

# PHYSICS | BACHELOR OF ARTS: PHYSICS

## Program Summary

Code	Title	Hours
	General Education	34
	Bachelor of Arts Language Requirement	10
	Major Courses	16
	Major Electives	12
	Laboratory Electives	1
	Projects	1
	Cognates	20
	Open Electives <sup>1</sup>	26
<b>Total Hours</b>		<b>120</b>

<sup>1</sup> Open electives are the credit hours required to reach a minimum of 120 total hours and 45 upper-level hours. The number listed assumes all courses are completed at FHSU as listed. This number may vary if students transfer courses, or have individual substitutions allowed.

Students should speak with their advisor if either situation applies to determine if the number will vary, and to ensure they enroll in a minimum of 45 upper-level hours.

Students entering within 1 year of high school graduation will take UNIV 101 Freshman Seminar and may apply that hour in the open elective category.

## Program Requirements

### General Education

All undergraduate degrees require completion of the Kansas Systemwide General Education (<https://catalog.fhsu.edu/general-education/>).

Courses identified with <sup>GE</sup> on this page may satisfy a general education requirement in addition to the identified degree requirement. Students who apply a degree requirement to satisfy a general education requirement will typically add an equal number of hours to the the university elective category. This flexibility may allow you to complete a minor or certificate within the 120 hour degree. Transfer students and students majoring in programs with approved exceptions (<https://www.fhsu.edu/general-education/documents/fhsu-gen-ed-transfer-exceptions-explainer1.pdf>) are especially encouraged to select these courses in completing General Education requirements to maximize the likelihood of completing the degree with 120 credit hours.

Code	Title	Hours
	<b>General Education</b>	<b>34-35</b>

### BA Language Requirement

All FHSU students pursuing a BA degree are required to take two consecutive non-English language classes. Students taking beginning Spanish or French classes may be able to apply the first class to the Arts and Humanities area of the general education requirement.

Code	Title	Hours
	Bachelor of Arts Language Requirement	10

## Major

Code	Title	Hours
<b>Introduction to Physics</b>		
PHYS 100	Introduction to Physics and Engineering	3
PHYS 211 & 211L	Engineering Physics I and Engineering Physics I Laboratory <sup>GE</sup>	5
PHYS 212 & 212L	Engineering Physics II and Engineering Physics II Laboratory <sup>GE</sup>	5
PHYS 313	Modern Physics	3
<b>Projects</b>		
PHYS 603 or PHYS 675	Projects I Senior Seminar	1
<b>Physics Electives</b>		
Select four of the following:		12
PHYS 221	Statics	
PHYS 312	Scientific Computing and Productivity	
PHYS 331	Electronic Circuits	
PHYS 332	Analog and Digital Electronics	
PHYS 333	Introduction to Computational Physics	
PHYS 608	Special Topics I	
PHYS 620	Mathematics for the Physical Sciences	
PHYS 621	Mechanics	
PHYS 632	Electricity and Magnetism	
PHYS 652	Optics	
PHYS 672	Thermal Physics	
PHYS 677	Quantum Mechanics I	
<b>Laboratory Electives</b>		
Select one course from the following:		1
PHYS 601	Computational Physics Laboratory	
PHYS 651	Advanced Physics Laboratory I	
PHYS 654	Advanced Physics Laboratory II	
<b>Cognates</b>		
CHEM 120 & 120L	University Chemistry I and University Chemistry Laboratory I <sup>GE</sup>	
MATH 234	Analytic Geometry and Calculus I <sup>GE</sup>	
MATH 235	Analytic Geometry and Calculus II	
MATH 236	Analytic Geometry and Calculus III	
MATH 354	Differential Equations	
BIOL 442 or GSCI 685	Scientific Communication Writing in the Sciences	
<b>Open Electives</b>		
Select 26 credits of free electives. The following are suggested, not required:		26
CHEM 122 & 122L	University Chemistry II and University Chemistry Laboratory II <sup>GE</sup>	
MATH 240	Linear Algebra	
MATH 350	Mathematical Statistics	
CSCI 121	Computer Science I	
<b>Total Hours</b>		<b>56</b>

## Degree Requirements

Code	Title	Hours
<b>Bachelor of Arts Degree Language Requirement</b>		
Two consecutive semesters of a non-English Language		
<b>All bachelor degrees require:</b>		
GPA of 2.0 on FHSU courses & 2.0 on all coursework (Higher program requirements prevail over the 2.0 when set)		
A minimum of 30 hours earned from FHSU with a grade of D, C, B, or A		
Successful completion of an upper division Writing and Information Literacy course (Most majors contain a course designated)		
A minimum of 45 hours of recognized upper division credit		
A minimum of 120 hours of recognized college credit		

## Degree Maps

Course	Title	Hours
<b>First Year</b>		
<b>Fall</b>		
ENG 101	English Composition I (SGE010 - English Discipline Area)	3
COMM 100	Fundamentals of Oral Communication (SGE020 - Communication Discipline Area)	3
PHYS 100	Introduction to Physics and Engineering	3
UNIV 101	Freshman Seminar	1
MATH 234	Analytic Geometry and Calculus I (SGE030 - Math Statistics Discipline Area)	5
<b>Hours</b>		<b>15</b>
<b>Spring</b>		
ENG 102	English Composition II (SGE010 - English Discipline Area)	3
MATH 235	Analytic Geometry and Calculus II	5
PHYS 211 & 211L	Engineering Physics I and Engineering Physics I Laboratory	5
SGE070 - Institutionally Designated Area: Personal and Professional Development		3
<b>Hours</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
MATH 236	Analytic Geometry and Calculus III	3
PHYS 333	Introduction to Computational Physics	3
PHYS 212 & 212L	Engineering Physics II and Engineering Physics II Laboratory	5
SGE050 - Social Behavioral Sciences Discipline Area		3
<b>Hours</b>		<b>14</b>
<b>Spring</b>		
CHEM 120 & 120L	University Chemistry I and University Chemistry Laboratory I	5
PHYS 313	Modern Physics	3
MATH 354	Differential Equations	3
Concentration Course		3
<b>Hours</b>		<b>14</b>
<b>Third Year</b>		
<b>Fall</b>		
PHYS 332	Analog and Digital Electronics	3
PHYS 620	Mathematics for the Physical Sciences	3
PHYS 632	Electricity and Magnetism	3
Concentration Course		3
SGE060 - Arts Humanities Discipline Area		3
<b>Hours</b>		<b>15</b>

<b>Spring</b>		
PHYS 621	Mechanics	3
PHYS 672	Thermal Physics	3
PHYS 651	Advanced Physics Laboratory I	2
PHYS 603	Projects I	1
Concentration Course		3
SGE050 - Social Behavioral Sciences Discipline Area		3
<b>Hours</b>		<b>15</b>
<b>Fourth Year</b>		
<b>Fall</b>		
PHYS 603	Projects I	2
PHYS 105	Critical Thinking for Scientists (SGE070 - Institutionally Designated Area: Critical Thinking)	3
PHYS 677	Quantum Mechanics I	3
Beginning Language Course 1 (Bachelor of Arts Language Requirement)		5
Open Electives		3
<b>Hours</b>		<b>16</b>
<b>Spring</b>		
PHYS 675	Senior Seminar	1
PHYS 652	Optics	3
PHYS 603	Projects I	3
SGE060 - Arts Humanities Discipline Area		3
Beginning Language Course 2 (Bachelor of Arts Language Requirement)		5
<b>Hours</b>		<b>15</b>
<b>Total Hours</b>		<b>120</b>

**Academic Degree Maps** are term-by-term sample course plans that specify milestones, courses, and special requirements that are necessary for facilitating on-time completion. Degree Maps are *examples* and are not prescriptive. Individualized choices such as concentration options, transfer credits, optional minors, advisory programs (certificates), etc. can alter the recommended coursework. Course offerings are subject to change. Students should consult with their academic advisors for additional guidance on course planning.

To determine courses to take in the directed choices (often listed as Program Elective Course) and directed elective course blocks see the overview tab for courses. To locate approved courses in General Education areas (Undergraduate Programs) see the general education section (<https://catalog.fhsu.edu/general-education/>) of the catalog.

The undergraduate course maps typically advise the most efficient route for students to complete the general education requirements. Courses that are required in the major may be listed as fulfilling relevant general education requirements. This will result in more open elective course hours in some maps than is listed on the degree overview page.