 Units (54 lecture hours; 54 lab hours)**
Survey Of Computer Science/Information Technology
Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU; UC.

This class surveys computer science and information technology with emphasis on computer business applications. The student will be exposed to computer concepts including components of a computer, operating systems, utility programs, terminology, communications, networking, internet usage, ethical issues and computer application software, such as word processing, spreadsheets, database, database query and presentation software. The student will complete projects in a desktop computer environment. Lecture & lab. Graded or Pass/No Pass option. **C-ID:** ITIS 120.

CS G131   **3 Units (42 lecture hours; 48 lab hours)**
Python Programming I
Advisory: CS G102.

Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU; UC.

This course will cover the fundamentals of programming using Python language. The process of software development will be discussed to include: designing, writing source code, executing, testing, and debugging. Data types, arithmetic and logical expressions, debugging, looping, branching, modularization, simple database access, simple database structures, and simple Graphical User Interface will be discussed in lectures and practiced through lab projects. Business, scientific, and mathematics applications will be designed and created. Graded or Pass/No Pass option.

CS G153   **3 Units (42 lecture hours; 48 lab hours)**
Java Programming 1
Advisory: CS G102 and course taught at the level of intermediate algebra or appropriate math placement.

Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU; UC.

This course covers the fundamentals of software development using the Java programming language. Students learn to design and evaluate solutions and apply computer science to solve problems through the development of algorithms and programs. Lecture and lab content will focus on object-oriented programming, classes, constructors, flow control statements, data types, methods, inheritance, data hiding, abstraction, and the Java library. Graded or Pass/No Pass option. **C-ID:** COMP 122.

CS G154   **3 Units (42 lecture hours; 48 lab hours)**
Java Programming 2
Prerequisite(s): CS G153 or CS G175.

Grading Mode: Standard Letter
Transfer Credit: CSU; UC.

Formerly: Data Structures with Java. This course covers advanced programming techniques and object oriented programming (OOP) in Java. Students will gain theoretical and hands-on experience with the implementation of typical data structures including arrays, queues, stacks, linked-lists, trees, hashing, and graphs used in programming applications. Principles of recursion, sorting, searching, optimization, classes, objects, inheritance, and polymorphism will be explored and practiced. Graded. **C-ID:** COMP 132.

CS G175   **3 Units (42 lecture hours; 48 lab hours)**
C++ Programming 1
Advisory: CS G102 and course taught at the level of intermediate algebra or appropriate math placement.

Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU; UC.

Formerly: C++ Programming. This course introduces the fundamentals of software development using the C++ programming language. Software development process will include: designing, writing source code, compiling, linking, executing, and debugging. Data types, arithmetic and logical expressions, debugging, looping, branching, modularization, static and dynamic memory allocation, classes and objects will be presented in lectures and practiced through lab projects. Console applications will be designed and implemented. Graded or Pass/No Pass option. **C-ID:** COMP 122.

CS G178   **4 Units (54 lecture hours; 54 lab hours)**
Visual C# .Net
Advisory: CS G153 or CS G175.

Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU.

This course will cover software development in the Microsoft .NET framework. Visual C# .NET will be used as the development tool to discuss and practice Windows-based applications and Web-based applications. This course prepares students for Microsoft.NET Framework Web-Based Development Certificate and Windows Client Development Certificate. Graded or Pass/No Pass option.

CS G179   **4 Units (54 lecture hours; 54 lab hours)**
C++ Programming, Advanced
Advisory: Experience with Object Oriented Programming in C++, including templates.

Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU; UC.

This course covers advanced features of software development using the C++ language. Topics covered will include input/output streams, file input and output, exception handling, Standard Template Library (STL) including string class, sequential and associative containers. Understanding function objects, STL algorithms, adaptive containers, bitset class and smart pointers will also be discussed in lectures and practiced through lab projects. Graded or Pass/No Pass option.

CS G189   **3 Units (42 lecture hours; 48 lab hours)**
C++ Programming 2
Prerequisite(s): CS G153 or CS G175.

Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU; UC.

Formerly: Data Structures with C++. This course covers data structures and object-oriented programming (OOP) concepts using the C++ language. Arrays, queues, stacks, linked-lists, trees, hashing, graphs, recursion, sorting, searching, optimization, classes, objects, inheritance, polymorphism, and algorithm complexity will be discussed and practiced. Graded or Pass/No Pass option. **C-ID:** COMP 132.

CS G196   **4 Units (54 lecture hours; 54 lab hours)**
Web Programming With .NET
Advisory: CS G177 or CS G178.

Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU; UC.

Students will study and build eCommerce and eBusiness applications using various tools, languages, & utilities to include: Visual Basic .Net, C#, Code Behind, Active Server Pages.Net, ActiveX Data Objects.Net, Structured Query Language (SQL) & Common Gateway Interface. Web services will be discussed and implemented using XML, SOAP, WSDL, & UDDI. This course prepares students for Microsoft .NET Framework Web-Based Development Certificate. Graded or Pass/No Pass option.

CS G231   **3 Units (42 lecture hours; 48 lab hours)**
Python Programming 2
Prerequisite(s): CS G131, CS G153, or CS G175.

Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU; UC.

This course covers data structures and object-oriented programming (OOP) concepts using the Python language. Arrays, queues, stacks, linked-lists, trees, hashing, graphs, recursion, sorting, searching, optimization, classes, objects, inheritance, polymorphism, and algorithm complexity will be discussed and practiced. Graded or Pass/No Pass option.

CS G242   **3 Units (54 lecture hours)**
Computer Architecture and Organization
Advisory: CS G153 or CS G175.

Grading Mode: Standard Letter
Transfer Credit: CSU; UC.

This course will cover the organization and behavior of real computer systems at the assembly-language level. The mapping of statements and constructs in a high-level language onto sequences of machine instructions is studied, as well as the internal representation of simple data types and structures. Numerical computation is examined, noting the various data representation errors and potential procedural errors. Graded. **C-ID:** COMP 142.

CS G262   **3 Units (54 lecture hours)**
Discrete Structures
Prerequisite(s): CS G153 or CS G175 and course taught at the level of intermediate algebra or appropriate math placement.

Grading Mode: Standard Letter
Transfer Credit: CSU; UC.

This course is an introduction to the discrete structures used in Computer Science with an emphasis on their applications. Topics covered include: Functions, Relations and Sets; Basic Logic; Proof Techniques; Basics of Counting; Graphs and Trees; and Discrete Probability. Graded. **C-ID:** COMP 152.