

PHYSICS, BACHELOR OF SCIENCE (BS) / PRE-ENGINEERING (PITT) (3+2)

Program Learning Outcomes

LO1: Graduates will demonstrate a comprehensive understanding of core physics concepts including mechanics, electromagnetism, thermal and statistical physics, and quantum mechanics (UGO 02, 03, 04)

LO2: Graduates will be skilled in using physical laws, relevant mathematical and statistical techniques, and computational tools to model physical systems and solve complex problems across various domains in physics. (UGO 02, 03, 04, 06)

LO3: Graduates will possess hands-on experience in designing, conducting, and analyzing experiments using appropriate laboratory equipment and techniques. (UGO 02, 04, 06)

LO4: Graduate will demonstrate the ability to effectively communicate complex physical concepts and results through oral presentations, written reports, and visual aids tailored to diverse audiences. (UGO 01, 05)

LO5: Graduates will be capable of collaborating effectively within diverse, interdisciplinary teams and recognize the significance of professional integrity in scientific practices. (UGO 07, 08, 09, 10)

Related Links

Physics - Pre-Engineering PITT, BS Program Page (<https://www.sru.edu/academics/majors-and-minors/pre-engineering-with-pitt/>)

Physics Fact Sheet URL (<https://www.sru.edu/documents/programs/factsheets/undergraduate/physics-fs.pdf>)

Professional Licensure/Certification Page (<https://www.sru.edu/students/student-consumer-information/professional-licensures/>)

Curriculum Guide

GPA Requirement

Major GPA: 2.00 or higher
Overall GPA: 3.00 or higher

Summary*

Code	Title	Hours
	Rock Studies 2 Requirements	41
	Other Basic Requirements	0-3
	Major Requirements	56
	Natural Science and Math College-Wide Requirements (Included in Rock Studies Requirements)	12
	Electives	23

* All undergraduate degree programs require a minimum of 120 credits. Some courses meet multiple requirements, but are only counted once toward the 120 credit total required to graduate. However, because this is a pre-professional program, credits taken during the 1st year of the graduate program are applied toward the undergraduate credit hours to meet the 120 credits required for your undergraduate degree.

Rock Studies 2 Requirements

Code	Title	Hours
The Rock		
SUBJ 139	Foundations of Academic Discovery ¹	3
ENGL 102	Critical Writing	3
ENGL 104	Critical Reading	3
MATH 225	Calculus I	4
Select one of the following:		3
COMM 200	Civil Discourse: Theory & Practice	
PHIL 110	Ethics and Civil Discourse	
POLI 235	Civil Discourse and Democracy	
Subtotal		16
Integrated Inquiry		
<i>Creative and Aesthetic Inquiry</i>		
Select 3 Credits (https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/)		3
<i>Humanities Inquiry</i>		
Select 3 Credits (https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/)		3
<i>Social Science Inquiry</i>		
Select 3 Credits (https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/)		3
<i>Natural Sciences Inquiry</i>		
CHEM 107	General Chemistry I	3
CHEM 111	General Chemistry I Lab	1
<i>Physical Sciences Inquiry</i>		
PHYS 216	University Physics 1 with Lab	4
Subtotal		17
Additional Rock Studies 2 Requirements		
Required Thematic Thread Coursework:		
MATH 230	Calculus II	4
CHEM 108	General Chemistry II	3
CHEM 112	General Chemistry II Lab	1
Subtotal		8
Total Hours		41

¹ Course offered in multiple subjects; cannot take course in first major subject.

Basic Math Requirement

Check with your adviser or a current degree audit report to see if you have been exempted from this course. The credit earned in this course will not be counted toward the 120 credit hour minimum needed to earn a degree.

Code	Title	Hours
Complete one of the following:		0-3
Meet required minimum SAT or ACT math score OR		
ESAP 110	Beginning Algebra	
Total Hours		0-3

DIVERSITY, EQUITY, AND INCLUSION REQUIREMENT

Students must take and pass a course with the Diversity, Equity, and Inclusion (DEI) designation prior to graduation. Students can meet this

requirement by taking any DEI - designated course in any program at any time during their undergraduate career.

Major Requirements

Code	Title	Hours
Physics Core		
PHYS 217	University Physics 2 with Lab ¹	4
PHYS 310	Classical Mechanics ¹	3
PHYS 312	Modern Physics ¹	3
PHYS 381	Advanced Physics Laboratory ¹	2
PHYS 385	Computational Physics ¹	3
Subtotal		15
Required Physics Courses		
PHYS 314	Statics ¹	3
PHYS 315	Dynamics ¹	3
PHYS 331	Mathematical Methods of Physics and Engineering ¹	3
or MATH 331	Mathematical Methods of Physics and Engineering	
Subtotal		9
Required Engineering Courses		
ENGR 230	Mechanics of Materials ¹	3
ENGR 250	Circuit Analysis I ¹	3
Subtotal		6
Major and Related Electives		
Select nine credits of the following: ²		9
PHYS 375	Thermal and Statistical Physics ¹	
PHYS 410	Electricity and Magnetism ¹	
PHYS 480	Quantum Mechanics ¹	
ENGR 120	Engineering Design Tools ¹	
ENGR 130	Engineering Computing Tools ¹	
ENGR 231	Mechanics of Materials Lab ¹	
ENGR 220	Engineering Materials ¹	
ENGR 301	Fluid Mechanics ¹	
ENGR 320	Thermodynamics ¹	
STAT 350	Applied Statistics ¹	
ENGR 340	Engineering Economics ¹	
CHEM 201	Organic Chemistry I ¹	
CHEM 202	Organic Chemistry II ¹	
CHEM 211	Organic Chemistry Laboratory I ¹	
CHEM 212	Organic Chemistry Laboratory II ¹	
CHEM 301	Physical Chemistry I ¹	
CPSC 246	Object-Oriented Programming ¹	
Subtotal		9
Required Related Courses		
MATH 230	Calculus II ¹	4
MATH 231	Calculus III ¹	4
MATH 232	Linear Algebra ¹	3
MATH 301	Differential Equations I ¹	3
CPSC 146	Programming Principles ¹	3
Subtotal		17
Total Hours		56

¹ Course counts for 50% of Major requirements and Major GPA

² Elective courses need to be selected based upon area of Engineering chosen. Please contact your Adviser for specific courses.

³ Course can be counted as a Rock Studies 2 Requirement, but earns credit only once toward your 120-credits total.

* Some courses may require pre-requisites. Please see course descriptions to determine if there are any pre-requisites for that specific course.

Natural Science and Math College-Wide Requirements

Code	Title	Hours
Students must take the following four courses:		
CHEM 107	General Chemistry I ¹	3
CHEM 111	General Chemistry I Lab ¹	1
MATH 225	Calculus I ¹	4
PHYS 216	University Physics 1 with Lab ¹	4
Total Hours		12

¹ Course can be counted as a Rock Studies 2 Requirement, but earns credit only once toward your 120-credits total.

Important Curriculum Guide Notes

This Curriculum Guide is provided to help SRU students and prospective students better understand their intended major curriculum. Enrolled SRU students should note that the My Rock Audit may place already-earned and/or in progress courses in different, yet valid, curriculum categories. Enrolled SRU students should use the My Rock Audit Report and materials and information provided by their faculty advisers to ensure accurate progress towards degree completion. *The information on this guide is current as of the date listed. Students are responsible for curriculum requirements at the time of enrollment at the University.*

PASSHE - Pennsylvania State System of Higher Education Institutions

PHYSICS PRE ENGINEERING - BS (6164)/CIM 333
with Concentration in Engineering Physics (ENPH)
with University of Pittsburgh (6PIT)
This program is effective as of Summer 2025
Revised 07.14.2025
UCC 10.29.2024