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# Computational Science

In the College of Sciences

**OFFICE: Geology/Mathematics/Computer Science 206H**  
**TELEPHONE: 619-594-3430 / FAX: 619-594-2459**  
**<http://www.csrc.sdsu.edu>**

## Faculty

*Program Director:* José E. Castillo (Mathematics and Statistics)

*Associated Faculty:* Bailey (Mathematics and Statistics), Baljon (Physics), Blomgren (Mathematics and Statistics), Carretero (Mathematics and Statistics), Cooksy (Chemistry and Biochemistry), Demasi (Aerospace Engineering), Edwards (Computer Science), Fan (Mathematics and Statistics), Johnson (Physics), Kuznetsova (Physics), Kumar (Electrical and Computer Engineering), Levine (Mathematics and Statistics), Müller (Psychology), Palacios (Mathematics and Statistics), Paolini (Biology, Emeritus), Rohwer (Biology), Sandquist (Astronomy), Segall (Biology), Shen (Mathematics and Statistics), Venkataraman (Aerospace Engineering), Weber (Physics), Zeller (Biology), Xie (Computer Science).

## Offered by Computational Science

Doctor of Philosophy degree in computational science.

Concentration in statistics.

Master of Science degree in computational science.

Concentration in professional applications.

Certificate in professional computational science, advanced (refer to the *Graduate Bulletin*).

## COURSES (COMP)

*Refer to Courses and Curricula and University Policies sections of this catalog for explanation of the course numbering system, unit or credit hour, prerequisites, and related information.*

### UPPER DIVISION COURSES (Also Acceptable for Advanced Degrees)

#### COMP 521. Introduction to Computational Science (3)

Prerequisite: Mathematics 151.

Matrices and linear equations, solving ordinary differential equations (ODEs), vector spaces, closed form solutions, qualitative theory, Eigenvalues, linear maps, linear differential equations, other techniques, nonlinear systems, higher dimensional systems.

#### COMP 526. Computational Methods for Scientists (3)

Prerequisites: Mathematics 252 and 254.

Translating mathematical problem descriptions to computer programs. Introduction to Unix system.

#### COMP 536. Computational Modeling for Scientists (3)

Prerequisite: Mathematics 151.

Models, computational tools, errors, system dynamics, growth, stability, multicompartiment models, Euler's, Runge-Kutta methods, system dynamics, infectious disease, enzyme kinetics, environmental cycles, cardiovascular system, metabolism, global warming, empirical models, HIV, population distributions, diffusion, HPC.

#### COMP 596. Advanced Topics in Computational Science (1-4)

Prerequisite: Consent of instructor.

Selected topics in computational science. may be repeated with the approval of the instructor. See *Class Schedule* for specific content. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree. Maximum credit of six units of 596 applicable to a bachelor's degree. Credit for 596 and 696 applicable to a master's degree with approval of the graduate adviser.

### GRADUATE COURSES Refer to the *Graduate Bulletin*.

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