BS in Physics

Program Codes:
20FT0240BS

Degree Requirements
To earn a Bachelor of Science in Physics degree from UIC, students must complete university, college, and department degree requirements. The Department of Physics degree requirements are outlined below. Students should consult the College of Liberal Arts and Sciences section for additional degree requirements and college academic policies.

Summary of Requirements
Requirements for the Curriculum 120
Total Hours 120

Requirements for the Curriculum
The requirements for the curriculum include the courses necessary to complete the General Education and Writing-in-the-Discipline requirements described in the College of Liberal Arts and Sciences section.

Code Title Hours

Required Courses
ENGL 160 Academic Writing I: Writing in Academic and Public Contexts 3
ENGL 161 Academic Writing II: Writing for Inquiry and Research 3
Foreign Language (the equivalent of two years of a single language at the college level) 0-16
Exploring World Cultures 3
Understanding the Creative Arts 3
Understanding the Individual and Society 3
Understanding the Past 3
Understanding U.S. Society 3
MATH 180 Calculus I 4
MATH 181 Calculus II 4
MATH 210 Calculus III 3
MATH 220 Introduction to Differential Equations 3
CHEM 122 General Chemistry I Lecture 4
CHEM 123 General Chemistry Laboratory I d,e 1
CHEM 124 General Chemistry II Lecture 4
CHEM 125 General Chemistry Laboratory II d,e 1
PHYS 141 General Physics I (Mechanics) 4
PHYS 142 General Physics II (Electricity and Magnetism) 4
PHYS 215 Computational and Mathematical Methods for the Physical Sciences 4
PHYS 230 Fundamentals of Relativity 3
PHYS 240 Fundamentals of Modern Quantum Theory 3
PHYS 241 Experiments in Modern Physics 1
PHYS 245 Introduction to Vibrations, Waves, and Thermal Physics 4
PHYS 401 Electromagnetism I 4

PHYS 411 Quantum Mechanics I 4
PHYS 441 Theoretical Mechanics 4
PHYS 461 Thermal and Statistical Physics 4
PHYS 425 Modern Optics 4
or PHYS 482 Modern Experimental Physics II 4

PHYS 402 Electromagnetism II d 4
or PHYS 412 Quantum Mechanics II 4
PHYS 481 Modern Experimental Physics I d,e 4
PHYS 499 Survey of Physics Problems h,i 1
Electives 7-23

Total Hours 120

a ENGL 160 and ENGL 161 fulfill the University Writing Requirement.
b Students should consult the General Education (http://catalog.uic.edu/ucat/degree-programs/general-education) section of the catalog for a list of approved courses in this category.
c MATH 180 fulfills the LAS Quantitative Reasoning requirement.
d This course is approved for the Analyzing the Natural World General Education category.
e General Education credit is given for successful completion of both CHEM 122 and CHEM 123 or CHEM 124 and CHEM 125.
f Students planning to pursue graduate studies in physics are strongly encouraged to take both of these courses.
g PHYS 481 fulfills the LAS Writing-in-the-Discipline requirement.
h A grade of C or better is required in PHYS 499.
i Concurrent registration in PHYS 481 and PHYS 499 is required.

Recommended Plan of Study
Physics is a discipline that carefully builds additional knowledge on a foundation of previously learned science and mathematics. To complete the physics curriculum in four years, therefore, requires careful planning, especially because the upper-division courses are offered at most once per year and have prerequisites. A recommended typical course sequence for the BS degree is given below.

Note: Students should consult the General Education section of the catalog for a list of approved courses in each category.

Course Title Hours
Freshman Year
Fall Semester
ENGL 160 Academic Writing I: Writing in Academic and Public Contexts 3
MATH 180 Calculus I 4
PHYS 141 General Physics I (Mechanics) 4

Spring Semester
ENGL 161 Academic Writing II: Writing for Inquiry and Research 3
MATH 181 Calculus II 4
PHYS 142 General Physics II (Electricity and Magnetism) 4

Total Hours 15

Foreign Language

Hours 4

Foreign Language
### Sophomore Year

#### Fall Semester

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>MATH 210</td>
<td>Calculus III</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 215</td>
<td>Computational and Mathematical Methods for the Physical Sciences</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 230</td>
<td>Fundamentals of Relativity</td>
<td>3</td>
</tr>
</tbody>
</table>

**Foreign Language** | 4     

**Hours** | 14    

#### Spring Semester

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>MATH 220</td>
<td>Introduction to Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 240</td>
<td>Fundamentals of Modern Quantum Theory</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 241</td>
<td>Experiments in Modern Physics</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 245</td>
<td>Introduction to Vibrations, Waves, and Thermal Physics</td>
<td>4</td>
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</table>

**Foreign Language** | 4     

**Hours** | 15    

### Junior Year

#### Fall Semester

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>PHYS 411</td>
<td>Quantum Mechanics I</td>
<td>4</td>
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Select one of the following:

<table>
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<tr>
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<th>Hours</th>
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<tbody>
<tr>
<td>PHYS 461</td>
<td>Thermal and Statistical Physics</td>
<td></td>
</tr>
<tr>
<td>PHYS 481 &amp; PHYS 499</td>
<td>Modern Experimental Physics I and Survey of Physics Problems</td>
<td></td>
</tr>
<tr>
<td>CHEM 122 &amp; CHEM 123</td>
<td>General Chemistry I Lecture and General Chemistry Laboratory I</td>
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**General Education Core course** | 3     

**Hours** | 16-17   

#### Spring Semester

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>PHYS 412 a</td>
<td>Quantum Mechanics II (or Elective)</td>
<td>4</td>
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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>PHYS 441</td>
<td>Theoretical Mechanics</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 124 &amp; CHEM 125</td>
<td>General Chemistry II Lecture and General Chemistry Laboratory II</td>
<td>5</td>
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**General Education Core course** | 3     

**Hours** | 16    

### Senior Year

#### Fall Semester

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>PHYS 401</td>
<td>Electromagnetism I</td>
<td>4</td>
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<tr>
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<td>Thermal and Statistical Physics</td>
<td></td>
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<tr>
<td>PHYS 481 &amp; PHYS 499</td>
<td>Modern Experimental Physics I and Survey of Physics Problems</td>
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**General Education Core course** | 3     

**General Education Core course** | 3     

**Hours** | 14-15   

#### Spring Semester

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>PHYS 402 a</td>
<td>Electromagnetism II (or Elective)</td>
<td>4</td>
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<tr>
<td>PHYS 425 or PHYS 482</td>
<td>Modern Optics or Modern Experimental Physics II</td>
<td>4</td>
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**General Education Core course** | 3     

**Hours** | 14     

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**Elective** | 3     

**Total Hours** | 120    

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### Notes

- The BS degree requires PHYS 402 or PHYS 412, but both are recommended for students who plan to go to graduate school in physics.
- Students who are not prepared to begin MATH 180 in their first semester may need to attend summer school or possibly take more than four years to finish their BS degree.

In addition to the degree programs shown above, there is an Engineering Physics program available through the [College of Engineering](http://catalog.uic.edu/ucat/colleges-depts/engineering).