

# PHYSICAL SCIENCE

## DEGREES, CERTIFICATES AND AWARDS

Associate in Science Degree (A.S.)

### DESCRIPTION

**Physical Science** is a branch of science, identified as a natural science, which encompasses the study non-living systems, in contrast to the life sciences. Physical sciences are those fields of study that analyze the natural state and properties of energy paired with any non-living matter. Physics, chemistry, geology (earth science), and astronomy are physical sciences.

**Physics** is the "fundamental science" because the other natural sciences (biology, chemistry, geology, etc.) deal with systems that obey the laws of physics. The physical laws of matter, energy, and the forces of nature govern the interactions between particles (such as molecules, atoms, or subatomic particles).

**Astronomy** is a natural science that deals with the study of celestial objects (such as stars, planets, comets, nebulae, star clusters, and galaxies) and phenomena that originate outside the atmosphere of Earth. It is concerned with the evolution, physics, chemistry, meteorology, and motion of celestial objects, as well as the formation and development of the universe. Astronomy is one of the oldest sciences.

**Chemistry**, built upon physical concepts, addresses phenomena associated with the structure, and composition of matter and the changes it undergoes. Often known as the central science, chemistry connects the fundamental laws of physics to engineering and other natural sciences such as biology, earth science, astronomy and material science.

**Earth Science** is the science of the planet Earth, the only known life-bearing planet. Its studies include some of the following: Oceanography, Geology, Weather, Soil Science, Physical Geography, etc.

### PROGRAM LEARNING OUTCOMES

1. Be able to observe repeatable physical interactions, collect data and apply the scientific method to identify their physical origins.
2. Demonstrate, in a clear and concise manner, how to analyze and solve problems and to evaluate and test the correctness of the proposed solution.
3. Demonstrate a proficiency in their oral and written communications of their scientific work and ideas in group and/or laboratory exercises.

### ASSOCIATE DEGREE AND CERTIFICATE OF ACHIEVEMENT PROGRAMS

**The Associate in Arts (AA) or the Associate in Science (AS) Degree** involves satisfactory completion of a minimum of 60 semester units with a C average or higher, including grades of C in all courses required for the major, and fulfillment of all IVC district requirements for the associate's degree along with all general education requirements. The degree provides a sound basis for transfer to upper division institutions for additional degrees or for higher vocational preparation. To be eligible to receive an Associate Degree the student must complete the requirements for the major, the District requirements for an Associate Degree, and the General Education requirements. In addition students must maintain a minimum grade point average and meet the minimum grade requirements of their program. Detailed information is available in the college catalog.

**The Certificate of Achievement** program is designed for students with personal or occupational goals who wish early employment. To qualify for the Certificate, a student must satisfy the following requirements: (1) complete all courses listed for a particular certificate.; (2) achieve a "C" average (2.0 GPA) for all courses used to complete the certificate; and, (3) file a Certificate Application form with Admissions and Records by the appropriate deadline(s) identified on the application.

### CAREER OPPORTUNITIES

Of the career opportunities identified many will usually require the completion of degree requirements at 4-year colleges and universities. A strong mathematical background is required.

- Engineer
- Science Educator
- Chemist
- Geologist
- Agriculturist
- Scientific Computer Programmer
- Geographer
- Meteorologist
- Technical Writer
- Research Physicist
- Applied Physicist
- Telescope Operator
- Astronaut
- Space Engineer
- Space Scientist

**Gainful Employment:** Federal regulations require institutions to provide students with Gainful Employment information for specific certificate programs offered at IVC. Please click on our Programs of Study link to view the information for each certificate program: <http://www.imperial.edu/courses-and-programs/programs-of-study/>

### TRANSFER PREPARATION

Courses that fulfill major requirements for an associate degree at Imperial Valley College may not be the same as those required for completing the major at a transfer institution offering a bachelor's degree. Students who plan to transfer to a four-year college or university should schedule an appointment with an IVC Counselor to develop a student education plan (SEP) before beginning their program.

### Transfer Resources:

[www.ASSIST.org](http://www.ASSIST.org) – CSU and UC Articulation Agreements and Majors Search Engine

[www.CSUMentor.edu](http://www.CSUMentor.edu) – CSU System Information

[www.universityofcalifornia.edu/admissions/index.html](http://www.universityofcalifornia.edu/admissions/index.html) - UC System Information

[www.aiccu.edu](http://www.aiccu.edu) – California Independent Colleges and Universities, Association of

<http://wiche.edu/wue> - Western Undergraduate Exchange Programs

### FINANCIAL AID

Paying for the cost of a college education requires a partnership among parents, students and the college. As the cost of higher education continues to rise we want you to know that IVC offers a full array of financial aid programs – grants, work study, scholarships, and fee waivers (we do not participate in the federal loan programs). These programs are available to both full and part time students who are seeking a degree or certificate. For those who qualify, financial aid is available to help with tuition, fees, books and supplies, food, housing, transportation, and childcare. Please log onto our website for additional information: [www.imperial.edu/students/financial-aid-and-scholarships/](http://www.imperial.edu/students/financial-aid-and-scholarships/)

# PHYSICAL SCIENCE

## ASSOCIATE DEGREE PROGRAM

### PHYSICAL SCIENCE MAJOR – A.S. DEGREE

Forty (40.0) units required for the major.

ALL COURSES FOR THIS MAJOR MUST BE COMPLETED WITH A MINIMUM GRADE OF "C" OR BETTER.

#### I. Thirty-five (35.0) units required:

CHEM	200	General Inorganic Chemistry I	5.0
CHEM	202	General Inorganic Chemistry II	5.0
MATH	192	Calculus I	5.0
MATH	194	Calculus II	5.0
PHYS	200	Principles of Physics I	5.0
PHYS	202	Principles of Physics II	5.0
PHYS	204	Principles of Physics III	5.0

#### II. Five (5.0) units selected from:

AG/ENVS	110	Environmental Science (3.0)
ASTR	100	Principles of Astronomy (3.0)
CHEM	204	Organic Chemistry I (5.0)
CHEM	206	Organic Chemistry II (5.0)
GEOG	100	Physical Geography (3.0)
GEOL	100	General Geology (4.0)
GEOL	110	Earth and Space Science (3.0)
GEOL	130	Climate Studies (3.0)
MATH	119	Elementary Statistics (4.0)
MATH	210	Calculus III (5.0)
MATH	220	Elem Differential Equations (3.0)
MATH	230	Intro to Linear Algebra w/Appl (3.0)
PHSC	110	Physical Science (3.0)

Total Major Units	40.0
IVC Graduation Requirements and GE Pattern:	30.0
Electives (as needed to reach 60 degree applicable units)	<hr/>
<b>Total Maximum Units:</b>	<b>70.0</b>