

# PHYSICS: EDUCATION FOCUS (BA)

## Program Description

When you major in Physics, you study the changes, interactions, and properties of matter and energy. As a result, you learn how physics strongly influences humankind's understanding of nature and how engineers create new technology based on the principles first discovered by physicists, contributing to the social economics and changes.

The Education Focus option is suited for you if you are preparing to teach physics at the secondary level.

## Entering and Completing the Major

In order to earn a degree, you must complete at least one academic major. SPU encourages students to explore various academic paths, so if you change your mind about a major, or want to include an additional program, you are able to do so, as outlined below.

Note that the University encourages you to enter your chosen major(s) as soon as you have determined it and are eligible to join it, especially by the start of your junior year. Students who transfer as juniors and seniors should enter a major within their first two quarters at SPU.

- If this is your first quarter at SPU and you identified a major in this department as your first choice on your application for admission to the University, you have gained entry to the major. To change or add a major, follow these instructions (<https://spu.atlassian.net/1/cp/a3th1keb/>).
- If you are an SPU student with an SPU cumulative GPA of 2.0 or better, follow these instructions (<https://spu.atlassian.net/1/cp/a3th1keb/>) to enter a major in this department.
- The University requires a grade of C- or better in all classes that apply to a major; however, programs may require higher minimum grades in specific courses. You may repeat an SPU course only once for a higher grade.
- To advance in this program, meet with your faculty advisor regularly to discuss your grades, course progression, and other indicators of satisfactory academic progress. If your grades or other factors indicate that you may not be able to successfully complete the major or minor, your faculty advisor can work with you to explore options, which may include choosing a different major.
- You must complete the major requirements that are in effect in the SPU Undergraduate Catalog for the year you enter the major.

### Physics: Education Focus (BA)

69 Credits Minimum, Including 31 Upper Division (UD)

Code	Title	Credits
<b>Introductory Classes</b>		
Select one of the following Groups:		15
Group A:		
PHY 1101	General Physics	
PHY 1102	General Physics	
PHY 1103	General Physics	
Group B:		
PHY 1121	Physics for Science and Engineering	

PHY 1122	Physics for Science and Engineering	
PHY 1123	Physics for Science and Engineering	
PHY 2321	Intermediate Physics	5
Section Credits Required		20
<b>Math</b>		
MAT 1234	Calculus I	5
MAT 1235	Calculus II	5
MAT 1236	Calculus III	5
MAT 2401	Linear Algebra	3
MAT 3237	Differential Equations	3
Section Credits Required		21
<b>Required Lab Classes</b>		
PHY 3311	Experimental Methods I	3
PHY 3312	Experimental Methods II	3
Section Credits Required		6
<b>Required Upper Division</b>		
ME 3400	Dynamics	3
or PHY 3110	Mechanical Modeling and Analysis	
ME 3500	Thermal Science I: Thermodynamics	3
or PHY 3401	Thermal and Statistical Physics	
PHY 3315	Electricity and Magnetism I	3
PHY 3341	Quantum Mechanics	5
PHY 4898	Physics Capstone	1
PHY 4970	Undergraduate Research	1
Section Credits Required		16
<b>Teaching Preparation</b>		
PHY 4520	Preparing to Teach (taken three times)	2
Section Credits Required		6
<b>Total Credits</b>		<b>69</b>

## Suggested Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Autumn</b>		
PHY 1121	Physics for Science and Engineering	5
MAT 1234	Calculus I	5
UCOL 1000	University Colloquium	1
<b>Credits</b>		<b>11</b>
<b>Winter</b>		
PHY 1122	Physics for Science and Engineering	5
MAT 1235	Calculus II	5
<b>Credits</b>		<b>10</b>
<b>Spring</b>		
PHY 1123	Physics for Science and Engineering	5
MAT 1236	Calculus III	5
<b>Credits</b>		<b>10</b>
<b>Any Quarter</b>		
WRI 1000	Academic Inquiry and Writing Seminar	5
WRI 1100	Disciplinary Research and Writing Seminar	5
UFDN 1000	The Christian Faith	5
<b>Credits</b>		<b>15</b>
<b>Second Year</b>		
<b>Autumn</b>		
PHY 2321	Intermediate Physics	5
PHY 3311	Experimental Methods I	3
EDU 2100	Foundational Issues in Education	5

2 Physics: Education Focus (BA)

PHY 4520	Preparing to Teach	2
<b>Credits</b>		<b>15</b>
<b>Winter</b>		
PHY 3312	Experimental Methods II	3
EDU 2300	Diversity, Equity, and Inclusion in Education	3
PHY 4520	Preparing to Teach	2
<b>Credits</b>		<b>8</b>
<b>Spring</b>		
MAT 2401	Linear Algebra	3
PHY 3313	Experimental Methods III (example of an elective course)	3
PHY 4520	Preparing to Teach	2
<b>Credits</b>		<b>8</b>
<b>Any Quarter</b>		
UFDN 2000	Christian Scripture	5
UCOR 2000	The Emergence of the Modern Global System	5
WE course - WK Arts (sophomore through senior year)		5
CUE course - WK Humanities (sophomore through senior year)		5
WK Social Sciences (sophomore through senior year)		5
<b>Credits</b>		<b>25</b>
<b>Third Year</b>		
<b>Autumn</b>		
PHY 3315	Electricity and Magnetism I	3
ME 3500	Thermal Science I: Thermodynamics	5
PHY 4898	Physics Capstone	1
MAT 3238	Vector Calculus	3
<b>Credits</b>		<b>12</b>
<b>Winter</b>		
PHY 4311	Optics and Lasers (example of an elective course, taught every other year)	5
EDTC 4238	Orientation to Teacher Education and Technology	1
PHY 4898	Physics Capstone	1
<b>Credits</b>		<b>7</b>
<b>Spring</b>		
PHY 3011	Global Climate Change: Scientific, Social and Moral Implications (example of an elective course) <sup>1</sup>	5
ME 3400	Dynamics	5
<b>Credits</b>		<b>10</b>
<b>Any Quarter</b>		
UFDN 3100	Christian Theology	5
UCOR 3000	Faith, Philosophy, and Science	5
<b>Credits</b>		<b>10</b>
<b>Fourth Year</b>		
<b>Autumn</b>		
Methods Quarter <sup>2</sup>		
<b>Credits</b>		<b>0</b>
<b>Winter</b>		
Integrated Quarter <sup>2</sup>		
<b>Credits</b>		<b>0</b>
<b>Spring</b>		
Internship Quarter <sup>2</sup>		
<b>Credits</b>		<b>0</b>
<b>Total Credits</b>		<b>141</b>

2

The last year of classes will focus on teacher certification including Student Teaching.

1

PHY 3011 Global Climate Change: Scientific, Social and Moral Implications Global Climate Change can count as a WE course or a UD elective but not as both unless a student is a double major and PHY 3011 Global Climate Change: Scientific, Social and Moral Implications is not required for the other major.