

# PHYSICS | BACHELOR OF SCIENCE: PHYSICS

## Program Summary

Code	Title	Hours
General Education		34
Major Courses		16
Intermediate Physics Electives		9
Advanced Physics Electives		15
Laboratory Electives		1
Projects		2
Cognates		24
Open Electives <sup>1</sup>		19
<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
General Education		34-35

### 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
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### Intermediate Physics

Select three courses from the following: 9

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	

### Advanced Physics Electives

Select five of the following: 15

PHYS 608	Special Topics I	
PHYS 620	Mathematics for the Physical Sciences	
PHYS 621	Mechanics	
PHYS 632	Electricity and Magnetism	
PHYS 652	Optics	
PHYS 660	Solid State Physics	
PHYS 672	Thermal Physics	
PHYS 677	Quantum Mechanics I	
PHYS 678	Quantum Mechanics II	

### Projects

PHYS 603	Projects I	
PHYS 675	Senior Seminar	

### Laboratory Electives

Select one course from the following: 1

PHYS 601	Computational Physics Laboratory	
PHYS 651	Advanced Physics Laboratory I	
PHYS 654	Advanced Physics Laboratory II	

### Cognates

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	

### Free Electives

Select 20 credits of free electives. The following are suggested, not required: 20

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	

**Total Hours** 61

## Degree Requirements

Code	Title	Hours
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### All bachelor degrees require:

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>Freshman</b>		
<b>Fall</b>		
SGE030 - Math Statistics Discipline Area		
MATH 234	Analytic Geometry and Calculus I <sup>1, GE</sup>	5
SGE010 - English Discipline Area		
SGE020 - Communication Discipline Area		
UNIV 101	Freshman Seminar	1
PHYS 100	Introduction to Physics and Engineering	3
<b>Hours</b>		<b>15</b>
<b>Spring</b>		
SGE070 - Institutionally Designated Area: Personal and Professional Development		
MATH 235	Analytic Geometry and Calculus II	5
SGE010 - English Discipline Area		
PHYS 211	Engineering Physics I	4
PHYS 211L	Engineering Physics I Laboratory	1
<b>Hours</b>		<b>16</b>
<b>Sophomore</b>		
<b>Fall</b>		
SGE050 - Social Behavioral Sciences Discipline Area		
MATH 236	Analytic Geometry and Calculus III	3
PHYS 333	Introduction to Computational Physics	3
PHYS 212	Engineering Physics II	4
PHYS 212L	Engineering Physics II Laboratory	1
PHYS 221	Statics	3
<b>Hours</b>		<b>17</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
PHYS 331	Electronic Circuits	3
<b>Hours</b>		<b>14</b>
<b>Junior</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
PHYS 603	Projects I	1
Directed Electives		
SGE060 - Arts Humanities Discipline Area		
<b>Hours</b>		<b>16</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
MATH 240	Linear Algebra	3
SGE050 - Social Behavioral Sciences Discipline Area		
<b>Hours</b>		<b>15</b>
<b>Senior</b>		
<b>Fall</b>		
Writing & Information Literacy Requirement		
PHYS 654	Advanced Physics Laboratory II	2

PHYS 677	Quantum Mechanics I	3
PHYS 603	Projects I	1
SGE070 - Institutionally Designated Area: Critical Thinking		
PHYS 105	Critical Thinking for Scientists <sup>1, GE</sup>	3
SGE060 - Arts Humanities Discipline Area		
Directed Electives		
<b>Hours</b>		<b>17</b>
<b>Spring</b>		
PHYS 675	Senior Seminar	1
PHYS 652	Optics	3
PHYS 678	Quantum Mechanics II	3
PHYS 603	Projects I	3
<b>Hours</b>		<b>10</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.