

PHYSICS | BACHELOR OF SCIENCE: PHYSICS (PRE-ENGINEERING) (2+2 PROGRAM)

While the 3+2 degree will give you the best real-world preparation, the 2+2 Pre-Engineering program lets you focus on your engineering courses. You will be able to take your first semesters of pre-engineering classes required by all engineering schools at FHSU and then transfer to an engineering program to finish your degree. In this program, you learn the foundations of engineering from outstanding faculty members and get personal attention you can't find anywhere else.

Program Summary

| Code | Title | Hours |
|------|----------------------|------------|
| | General Education | 34 |
| | Introductory Physics | 16 |
| | Intermediate Physics | 9 |
| | Advanced Physics | 9 |
| | Laboratory Electives | 1 |
| | Projects | 1 |
| | Cognates | 20 |
| | Open Electives | 30 |
| | Total Hours | 120 |

Program Requirements

General Education

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

Courses identified with ^{GE} 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 |
|-----------------|---|-------|
| | Introductory Physics | |
| PHYS 100 | Introduction to Physics and Engineering ¹ | 3 |
| PHYS 211 & 211L | Engineering Physics I and Engineering Physics I Laboratory ^{GE, 1} | 5 |
| PHYS 212 & 212L | Engineering Physics II and Engineering Physics II Laboratory ¹ | 5 |
| PHYS 313 | Modern Physics | 3 |

| Intermediate Physics | | |
|--|---------------------------------------|---|
| Select three courses from the following: | | |
| PHYS 312 | Scientific Computing and Productivity | 9 |
| PHYS 221 | Statics ¹ | |
| PHYS 331 | Electronic Circuits ¹ | |
| PHYS 332 | Analog and Digital Electronics | |
| PHYS 333 | Introduction to Computational Physics | |

| Advanced Physics Electives | | |
|--|---------------------------------------|---|
| Select three courses from the following: | | |
| PHYS 608 | Special Topics I | 9 |
| 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 | |

| Laboratory Electives | | |
|---------------------------------------|----------------------------------|---|
| Select one course from the following: | | |
| PHYS 601 | Computational Physics Laboratory | 1 |
| PHYS 651 | Advanced Physics Laboratory I | |
| PHYS 654 | Advanced Physics Laboratory II | |

| Projects | | |
|---------------------------------------|----------------|---|
| Select one course from the following: | | |
| PHYS 603 | Projects I | 1 |
| PHYS 675 | Senior Seminar | |

| Cognates | | |
|-----------------|---|---|
| CHEM 120 & 120L | University Chemistry I and University Chemistry Laboratory I ^{GE, 1} | 5 |
| MATH 234 | Analytic Geometry and Calculus I ¹ | 5 |
| MATH 235 | Analytic Geometry and Calculus II ¹ | 5 |
| MATH 236 | Analytic Geometry and Calculus III ¹ | 3 |
| MATH 354 | Differential Equations ¹ | 3 |

| | | |
|--------------------|--|-----------|
| Total Hours | | 57 |
|--------------------|--|-----------|

¹ If you're interested in pursuing the 2+2 program with the intention of completing an Engineering degree elsewhere, you will work closely with an academic advisor to determine the best sequence of courses you need to take in order to meet your educational and career objectives. In addition to Fort Hays State University's General Education program, 2+2 students *typically* take the courses noted here.

Total Hours: 120

Degree Requirements

| Code | Title | Hours |
|--------------------------------------|-------|-------|
| 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

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.