Bachelor of Science in Natural Sciences  
Major: Physics – Flexible Emphasis  
2020-2021 Sample 4-Year Plan  
Total Degree Requirements: 120 credits

<table>
<thead>
<tr>
<th>Student ID#</th>
<th>Student Phone #</th>
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<tbody>
<tr>
<td>Minimum GPA</td>
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<tr>
<td>Advisor</td>
<td>Minor/Career Interest(s)</td>
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</table>

Students are not limited to this plan; it is meant to be used as a guide for planning purposes in consultation with your advisor. The sample schedule is one possible path to completing your degree within four years. For official program requirements, please refer to the Undergraduate Catalog.

**First Year**

**Fall**

<table>
<thead>
<tr>
<th>Prefix + Number</th>
<th>Course Title</th>
<th>Prerequisites/Comments</th>
<th>Credits</th>
<th>Semester</th>
<th>Grade</th>
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<tbody>
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<tr>
<td>ENGL 101</td>
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<td>p. Placement</td>
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<tr>
<td>PHYS 211-211L</td>
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<td>c. MATH 123</td>
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**Total Credit Hours** 15

**Spring**

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<th>Semester</th>
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<td>SPCM 101</td>
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**Total Credit Hours** 14

**Second Year**

**Fall**

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<td>p. MATH 114 or higher</td>
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<td>PHYS 331</td>
<td>Introduction to Modern Physics</td>
<td>p. PHYS 213-213L or PHYS 113-113L</td>
<td>3</td>
<td>F</td>
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<tr>
<td>PHYS 316-316L</td>
<td>Measurement Theory and Lab</td>
<td>p. PHYS 213-213L or PHYS 113-113L</td>
<td>2</td>
<td>F</td>
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<td>MATH 225</td>
<td>Calculus III</td>
<td>p. MATH 125</td>
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<td>CSC 150</td>
<td>Computer Science I</td>
<td>p. MATH 114</td>
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**Total Credit Hours** 16

**Spring**

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<td>PHYS 318</td>
<td>Advanced Lab I</td>
<td>p. PHYS 316-316L</td>
<td>2</td>
<td>S</td>
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<tr>
<td>EE 216-216L</td>
<td>Linear Circuits I and Lab</td>
<td>c. MATH 125</td>
<td>4</td>
<td>S</td>
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<td>MATH 321</td>
<td>Differential Equations</td>
<td>p. MATH 125</td>
<td>3</td>
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<tr>
<td>or ENGL 277</td>
<td>or Technical Writing in Engineering (SGR #1)</td>
<td>p. ENGL 101 and PHYS 119</td>
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**Total Credit Hours** 16

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### Third Year

#### Fall

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<th>Credits</th>
<th>Semester</th>
<th>Grade</th>
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<tbody>
<tr>
<td>PHYS 451</td>
<td>Classical Mechanics</td>
<td>p. MATH 321 and 225</td>
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<td>GEOG 210</td>
<td>World Regional Geography</td>
<td>SGR #3 satisfies by coursework from 2 different disciplines</td>
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<tr>
<td>AHSS 111</td>
<td>Introduction to Global Citizenship and Diversity</td>
<td>SGR #4 satisfies by coursework from 2 different disciplines or 1 modern language sequence</td>
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**Total Credit Hours** 14-15

#### Spring

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<td>Physical Major Directed Electives</td>
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<td>Physical Major Technical Electives</td>
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<td>SGR #3</td>
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<tr>
<td>SGR #4</td>
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<td>SGR #4 satisfies by coursework from 2 different disciplines or 1 modern language sequence</td>
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**Total Credit Hours** 14-15

### Fourth Year

#### Fall

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<th>Semester</th>
<th>Grade</th>
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<tr>
<td>PHYS 341</td>
<td>Thermodynamics</td>
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<td>PHYS 343</td>
<td>Statistical Physics</td>
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<tr>
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<td>4-5</td>
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**Total Credit Hours** 15-16

#### Spring

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<th>Prefix + Number</th>
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<th>Prerequisites/Comments</th>
<th>Credits</th>
<th>Semester</th>
<th>Grade</th>
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<tr>
<td>PHYS 490</td>
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<td>4-5</td>
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</table>

**Total Credit Hours** 15-16

### Comments/Notes

Students from all academic majors can pursue graduation with Fishback Honors College distinction. View the Honors program requirements.

If math placement is to take MATH 115, take MATH 115 and CHEM 112-112L. In the following semester, take MATH 123 and PHYS 211-211L.

If math placement is to take MATH 114, take MATH 114 and CHEM 112-112L. In the following semester, take MATH 115 and CHEM 114-114L.

As part of this program, students must complete:
- a minimum of 33 upper division credits (300-400 level courses)
- a capstone course in the major
- a designated diversity, equity, and inclusion course – AHSS 111 (or AIS 211 for teaching specialization students only)
- a minor, second major, or teaching specialization
- Natural Sciences Coursework: 10+ credits in any two lab sciences; must include two prefixes.

The following courses are recommended for the Minor in Nuclear Engineering among the approved Technical Electives.

- PHYS 331 (3 cr.)/ NE 337 (3 cr.)/ NE 435 (3 cr.)/ NE 498 (2 cr.)/ PHYS 418 (1 cr.)/ CHEM 332-332L (4 cr.)/ PHYS 433 (3 cr.)

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Major: Physics – Health and Medical Physics Emphasis  
2020-2021 Sample 4-Year Plan  

Total Degree Requirements: 120 credits  

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**Fall**

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<th>Prefix + Number</th>
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<tbody>
<tr>
<td>PHYS 119</td>
<td>First Year Seminar in Physics</td>
<td></td>
<td>1</td>
<td>F</td>
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<tr>
<td>AHSS 111</td>
<td>Introduction to Global Citizenship and Diversity</td>
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<td>3</td>
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<tr>
<td>ENGL 101</td>
<td>Composition I (SGR #1)</td>
<td>p. Placement</td>
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<tr>
<td>PHYS 211-211L</td>
<td>University Physics I and Lab (SGR #6)</td>
<td>c. MATH 123</td>
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<td>Calculus I (SGR #5)</td>
<td>p. Placement</td>
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**Spring**

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<thead>
<tr>
<th>Prefix + Number</th>
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<th>Credits</th>
<th>Semester</th>
<th>Grade</th>
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<tr>
<td>SGR #4</td>
<td>Arts and Humanities/Diversity</td>
<td>SGR #4 satisfies by coursework from 2 different disciplines or 1 modern language sequence</td>
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<tr>
<td>SPCM 101</td>
<td>Fundamentals of Speech (SGR #2)</td>
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<tr>
<td>PHYS 213-213L</td>
<td>University Physics II and Lab (SGR #6)</td>
<td>c. MATH 125</td>
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**Total Credit Hours**: 15

### Second Year

**Fall**

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<th>Prerequisites/Comments</th>
<th>Credits</th>
<th>Semester</th>
<th>Grade</th>
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<td>Introduction to Modern Physics</td>
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**Total Credit Hours**: 14-15

**Spring**

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<th>Semester</th>
<th>Grade</th>
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<tr>
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<td>General Chemistry II and Lab</td>
<td>p. CHEM 112-112L</td>
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<tr>
<td>EE 216-216L</td>
<td>Linear Circuits I and L</td>
<td>c. MATH 125</td>
<td>4</td>
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<td>MATH 321</td>
<td>Differential Equations</td>
<td>p. MATH 125</td>
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**Total Credit Hours**: 14

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Information Subject to Change. This is not a contract.
### Third Year

#### Fall

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<tr>
<td>PHYS 451</td>
<td>Classical Mechanics</td>
<td>p. MATH 321 and 225</td>
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**Total Credit Hours** 16

#### Spring

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<th>Credits</th>
<th>Semester</th>
<th>Grade</th>
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<td>PHYS 318</td>
<td>Advanced Lab I</td>
<td>p. PHYS 316-316L</td>
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<tr>
<td>PHYS 421</td>
<td>Electromagnetism</td>
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<td>PHYS 433 or NE 435</td>
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**Total Credit Hours** 16

### Fourth Year

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<th>Semester</th>
<th>Grade</th>
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<td>Human Anatomy and Lab</td>
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<td>CHEM 326-326L</td>
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<td>PHYS 341</td>
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<td>p. MATH 225</td>
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<td>PHYS 343</td>
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<td>Introduction to Probability and Statistics</td>
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**Total Credit Hours** 15

#### Spring

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<th>Prefix + Number</th>
<th>Course Title</th>
<th>Prerequisites/Comments</th>
<th>Credits</th>
<th>Semester</th>
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<td>CHEM 328-328L</td>
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<td>or Analytical Chemistry and Lab</td>
<td>p. CHEM 114</td>
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<td>or PHYS 471</td>
<td>or Quantum Mechanics</td>
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**Total Credit Hours** 12-14

### Comments/Notes

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- a designated diversity, equity, and inclusion course – AHSS 111 (or AIS 211 for teaching specialization students only)
- a minor, second major, or teaching specialization
- Natural Sciences Coursework: 10+ credits in any two lab sciences; must include two prefixes.

The following courses are recommended for the Minor in Nuclear Engineering among the approved Technical Electives.
- PHYS 331 (3 cr.)/ NE 337 (3 cr.)/ NE 435 (3 cr.)/ NE 498 (2 cr.)/ PHYS 418 (1 cr.)/ CHEM 332-332L (4 cr.)/ PHYS 433 (3 cr.)

**Information Subject to Change. This is not a contract.**

p. = Course Prerequisite c. = Course Corequisite
Semester: F = Fall, S = Spring, SU = Summer
odd (even) = odd (even) year only
Bachelor of Science in Natural Sciences  
Major: Physics – Professional and Applied Physics Emphasis  
2020-2021 Sample 4-Year Plan  

Total Degree Requirements: 120 credits

<table>
<thead>
<tr>
<th>Student ID#</th>
<th>Student Phone #</th>
<th>Advisor</th>
<th>Minimum GPA</th>
<th>Minor/Career Interest(s)</th>
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<tbody>
<tr>
<td></td>
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Students are not limited to this plan; it is meant to be used as a guide for planning purposes in consultation with your advisor. The sample schedule is one possible path to completing your degree within four years. For official program requirements, please refer to the Undergraduate Catalog.

**First Year**

**Fall**

<table>
<thead>
<tr>
<th>Prefix + Number</th>
<th>Course Title</th>
<th>Prerequisites/Comments</th>
<th>Credits</th>
<th>Semester</th>
<th>Grade</th>
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<tbody>
<tr>
<td>PHYS 119</td>
<td>First Year Seminar in Physics</td>
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<tr>
<td>PHYS 185-185L</td>
<td>Astronomy I and Lab</td>
<td>Suggested Physics Major Technical Elective</td>
<td>3</td>
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<tr>
<td>ENGL 101</td>
<td>Composition I (SGR #1)</td>
<td>p. Placement</td>
<td>3</td>
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<tr>
<td>PHYS 211-211L</td>
<td>University Physics I and Lab (SGR #6)</td>
<td>c. MATH 123</td>
<td>4</td>
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<td>MATH 123</td>
<td>Calculus I (SGR #5)</td>
<td>p. Placement</td>
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Total Credit Hours: 15

**Spring**

<table>
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<tr>
<th>Prefix + Number</th>
<th>Course Title</th>
<th>Prerequisites/Comments</th>
<th>Credits</th>
<th>Semester</th>
<th>Grade</th>
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<tbody>
<tr>
<td>PHYS 187-187L</td>
<td>Astronomy II and Lab</td>
<td>Suggested Physics Major Technical Elective</td>
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<td>SPCM 101</td>
<td>Fundamentals of Speech (SGR #2)</td>
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<tr>
<td>PHYS 213-213L</td>
<td>University Physics II and Lab (SGR #6)</td>
<td>c. MATH 125</td>
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<tr>
<td>MATH 125</td>
<td>Calculus II</td>
<td>p. MATH 123</td>
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Total Credit Hours: 14

**Second Year**

**Fall**

<table>
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<th>Prefix + Number</th>
<th>Course Title</th>
<th>Prerequisites/Comments</th>
<th>Credits</th>
<th>Semester</th>
<th>Grade</th>
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<tbody>
<tr>
<td>CHEM 112-112L</td>
<td>General Chemistry I and Lab</td>
<td>p. MATH 114 or higher</td>
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<tr>
<td>PHYS 331</td>
<td>Introduction to Modern Physics</td>
<td>p. PHYS 213-213L or PHYS 113-113L</td>
<td>3</td>
<td>F</td>
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<tr>
<td>PHYS 316-316L</td>
<td>Measurement Theory and Lab</td>
<td>p. PHYS 213-213L or PHYS 113-113L</td>
<td>2</td>
<td>F</td>
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<tr>
<td>MATH 225</td>
<td>Calculus III</td>
<td>p. MATH 125</td>
<td>4</td>
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<tr>
<td>CSC 150</td>
<td>Computer Science I</td>
<td>p. MATH 114</td>
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Total Credit Hours: 16

**Spring**

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<th>Prefix + Number</th>
<th>Course Title</th>
<th>Prerequisites/Comments</th>
<th>Credits</th>
<th>Semester</th>
<th>Grade</th>
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<tbody>
<tr>
<td>CHEM 114-114L</td>
<td>General Chemistry II and Lab</td>
<td>p. CHEM 112-112L and MATH 114</td>
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<tr>
<td>PHYS 318</td>
<td>Advanced Lab I</td>
<td>p. PHYS 316-316L</td>
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<tr>
<td>EE 216-216L</td>
<td>Linear Circuits I and L</td>
<td>c. MATH 125</td>
<td>4</td>
<td>S</td>
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<tr>
<td>MATH 321</td>
<td>Differential Equations</td>
<td>p. MATH 125</td>
<td>3</td>
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<tr>
<td>ENGL 201 or ENGL 277</td>
<td>Composition II (SGR #1) or Technical Writing in Engineering (SGR #1)</td>
<td>p. ENGL 101 or ENGL 119</td>
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</table>

Total Credit Hours: 16

Information Subject to Change. This is not a contract.
### Third Year

#### Fall

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<tr>
<th>Prefix + Number</th>
<th>Course Title</th>
<th>Prerequisites/Comments</th>
<th>Credits</th>
<th>Semester</th>
<th>Grade</th>
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</thead>
<tbody>
<tr>
<td>PHYS 451</td>
<td>Classical Mechanics</td>
<td>p. MATH 321 and 225</td>
<td>4</td>
<td>F</td>
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<tr>
<td>MATH 331 or PHYS 481 or STAT 381</td>
<td>Advanced Engineering Math or Mathematical Physics or Introduction to Probability and Statistics</td>
<td>p. MATH 321 and 225</td>
<td>3</td>
<td>F-odd</td>
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<tr>
<td>SGR #3</td>
<td>Social Sciences/Diversity</td>
<td>SGR #3 satisfies by coursework from 2 different disciplines</td>
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<td>SGR #4</td>
<td>Arts and Humanities/Diversity</td>
<td>SGR #4 satisfies by coursework from 2 different disciplines or 1 modern language sequence</td>
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**Total Credit Hours**: 13-15

#### Spring

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<th>Prefix + Number</th>
<th>Course Title</th>
<th>Prerequisites/Comments</th>
<th>Credits</th>
<th>Semester</th>
<th>Grade</th>
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<tbody>
<tr>
<td>AHSS 111</td>
<td>Introduction to Global Citizenship and Diversity</td>
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<tr>
<td>PHYS 471</td>
<td>Quantum Mechanics</td>
<td>p. PHYS 331</td>
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<td>SGR #3</td>
<td>Social Sciences/Diversity</td>
<td>SGR #3 satisfies by coursework from 2 different disciplines</td>
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<tr>
<td>SGR #4</td>
<td>Arts and Humanities/Diversity</td>
<td>SGR #4 satisfies by coursework from 2 different disciplines or 1 modern language sequence</td>
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<tr>
<td>Free Electives</td>
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**Total Credit Hours**: 14-18

### Fourth Year

#### Fall

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<th>Prefix + Number</th>
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<th>Credits</th>
<th>Semester</th>
<th>Grade</th>
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<tbody>
<tr>
<td>PHYS 341</td>
<td>Thermodynamics</td>
<td>p. MATH 225</td>
<td>2</td>
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<tr>
<td>PHYS 343</td>
<td>Statistical Physics</td>
<td>p. MATH 321</td>
<td>2</td>
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<td>Physics Major</td>
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<td>Select from approved courses</td>
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<tr>
<td>Free Electives</td>
<td>Taken as needed to reach 120 credits</td>
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</table>

**Total Credit Hours**: 15

#### Spring

<table>
<thead>
<tr>
<th>Prefix + Number</th>
<th>Course Title</th>
<th>Prerequisites/Comments</th>
<th>Credits</th>
<th>Semester</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 421</td>
<td>Electromagnetism</td>
<td>p. MATH 321 and 225</td>
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<td>PHYS 418</td>
<td>Advanced Lab II</td>
<td>p. PHYS 316</td>
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<td>PHYS 490</td>
<td>Seminar</td>
<td>Capstone</td>
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<td>Technical Electives</td>
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<td>Free Electives</td>
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</tbody>
</table>

**Total Credit Hours**: 15

### Comments/Notes

Students from all academic majors can pursue graduation with Fishback Honors College distinction. View the [Honors program requirements](#).

If math placement is to take MATH 115, take MATH 115 and CHEM 112/L. In the following semester, take MATH 123 and PHYS 211/L.

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