

PHYSICS

PROGRAM

- Associate in Science for Transfer (A.S.-T)



**HARTNELL
COLLEGE**

DESCRIPTION

Physics is the natural science involving a general analysis of nature, conducted in order to understand how the universe behaves. It involves the study of matter and its motion through space and time, along with related concepts such as energy and force. Physics overlaps with many interdisciplinary areas such as astronomy, biology, chemistry, and geology. Physics also makes significant contributions through advances in new technologies that arise from theoretical breakthroughs. Research in physics includes the following specialty areas: solid-state physics; atomic, molecular, and optical physics; particle physics; astrophysics; geophysics and biophysics. Some positions for which four-year graduates in physics are qualified are in research, teaching, engineering, medicine, and industry.

The Associate in Science degree in Physics for Transfer provides a clearly articulated curricular track for students who wish to transfer to baccalaureate degree programs at a California State University (CSU) campus. For detailed requirements for individual four-year institutions, students should contact the transfer institution and/or meet with a counselor for specific transfer course requirements in their major.

LEADS TO CAREER OPPORTUNITIES SUCH AS:

- Aerodynamicist
- Astro Physicist
- Chemical Physicist
- Computer System Engineer
- Geophysicist
- Laboratory Technician
- Medical Physicist
- Meteorologist
- Nuclear Physicist
- Physics Teacher
- Process Engineer
- Researcher
- Satellite Data Analyst
- Technical Consultant

TRANSFER PREPARATION

Courses that fulfill major requirements for an associate degree may differ from those needed to prepare for transfer. Students who plan to transfer to a four-year college or university should schedule an appointment with a Hartnell College counselor to develop a student education plan before beginning their program.

TRANSFER RESOURCES

www.ASSIST.org – CSU and UC Articulation Agreements and Major Search Engine

CSU System Information - <http://www2.calstate.edu>

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 Hartnell College offers a full array of financial aid programs, federal loan programs, and fee waivers.

<https://www.hartnell.edu/students/fa/net-price-calculator.html>

PHYSICS (AST.PHY)

ASSOCIATE IN SCIENCE FOR TRANSFER

Program Outcomes: Upon successful completion of this program a student will be able to:

- apply fundamental physics laws, principles and widely accepted theories.
- demonstrate proficiency in solving problems that are appropriate to first-year-university students of calculus-level physics courses.
- collect and analyze data effectively using basic laboratory equipment, and present results and conclusions in formally structured laboratory reports.

Required Major Courses (24 units)

<input type="checkbox"/> PHY-4A – General Physics I/Mechanics	4.0
<input type="checkbox"/> PHY-4B – General Physics II/Electricity and Magnetism	4.0
<input type="checkbox"/> PHY-4C – General Physics III/Waves, Heat, Light, Sound and Modern Physics	4.0
<input type="checkbox"/> MAT-3A – Analytic Geometry and Calculus I	4.0
<input type="checkbox"/> MAT-3B – Analytic Geometry and Calculus II	4.0
<input type="checkbox"/> MAT-3C – Analytic Geometry and Calculus III	4.0

Major Electives (None Required)

<input type="checkbox"/> CHM-1A – General Chemistry I	5.0
<input type="checkbox"/> CHM-1B – General Chemistry II	5.0
<input type="checkbox"/> CSS-4 – Introduction to Scientific Programming	4.0
<input type="checkbox"/> MAT-4 – Linear Algebra	3.0
<input type="checkbox"/> MAT-5 – Differential Equations	3.0

SUBTOTAL: 24 UNITS

General Education – Required Courses

Students must complete one of the following General Education Plans:

CSU-GE (see page 72) 39 units

IGETC (see page 74) 37 units

Students can double-count required courses and courses for General Education

■ Electives (Courses Numbered 1-99) required when degree units plus GE units total fewer than 60.

TOTAL: 60 UNITS



**A Degree With A
Guarantee.com**
*Associate Degree
for Transfer*

In order to earn this degree, students must complete the Associate Degree for Transfer Requirements:

1. Completion of 60 semester units or 90 quarter units that are eligible for transfer to the California State University, including both of the following:
 - a. The Intersegmental General Education Transfer Curriculum (IGETC) or the California State University GE – Breadth Requirements (CSU GE-Breadth).
 - b. A minimum of 18 semester units or 27 quarter units in a major or area of emphasis, as determined by the community college district.
2. Obtainment of a minimum grade point average of 2.0

ADTs include (AA-T) and (AS-T) degrees. The law authorizing these degrees also requires that students must earn a “C” or better in all courses required for the major or area of emphasis. A “P” (Pass) grade is also an acceptable grade for courses in the major if the course is taken on a Pass/No Pass basis.