

PHYSICS

Natural and Applied Sciences Division

Wanda Garner, Division Dean

Division Office, Room 701

Joe McCullough, Program Chair, (831) 479-6521

Aptos Counselor: (831) 479-6274 for appointment

Watsonville Counselor: (831) 786-4734

Call (831) 479-6328 for more information

<http://www.cabrillo.edu/programs>

Program Description:

Physics is the study of our natural surroundings, from the tiniest elementary particle to the entire universe. Physics provides a broad range of knowledge and powerful skills which are useful in practically every discipline. The program at Cabrillo emphasizes topics that affect our everyday lives: forces, motion, gravity, waves, sound, electricity, magnetism, light, and heat. The excitement of atoms, nuclei, relativity, and the cosmos is also included. A physics major degree generally transfers to a four-year institution to complete a bachelor's degree. Physics graduates at the bachelor's level are qualified for a variety of technical positions with government or industry, and they are also well prepared to enter a graduate program in any other science or in engineering. Physics majors are welcomed into professional programs such as law, business, or medicine. Teaching at the high school or two-year college level is an option if a master's degree is obtained. A physicist generally obtains the Ph.D. Degree, which may lead to experimental or theoretical research and/or teaching at the university level or basic research in government or industry. Nearly every four-year college and university offers a physics major. Requirements vary from campus to campus. See a counselor and consult catalogs for specific information. High School Preparation: Physics, chemistry, four years of college preparatory mathematics. Cabrillo offers courses that are equivalent to this preparation. The major will require more than two years at the community college level if high school preparation is not complete.

Model Program for Physics

The following Model Program fulfills requirements for the A.S. Degree in physics at Cabrillo College. Specific lower division major preparation at four-year public institutions in California can be found at www.assist.org. Please see a counselor for advisement for transfer to any four-year institution.

A.S. Degree: Physics

A.S. General Education **21 Units**

Core Courses (39 units)

MATH 5A	Analytic Geometry and Calculus I	5
MATH 5B	Analytic Geometry and Calculus II	5
MATH 5C	Analytic Geometry and Calculus III	5
MATH 6	*Introduction to Linear Algebra	3
MATH 7	Introduction to Differential Equations	3
PHYS 4A	Physics for Scientists and Engineers	5
PHYS 4B	**Physics for Scientists and Engineers	5
PHYS 4C	*Physics for Scientists and Engineers	5
PHYS 4D	***Modern Physics	3
Total Units		60

*Spring only; **Fall only; ***Fall, even years only

Physics Courses

Note: UC will not grant credit for PHYS 10, 10L, 11, or 12 if taken after PHYS 2A or 4A; if PHYS 10, 10L, 11, and 12 are combined, only one course will transfer to UC. PHYS 2AB combined with 4ABC maximum credit, one series.

PHYS 2A

General Physics

4 units; 3 hours Lecture, 4 hours Laboratory

Prerequisite: MATH 4 or MATH 2 and MATH 3 or equivalent knowledge.

Recommended Preparation: Eligibility for ENGL 100 and READ 100.

Covers mechanics, heat and sound primarily for life science students. Fall semester only.

Transfer Credit: Transfers to CSU, UC.

PHYS 2B

General Physics

4 units; 3 hours Lecture, 4 hours Laboratory

Prerequisite: PHYS 2A.

Recommended Preparation: Eligibility for ENGL 100 and READ 100.

Covers electromagnetism, optics, relativity, and the atom primarily for life science students. Spring semester only.

Transfer Credit: Transfers to CSU, UC.

PHYS 4A

Physics for Scientists and Engineers

5 units; 4 hours Lecture, 5 hours Laboratory

Prerequisite: MATH 5A, MATH 5B or concurrent enrollment; PHYS 11 or high school physics with a grade of "B".

Recommended Preparation: Eligibility for ENGL 100 and READ 100.

Covers mechanics, fluids, and waves for scientists and engineers.

Transfer Credit: Transfers to CSU, UC.

PHYS 4B

Physics for Scientists and Engineers

5 units; 4 hours Lecture, 5 hours Laboratory

Prerequisite: PHYS 4A; MATH 5C or concurrent enrollment.

Recommended Preparation: Eligibility for ENGL 100 and READ 100.

Covers electricity and magnetism for scientists and engineers. Students enrolled in the Honors Transfer Program may count this course towards the "Honors Scholar" designation. Fall semester only.

Transfer Credit: Transfers to CSU, UC.

PHYS 4C

Physics for Scientists and Engineers

5 units; 4 hours Lecture, 5 hours Laboratory

Prerequisite: PHYS 4A; MATH 5C or concurrent enrollment.

Recommended Preparation: Eligibility for ENGL 100 and READ 100.

Covers thermodynamics, optics, and introduction to quantum physics for scientists and engineers. Students enrolled in the Honors Transfer Program may count this course towards the "Honors Scholar" designation. Spring semester only.

Transfer Credit: Transfers to CSU, UC.

PHYS 4D

Modern Physics

3 units; 3 hours Lecture

Prerequisite: PHYS 4C.

Recommended Preparation: Eligibility for ENGL 100 and READ 100.

Covers relativity, quantum mechanics and nuclear physics for scientists and engineers. Fall semester only.

Transfer Credit: Transfers to CSU, UC.

PHYS 10

Introduction to Physics

3 units; 3 hours Lecture

Prerequisite: MATH 154.

Recommended Preparation: Eligibility for ENGL 100 and READ 100.

Covers conceptual topics in physics for the non-science major (PHYS 10L lab optional).

Transfer Credit: Transfers to CSU, UC, with limits: PHYS 10, 10L, 11 & 12 combined: maximum credit- 4 units. No credit for PHYS 10/10L, 11 or 12 if taken after 2A or 4A.

PHYS 10L

Introduction to Physics Lab

1 unit; 3 hours Laboratory

Prerequisite: PHYS 10 or concurrent enrollment.

Recommended Preparation: Eligibility for ENGL 100 and READ 100.

Presents a hands-on exploration of topics in physics for the non-science major.

Transfer Credit: Transfers to CSU, UC, with limits: PHYS 10, 10L, 11 & 12 combined: maximum credit- 4 units. No credit for PHYS 10/10L, 11 or 12 if taken after 2A or 4A.

PHYS 11

Elementary Physics

4 units; 3 hours Lecture, 4 hours Laboratory

Prerequisite: MATH 4 or MATH 2 and MATH 3 or equivalent knowledge.

Recommended Preparation: Eligibility for ENGL 100 and READ 100.

Presents an introduction to motion, force, heat, electromagnetism, light, sound, atoms and nuclei designed primarily to prepare students for the PHYS 4 sequence.

Transfer Credit: Transfers to CSU, UC, with limits: PHYS 10, 11 & 12 combined: maximum credit- 4 units. No credit for PHYS 10/10L, 11 or 12 if taken after 2A or 4A.

PHYS 12

Introduction to Modern Physics

3 units; 3 hours Lecture

Prerequisite: MATH 154.

Recommended Preparation: Eligibility for ENGL 100 and READ 100.

Covers conceptual topics in modern physics for the nonscience major. Explores the nature and meaning of special and general relativity, quantum physics, the atom and nucleus, and elementary particles.

Transfer Credit: Transfers to CSU, UC, with limits: PHYS 10, 11 & 12 combined: maximum credit- 4 units No credit for PHYS 10/10L, 11 or 12 if taken after 2A or 4A.