

■ Computer Science

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The Computer Science Program at Chaminade University offers the Bachelor of Science degree in Computer Science (CS), the Bachelor of Science degree in Computer Information Systems (CIS), the Associate of Science degree in CIS, and minors in both CS and CIS. The various programs are designed to prepare students to meet professional and individual needs in computer and information technology in a wide range of workplace environments as well as to prepare them for graduate study. The CIS program concentrates on business applications: it includes a minor in Business Administration. The CS program concentrates on a deeper understanding of computer technology, computer systems and mathematical foundations.

The CS courses teach both CS and CIS students the tools needed for software development, the principles underlying the development of software systems, and applications in a variety of hardware and software environments. Studying the principles of computer operations and software development enables students to adapt to the change that is continual in the computer and information technology fields. Learning practical applications helps students to take advantage of current technology in their academic and professional work.

Program Learning Outcomes in Computer Sciences

After completing the Computer Science program leading to a Bachelor of Science degree, the student is expected to demonstrate the following outcomes:

1. Understanding of the basic elements of the Computer Science field
2. Basic skills in problem solving
3. Ability to write computer programs in several programming languages
4. Understanding of how the computer operates
5. Basic understanding of data communication and network systems
6. Understanding of ethical responsibilities for computer professionals

Program Learning Outcomes in Computer Information Sciences

After completing the Computer Information Systems program leading to a Bachelor of Science degree, the student is expected to demonstrate the following outcomes:

1. Understanding of the basic elements of the Information Technology field
2. Basic skills in problem solving
3. Understanding of basic programming concepts
4. Basic understanding of data communication
5. Ability to express ideas through oral and written communication
6. Familiarity with basic business concepts
7. Understanding of ethical responsibilities in business

Bachelor of Science in Computer Science (CS)

Pre-major requirements for CS: CS 110, CS 150, MA 110, BU 362.

Major requirements for CS: CS 310, CS 330, CS 350, CS 410, CS 420, CS 430, CS 460, CS470, one CS elective, MA 308, MA 331, and MA 401.

Bachelor of Science in Computer Information Systems (CIS)

Pre-major requirements for CIS: CS103, CS 110, CS 150, MA 110, BU 200, AC 201, EC 202, MA 331.

Major requirements for CIS: CS 310, CS 350, CS 420, CS 430, CS 460, CS elective (to be selected from the following classes: CS 330, CS 470, CS 480, CS 487, CS 499, ID 318, ID 319, COM 330), BU 324, BU 362, MA 308, MKT 301, BU 307, BU 407.

Associate of Science in Computer Information Systems

AS requirements: BU 200, BU 224, CS 103, CS 110, CS 150, CS 310, CS 350 .

Minor in CS or CIS

Pre-minor requirements for CS and CIS: CS 110, CS 150, CS 310, MA 110.

CS minor requirements: 12 semester hours of upper division CS courses which focus on deeper understanding of computer technology, computer systems and mathematical foundations.

CIS minor requirements: 12 semester hours of upper division CS courses which focus on business applications.

Course Descriptions

Computer Science (CS)

CS 103 Computers and Application Software (3)

Introduction to the computer as a productivity tool. Covers the basic concepts and uses of the Internet including email, FTP, and WWW; application packages including word processing, spreadsheet, presentation graphics, and database systems. Offered every semester.

CS 110 Introduction to Web Page Design (3)

Introduction to the design and implementation of Web pages. Survey of HTML elements including tables, forms, and images; cascading style sheet; Javascript; introduction to website development software. Offered every semester.

CS 150 Introduction to Programming (3)

Principles and techniques in algorithm development; basic concepts including variables, primitive types, arrays, events, functions, and procedures, using a high-level programming language. Offered every semester.

English 102 and COM 101 are prerequisites for all upper division courses

CS 310 Object-Oriented Programming (3)

Fundamental concepts in object-oriented programming, using a suitable programming language, including abstraction, encapsulation, inheritance, and other OOP concepts; container classes and their implementation. Offered annually in the fall semester. Prerequisite: CS 150.

CS 330 Computer Architecture (3)

Architecture versus organization; logic modules; CPU, memory and I/O; instruction cycles and the control unit; datapath implementation of the CPU; memory structure and timing; I/O interface, interrupts, programmed I/O and DMA; and assembly language programming. Offered annually in the spring semester. Prerequisite: CS 150.

CS 350 Data Structures (3)

Representation of information in computers including process and data abstraction techniques; static and dynamic storage methods, lists, stacks, queues, and binary trees; recursion, analysis of algorithms, and searching and sorting. Offered annually in the spring semester. Prerequisite: CS 150.

CS 410 Operating Systems (3)

Operating system concepts: process management, memory management, file systems, distributed systems, protection and security. Study of operating system types and examples. Offered alternate years in the fall semester. Prerequisite: CS 150.

CS 420 Database Systems (3)

Logical organization of databases; relational databases, entity-relationship model, data manipulation language to query and modify database; Web-based applications. Offered alternate years in the spring semester. Prerequisite: CS 150.

CS 430 Software Engineering (3)

An overview of methodologies for producing software systems, including requirements analysis, tools and techniques, and design principles and implementations. Includes structured and object-oriented approaches. Offered alternate years in the fall semester. Prerequisite: CS 150.

CS 460 Telecommunications and Network Systems (3)

Basic concepts in data transmission and network systems, including transmission protocols, network configurations, packet switching, and network interconnection. Offered alternate years in the fall semester. Prerequisite: CS 150.

CS 470 Network Management (3)

Techniques, tools, and systems to manage local and networks. Includes an overview of network management, diagnostic and performance tools, security issues, and requirements for the LAN manager. Offered alternate years in the spring semester. Prerequisite: CS 150.

CS 480 Special Topics (1-3)

Lecture or laboratory work on selected topics; e.g., artificial intelligence, parallel processing, information retrieval, data communications technology. Prerequisites: Permission of program advisor.

CS 487 Internship (3)

CS or CIS-related work experience in an approved organization. Prerequisites: 6 semester hours of upper-level CS courses with GPA of 3.0 and overall GPA of 2.5, and permission of program advisor.

CS 499 Directed Study (3)

Individualized study on a topic arranged through the program advisor. Offered every semester. Prerequisites: junior or senior standing and consent of program advisor.