

University of Houston Clear Lake

Student ID: _____
 Student Name: _____
 Advisor Name: _____

Catalog: 2023-2024 Undergraduate Catalog
 Program: Physics, 7-12 Certificate B.S.
 Minimum Credits Required: 125

Physics, 7-12 Physics/Mathematics Certification, B.S.

The plan in Physics leads to the Bachelor of Science (B.S.) degree at the undergraduate level. Our location and the connections our faculty have with National Aeronautics and Space Administration (NASA) and allied aerospace industry allow UHCL to offer students unique research opportunities. The Houston-Galveston area is a thriving center for many science-intensive industries, from aerospace to petrochemical; thus, the demand for professionals with knowledge of physics is high. Local industries in Houston provide a huge potential to employ individuals with a B.S. in Physics, in addition to the increasing demand for physics teachers in high schools. This demand is expected to grow dramatically over the next decade. An undergraduate degree in Physics enables students to progress into graduate programs in Physics, Astronomy or Engineering. Students may select electives in areas of particular interest. Physics is a very broad discipline that can lead to a variety of career options.

This certificate is offered through the College of Education (COE) with the degree being offered through the College of Science and Engineering (CSE). Please refer to CSE's portion of the catalog for additional information regarding its degrees. Check prerequisites before enrolling in any courses.

University Core Requirements (42 hours)

Communication (6 hours)

Course Name	Credit Hours:	Term Taken	Grade	Gen Ed
WRIT 1301 - Composition I	Credit Hours: 3			
WRIT 1302 - Composition II	Credit Hours: 3			
WRIT 2311 - Introduction to Professional Writing	Credit Hours: 3			

Mathematics (3 hours)

Course Name	Credit Hours:	Term Taken	Grade	Gen Ed
MATH 2413 - Calculus I	Credit Hours: 4			

Additional Information

Three (3) hours of Calculus will count toward the University Core and one (1) hour will count toward the Major.

Physical Sciences (6 hours)

Course Name	Credit Hours:	Term Taken	Grade	Gen Ed
CHEM 1311 - General Chemistry I	Credit Hours: 3			
CHEM 1312 - General Chemistry II	Credit Hours: 3			

Language, Philosophy and Culture (3 hours)

Course Name	Credit Hours:	Term Taken	Grade	Gen Ed
ANTH 2346 - General Anthropology	Credit Hours: 3			
COMM 1307 - Introduction to Mass Communication	Credit Hours: 3			
HUMN 1301 - Humanities	Credit Hours: 3			
LITR 2341 - Literature and Experience	Credit Hours: 3			
PHIL 1301 - Introduction to Philosophy	Credit Hours: 3			
SPAN 2311 - Intermediate Spanish I	Credit Hours: 3			
WGST 1301 - Gender Matters: Introduction to Women's and Gender Studies	Credit Hours: 3			

Creative Arts (3 hours)

Course Name	Credit Hours:	Term Taken	Grade	Gen Ed
ARTS 1303 - World Art Survey I	Credit Hours: 3			
ARTS 1304 - World Art Survey II	Credit Hours: 3			

ARTS 1314 - Dance Appreciation	Credit Hours: 3			
ARTS 2372 - Integrating Visual Art: Arts and STEM	Credit Hours: 3			
ARTS 2379 - Arts and the Child	Credit Hours: 3			
LITR 2366 - Introduction to Film Studies	Credit Hours: 3			

American History (6 hours)

Course Name	Credit Hours:	Term Taken	Grade	Gen Ed
HIST 1301 - United States History I	Credit Hours: 3			
HIST 1302 - United States History II	Credit Hours: 3			

Government/Political Science (6 hours)

Course Name	Credit Hours:	Term Taken	Grade	Gen Ed
POLS 2305 - Federal Government	Credit Hours: 3			
POLS 2306 - Texas Government	Credit Hours: 3			

Social and Behavioral Sciences (3 hours)

Course Name	Credit Hours:	Term Taken	Grade	Gen Ed
CRIM 1301 - Introduction to Criminal Justice	Credit Hours: 3			
ECON 2301 - Principles of Macroeconomics	Credit Hours: 3			
ECON 2302 - Principles of Microeconomics	Credit Hours: 3			
GEOG 1303 - World Regional Geography	Credit Hours: 3			
PSYC 2301 - Introduction to Psychology	Credit Hours: 3			
SOCI 1301 - Introduction to Sociology	Credit Hours: 3			
SOCI 1306 - Social Problems	Credit Hours: 3			
SWRK 2361 - Introduction to Social Work	Credit Hours: 3			

Component Area Option (6 hours)

Course Name	Credit Hours:	Term Taken	Grade	Gen Ed
CHEM 1111 - Laboratory for General Chemistry I	Credit Hours: 1			
CHEM 1112 - Laboratory for General Chemistry II	Credit Hours: 1			
COMM 1315 - Public Speaking	Credit Hours: 3			
PSYC 1100 - Learning Frameworks	Credit Hours: 1			

Major Requirements (47hours)

Major requirements must be completed with the grade of C- or better. Students seeking a B.S. degree in Physics should complete the following requirements:

Major Requirements

Course Name	Credit Hours:	Term Taken	Grade	Gen Ed
MATH 3305 – Geometry	Credit Hours: 3			
MATH 2413 - Calculus I	Credit Hours: 1			
MATH 2414 - Calculus II	Credit Hours: 4			
MATH 2315 - Calculus III	Credit Hours: 3			
STAT 3334 - Probability and Statistics for Scientists and Engineers	Credit Hours: 3			
PHYS 2425 - University Physics I	Credit Hours: 4			
PHYS 2426 - University Physics II	Credit Hours: 4			
PHYS 3103 - Laboratory for Modern Physics	Credit Hours: 1			
PHYS 3303 - Modern Physics	Credit Hours: 3			
PHYS 3311 - Mathematical Methods for Physics and Engineering I	Credit Hours: 3			
PHYS 3321 - Intermediate Mechanics	Credit Hours: 3			
PHYS 3331 - Intermediate Electromagnetism	Credit Hours: 3			
PHYS 3342 - Quantum Theory I	Credit Hours: 3			
PHYS 3351 - Thermodynamics & Statistical Mechanics	Credit Hours: 3			
PHYS 4171 - Research Seminar I	Credit Hours: 1			
PHYS 4172 - Research Seminar II	Credit Hours: 1			
PHYS 4173 – Research Seminar III	Credit Hours: 1			
WRIT 3315 - Advanced Technical Writing	Credit Hours: 3			

Optional Astronomy Minor (12 additional hours)

ASTR 1304/1104 Solar system ⁺	Credit Hours: 3			
ASTR 1303/1103 Stars and Galaxies ⁺	Credit Hours: 3			
ASTR 3311 Stellar Astrophysics	Credit Hours: 3			
ASTR 4312 Principles of Astrophysics	Credit Hours: 3			
ASTR 4391 Selected Topics in Space Science	Credit Hours: 3			
PHYS 4362 Fundamentals of Astroparticle Physics	Credit Hours: 3			

⁺ Must take both for Astronomy Minor

College of Education Core Requirements (30 hours)

College of Education Core

Course Name	Credit Hours:	Term Taken	Grade	Gen Ed
SILC 4315 - Theories of American Pluralism	Credit Hours: 3			
SPED 4300 - Survey of Exceptionalities	Credit Hours: 3			
TCED 4102 - Secondary (4-8 and 7-12) Content Teacher Seminar	Credit Hours: 1			
TCED 1101 - Inquiry Approaches to Teaching Mathematics and Science Step I	Credit Hours: 1			
TCED 1102 - Inquiry-Based Lesson Design in Mathematics and Science Step II	Credit Hours: 1			
TCED 2301 - Knowing and Learning	Credit Hours: 3			
TCED 2303 - Classroom Interactions	Credit Hours: 3			
TCED 3300 - Perspectives on Science and Math	Credit Hours: 3			
TCED 3301 - Research Methods in Science	Credit Hours: 3			
TCED 4300 - Project Based Instruction	Credit Hours: 3			
LLS 4351 - Content Area Literacy	Credit Hours: 3			
TCED 4362 - Methods in Secondary Science	Credit Hours: 3			

Pedagogy Requirements (6 hours)

Course Name	Credit Hours:	Term Taken	Grade	Gen Ed
TCED 4600 - Apprentice Clinical Teaching	Credit Hours: 6			

Additional Information

Notes: