**BIOPHYSICS (BS)**

The Biophysics major is an interdisciplinary program on the cutting edge of new developments in the biosciences. Offered by the Departments of Physics and Biology, the biophysics major provides rigorous training in biosciences, mathematics, and lab skills. The degree prepares students for research careers in biophysics, biochemistry, biomedical engineering, and physics. Biophysics is an ideal major for students considering careers in medicine, optometry, dentistry, and other applied health sciences.

**Curriculum**

This course of study prepares one for careers in medicine, medical research, nano-sciences, biophysics, medical physics, biomedical engineering, and biotechnology. A strong physics and mathematics background is fortified with biology and chemistry classes.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 121</td>
<td>College Physics I Lec/Dis</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 111L</td>
<td>College Physics Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 122</td>
<td>College Phys II Lec/Dis</td>
<td>3</td>
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<tr>
<td>PHYS 126F</td>
<td>Freshman Projects</td>
<td>1</td>
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<tr>
<td>PHYS 112L</td>
<td>College Physics Lab II</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 235</td>
<td>Modern Physics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 235L</td>
<td>Modern Physics Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 301</td>
<td>Mathematical Methods in Physics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 314</td>
<td>Theoretical Mechanics I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 351</td>
<td>Electricity and Magnetism I</td>
<td>3</td>
</tr>
</tbody>
</table>

**Physics Elective**

Select one of the following: 3

- PHYS 310 Optics
- PHYS 328 Thermal Phys & Stat Mechanics
- PHYS 361 Quantum Mechanics I

**Biology**

Select one of the following: 1-3

- BIOL 101 General Biology I
- BIOL 111 General Biology I Lab
- BIOL 251 Cell Biology
- BIOL 282 Genetics

**Biophysics Elective Options**

Students must complete 10 credit hours to fulfill this requirement from the following: 10

- BIOL 102 General Biology II
- or COMP 180 Computing and Data Analysis for the Sciences
- BIOL 112 General Biology II Lab
- BIOL 252 Cell Biology Laboratory
- BIOL 283 Genetics Laboratory
- BIOL 317 Models of Human Disease
- BIOL 335 / STAT 335 Intro to Biostatistics

**General Chemistry A: Lecture, Discussion & Lab**

- CHEM 101 General Chemistry A Lecture/Discussion and General Chemistry Lab A 4
- CHEM 111 General Chemistry B Lecture/Discussion and General Chemistry Lab B 3

**Organic Chemistry A: Lecture, Discussion & Lab**

- CHEM 223 Organic Chemistry A Lec/Disc
- CHEM 225 and Organic Chemistry Lab A 4

**Mathematics**

- MATH 161 Calculus I 4
- MATH 162 Calculus II 4
- MATH 263 Multivariable Calculus 4
- MATH 264 Ordinary Differential Equations 3

**Total Hours** 67-69

1. Students may receive degree credit for only one of the following: BIOL 102, COMP 180, or PHYS 130.
2. Students may only count 1 credit hour of PHYS 391 Research toward the degree.
3. CHEM 106 Basic Inorganic Chemistry may be substituted
4. CHEM 221 Organic Chemistry I Lec/Disc may be substituted
5. CHEM 222 Organic Chemistry II Lec/Disc may be substituted

**College of Arts and Sciences Graduation Requirements**

All Undergraduate students in the College of Arts and Sciences are required to complete a foreign language requirement at 102-level or higher (3 credit hours) or a language competency test. Additional information can be found here (https://www.luc.edu/cas/college-requirements/).

**Additional Undergraduate Graduation Requirements**

All Undergraduate students are required to take two Writing Intensive courses (6 credit hours) as well as complete a foreign language requirement at 102-level or higher (3 credit hours) or a language competency test. More information can be found here (https://www.luc.edu/cas/college-requirements/).
information in the University Requirements (https://catalog.luc.edu/undergraduate/university-requirements/) area.

**Learning Outcomes**

- Demonstrate foundational knowledge in physics and biology, and the acquisition of new knowledge via the scientific method.
- Develop a deeper understanding of the connection between the biological and the physical sciences.
- Understand and be able to employ laboratory techniques and computer skills used in biological and physical science labs.
- Possess an understanding of the intermediate level mathematics needed to model and solve problems based in the physical and biological sciences.
- Collect and analyze data to develop, refine, or falsify scientific theories.
- Learn effective and ethical methods for collaborating with others on scientific and technical projects.