

BIOPHYSICS

LUC.EDU/CAS

Loyola University Chicago's biophysics major is an interdisciplinary program on the cutting edge of new developments in the sciences. Offered by the Departments of Physics and Biology, the biophysics major provides rigorous training in mathematics and science, and prepares students for graduate education in biophysics, biochemistry, biomedical engineering, and physics. Biophysics is also an ideal major for students considering careers in medicine, optometry, dentistry, and other applied health sciences, such as physical or radiation therapy.

Students majoring in biophysics may pursue careers in medical centers, research institutes, and government labs. They may also focus on research and development in the areas of biotechnology, nanotechnology, medical physics, forensic science, environmental science, agricultural science, pharmaceutical, and other biologically oriented, high-tech industries, as well as in regulation and public policy at state and federal government agencies. Biophysics students may also obtain jobs with numerous private organizations.



The state-of-the-art Michael R. and Marilyn C. Quinlan Life Sciences Education and Research Center at Loyola's Lake Shore Campus. Major research instrumentation includes a complete microscopy facility with transmission and scanning electron microscopes and histology laboratory.

THE MAJOR

BS in Biophysics

The application of physics to biology and medicine has occurred for more than three centuries, and in the past three decades, biophysics research and applications have grown exponentially. Loyola's biophysics major allows students to obtain strong knowledge in the fields of physics, biology, and chemistry. Upon completion of this program, students will:

- Exhibit foundational knowledge in both the biological and physical sciences.
- Develop a deeper understanding of the connection between the biological and the physical sciences.
- Understand laboratory techniques 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.
- Recognize how careful data collection and analysis helps develop or falsify scientific theories.
- Demonstrate effective and ethical decision-making abilities in issues related to the sciences.

CONTINUED



THE MAJOR [CONTINUED]

With rigorous training in science and mathematics, biophysics majors will be prepared for careers as anatomists, aquatic biologists, biochemists, biophysicists, environmental scientists, geneticists, health physicists, industrial health engineers, lab assistants, medical illustrators, medical physicists, medical or pharmaceutical sales representatives, nuclear scientists, pharmacologists/toxicologists, physicists, or psychology engineers. Students may also go on to graduate programs in the fields of biomedical engineering, biotechnology, pre-health professions, or biophysics.

MAJOR REQUIREMENTS

All students must complete courses in biology, physics, and ancillary areas. Because these courses provide a rich introduction to mathematics and science, biophysics majors automatically fulfill Loyola's Core Curriculum requirements in scientific literacy and quantitative analysis requirements with the completion of the program.

Biology (BIOL)

BIOL 101	General Biology I
BIOL 102	General Biology II
BIOL 111	General Biology Lab I
BIOL 112	General Biology Lab II
BIOL 251	Cell Biology
BIOL 282	Genetics
BIOL 366	Biochemistry

Total: 17 credit hours

Biophysics Elective

Total: Three credit hours

Chemistry (CHEM)

CHEM 101	General Chemistry A
CHEM 111	General Chemistry Lab A
CHEM 102	General Chemistry B
CHEM 112	General Chemistry Lab B
CHEM 221	Organic Chemistry I+Lab
CHEM 222	Organic Chemistry II+Lab

Total: 16 credit hours

Mathematics (MATH)

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

Total: 16 credit hours

Physics (PHYS)

PHYS 125	General Physics I
PHYS 126	General Physics II
PHYS 126F	Freshman Projects
PHYS 135	General Physics Lab I
PHYS 136	General Physics Lab II

Information in this brochure is correct as of July 2011.

For the most up-to-date information, visit LUC.edu/undergrad/academics

Loyola is an equal opportunity educator/employer.

PHYS 235	Modern Physics
PHYS 237	Modern Physics Lab
PHYS 301	Math Methods
PHYS 328	Thermodynamics
PHYS 314	Theoretical Mechanics I
PHYS 351	Electricity Magnetism

Total: 26 credit hours

Capstone Experience

One credit hour

Electives

To be taken in consultation with an advisor

For a suggested four-year curriculum, please visit LUC.edu/physics/bs_biophysics.shtml.

Core Curriculum

Loyola's Core Curriculum focuses on desired outcomes in addition to academic disciplines. This varied curriculum instills important skills which prepare students for success regardless of desired career paths. These skills include communications, critical thinking, ethical awareness, information literacy, quantitative and qualitative analysis, research methods, and technological literacy. Students develop these skills by completing Loyola's 10 required areas of knowledge through coursework, which includes a college writing seminar, artistic knowledge and experience, historical knowledge, literary knowledge, quantitative analysis, scientific literacy, societal and cultural knowledge, philosophical knowledge, theological and religious studies, and ethics.

Loyola's Core integrates values across the curriculum through 12 credit hours completed in the Core, major, or electives. These values focus on understanding and promoting justice, understanding diversity in the U.S. and the world, understanding spirituality or faith in action in the world, and promoting civic engagement or leadership. This 45-credit hour curriculum makes up about one-third of a student's coursework, is complemented by a major and electives, and may be completed at any time during the Loyola academic experience.

For more information, please visit LUC.edu/core.

CONTACT US

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