

SDSU also requires three consecutive courses in a single foreign language as part of the requirement for the bachelor's degree. Foreign language competency may also be demonstrated by successfully completing four years of one foreign language in high school or by successfully completing a challenge examination. See a counselor for additional information.

*Students planning to transfer to a four-year college or university should complete courses specific to transfer institution of choice. University requirements vary from institution to institution and are subject to change. Therefore, it is important to verify transfer major preparation and general education requirements through consultation with a counselor in either the Counseling Center or Transfer Center.

PHYSICAL SCIENCE

SCHOOL OF MATHEMATICS, SCIENCE, AND ENGINEERING

DEAN: Michael Odu, Ph.D., Office 215A, 619-482-6344

FACULTY: Ken Yanow, M.S., M.A.

DEPARTMENT CHAIR: Jeffrey Veal, Ph.D.

GENERAL DESCRIPTION

The physical science program is an interdisciplinary approach to the study of science that stresses the interrelationship of chemistry and physics, as well as geology, biology, astronomy, earth science, and mathematics. Learning in this department offers a broad academic background and facility in analytic thinking requisite for advanced study in any of the sciences while providing a greater diversity of knowledge than is possible with study in a single science.

CAREER OPTIONS

The usual career goal of the physical science major is to become a teacher in high school. Upon completion of the bachelor's degree in physical science and other requirements for a single subject credential, graduates will be able to teach the following subjects in California high schools: chemistry, general science, physics, and physical science. Jobs for physical science teachers are becoming more plentiful with an increasing need for instructors in high school during the next ten years. Minority students or those proficient in Spanish are particularly in demand.

DEGREE/CERTIFICATE OPTIONS

MAJOR CODE

Associate in Science Degree: Transfer Preparation

Physical Science

01670

Consult with a counselor to develop a Student Education Plan (SEP), which lists the courses necessary to achieve your academic goal.

The program below is undergoing modification and the modification will be placed into an addendum upon Chancellor's Office approval - see your counselor for further information and visit the college website under <http://www.swccd.edu/catalog> link for the latest addenda updates.

ASSOCIATE IN SCIENCE DEGREE

PHYSICAL SCIENCE



ASSOCIATE IN SCIENCE DEGREE TRANSFER PREPARATION * (MAJOR CODE: 01670)

Lower-division requirements are not the same for all universities. The curriculum is designed for students who intend to transfer to a four-year college or university, such as SDSU, to earn a Bachelor of Science degree in order to become a high school science teacher. The State of California does not offer separate credentials in either chemistry or physics.

Program Student Learning Outcome Statement:

- Students should be able to demonstrate broad science content knowledge in the physical sciences such as the nature and structure of matter, Earth's place in the Universe, and the conservation of energy and matter.
- Students should be able to demonstrate the application of quantitative skills (such as statistics, mathematics and the interpretation of numerical graphical data) to physical science problems.
- Students should be able to demonstrate a general understanding of the nature of science, the methods applied in scientific investigations, and the value of those methods in developing a rigorous understanding of the physical world. Students should be able to identify the difference between science and other fields of knowledge.



ASTR 100	Principles of Astronomy	3
CHEM 200	General Chemistry I	5
CHEM 210	General Chemistry II	5
GEOL 100	Principles of Geology	3
MATH 130	Introduction Computer Programming	4
MATH 250	Analytic Geometry and Calculus I	5
MATH 251	Analytic Geometry and Calculus II	4
MATH 252	Analytic Geometry and Calculus III	4
PHYS 270	Principles of Physics I	3
PHYS 271	Principles of Physics Laboratory I	1
PHYS 272	Principles of Physics II	3
PHYS 273	Principles of Physics II	1
PHYS 274	Principles of Physics III	3
PHYS 275	Principles of Physics Laboratory III	1

Total units **45**

To earn an associate degree, additional general education and graduation requirements must be completed. See page 64.

- * Students planning to transfer to a four-year college or university should complete courses specific to the transfer institution of choice. University requirements vary from institution to institution and are subject to change. Therefore, it is important to verify transfer major preparation and general education requirements through consultation with a counselor in either the Counseling Center or Transfer Center. See catalog TRANSFER COURSES INFORMATION section on page 45 for further information.

PHYSICS

SCHOOL OF MATHEMATICS, SCIENCE, AND ENGINEERING

DEAN: Michael Odu, Ph.D., Office 215A, 619-482-6344

FACULTY: Hok Kong Lee, Ph.D.; Jeffrey Veal, Ph.D.

DEPARTMENT CHAIR: Jeffrey Veal, Ph.D.

GENERAL DESCRIPTION

Physics is the most fundamental science and underlies our understanding of nearly all areas of science and technology. In a broad sense, physics is concerned with the study of energy, space, matter, the interactions between matter and the laws which govern these interactions. More specifically, physicists study mechanics, heat, light, electric and magnetic fields, gravitation, relativity, atomic and nuclear physics, and condensed-matter physics.

CAREER OPTIONS

Below is a sample of the career options available for the physics major. A few of these require an associate degree, some require a bachelor's degree, and most require a graduate-level degree: research assistant, laboratory technician, high school or college instructor, technical writer and research or applied physicist in acoustics, atmospheric physics, astrophysics, astronomy, atomic and molecular physics, electricity and magnetism, electronic instrumentation, energy conservation, geophysics, health physics, mechanics, heat or light physics, medical imaging, nuclear medicine, solar energy, nuclear physics, engineering, and scientific computing.

DEGREE/CERTIFICATE OPTIONS

MAJOR CODE

Associate in Science Degree: Transfer Preparation

Physics	01680
Physics (SB 1440)	01685

Consult with a counselor to develop a Student Education Plan (SEP), which lists the courses necessary to achieve your academic goal.

Websites for physics majors:

SDSU: <http://physics.sdsu.edu/>

UCSD: <http://physics.ucsd.edu/>

CSU, San Marcos: <http://physics.csusm.edu/>

Articulation: <http://assist.org>

ASSOCIATE IN SCIENCE DEGREE

PHYSICS



ASSOCIATE IN SCIENCE DEGREE

TRANSFER PREPARATION* (MAJOR CODE: 01680)

Physicists are engaged in applying the fundamental principles of science to problems ranging from understanding life processes to exploring the universe. Specializations include mechanics, heat, optics, acoustics, electrodynamics, astrophysics, atomic physics, biophysics, and geophysics.

Program Student Learning Outcome Statement:

- Develop mathematical skills, acquire physics knowledge, and practice applying these skills and knowledge in physical situations.

FIRST SEMESTER

CHEM 200	General Chemistry I	5
MATH 250	Analytic Geometry and Calculus I	5

SECOND SEMESTER

MATH 251	Analytic Geometry and Calculus II	4
PHYS 270	Principles of Physics I	3
PHYS 271	Principles of Physics Laboratory I	1

