Department of Computer Science, San Diego State University
B.S. Applied Arts and Sciences

COMPUTER SCIENCE

Lower Division Requirements

(*Preparation for the major.*) All courses are 3 units unless otherwise specified.

Course #	Course Name (*26 units*)
CS 107	Introduction to Computer Programming
CS 108	Intermediate Computer Programming
CS 237	Machine Organization and Assembly Language
MATH 150	Calculus I (*4 units*)
MATH 151	Calculus II (*4 units*)
MATH 245	Discrete Mathematics
MATH 254	Linear Algebra
STAT 250	Basic Statistical Methods

A C or better is required in the above classes to advance to the major

Acceptable Science Courses (*12 units*)

Course #	Course Name
PHYS 195	Principles of Physics
PHYS 195L	Principles of Physics Lab (*1 unit*)
PHYS 196	Principles of Physics
PHYS 196L	Principles of Physics Lab (*1 unit*)
or	
CHEM 200	General Chemistry (*5 units*)
CHEM 201	General Chemistry (*5 units*)
or	
BIOL 203	Principles of Cell/Molecular Biology
BIOL 203L	Principles of Cell/Molecular Biology Lab *(1 unit)*
BIOL 204	Principles of Organismal Biology
BIOL 204L	Principles of Organismal Biology Lab *(1 unit)*

(*Note: Chem 200 is a prerequisite for Biol 203*)

and additional science courses to complete 12 units with approval of a computer science adviser. These must be science courses intended for science or engineering majors with a strong emphasis on quantitative methods.

(a) Courses for science majors taken in the Biology department or any of the physical science departments. (These may satisfy Gen Ed requirements II.A.1 or II.A.2.)
(b) Anthro 101, Astro 201, Biol 100, Biol 101, Biol 130, Geol Sci 104, Ocean 100. These satisfy Gen Ed II.A.1 or II.A.2.
(c) Astro 301, Astro 310, Biol 307, Biol 315, Biol 318, Biol 319, Biol 320, Biol 324, Biol 325, Biol 330, Biol 336, Biol 339, Biol 362, Biol 454, Chem 300, Chem 308, Geol Sci 301, Geol Sci 302, Geol Sci 304, Geol Sci 305, Physics 301, Physics 305 (These satisfy Gen Ed requirement IV.A.)
(d) Certain other courses with the approval of the undergraduate advisor, including Astro 101, Chem 100 (but not with Chem 200/201), Geography 101, Geography 103, Geol Sci 100, Physics 180A (but not with Physics 195/196).

You need 12 units of science, including the year-long sequence with labs, which in certain cases can involve 3 rather than 4 courses. If you take Chem 200/201 you need only one additional science course. If you take Biol 203/203L and 204/204L and the Chem 200 prerequisite you do not need a fourth course. (*These statements refer to the requirements for the CS major, not General Education requirements.*)

If you satisfy the science requirements of the Computer Science B.S. degree without satisfying Gen. Ed. IV.A (such as with the Biology or Chemistry sequence, or by taking an extra lower division science elective), then you need not satisfy Gen. Ed. IV.A. In this case you must substitute an additional course from areas IV.B or IV.C

Required Courses

(*All courses are 3 units except CS 490 which is 1 unit*)

Course #	Course Name (*22 units*)
CS 310	Data Structures
CS 320	Programming Languages
CS 370	Computer Architecture
CS 440	Social, Legal and Ethical Issues in Computing
CS 490	Senior Seminar
CS 530	Systems Programming
CS 560	Algorithms and their Analysis
CS 570	Operating Systems

At least one course from the following:

Course #	Course Name (3 *units*)
STAT 350 A	Statistical Methods
MATH 541	Intro to Numerical Analysis & Computing
STAT 550	Applied Probability
STAT 551A	Mathematical Statistics
MATH 579	Combinatorics

and 12 units of electives (*with approval of a computer science major adviser*)

Course #	Course Name (12 *units*)
CS 470	UNIX System Administration
CS 503	Scientific Database Techniques
CS 514	Database Theory and Implementation
CS 520	Advanced Programming Languages
CS 524	Compiler Construction
CS 532	Software Engineering
CS 534	Software Measurement
CS 535	Object Oriented Programming and Design
CS 537	Component GIS Architecture
CS 540	Software Internationalization
CS 541	Online Documentation and Help Systems
CS 542	XML for Multilingual and Multicultural Applications
CS 550	Artificial Intelligence
CS 552	Artificial Intelligence II
CS 553	Neural Networks
CS 556	Robotics: Math Programming and Control
CS 558	Computer Simulation
CS 559	Computer Vision
CS 562	Automata Theory
CS 572	Microprocessor Architecture
CS 574	Computer Security
CS 576	Computer Networks and Distributed Systems
CS 580	Client-Server Programming
CS 581	Computational Linguistics
CS 582	Introduction to Speech Processing
CS 583	3D Game Programming
CS 596	Advanced Topics in Computer Science (*Topics vary each semester*)

The student must complete an outline for the major and file a copy signed by a major adviser with the Office of Evaluations.

The student may not take both CS 503 and CS 514. CS 301, CS 501, and CS 499 are ***not*** appropriate CS major electives.

One appropriate elective may be taken outside the CS department, with PRIOR approval of a CS adviser.