



COLLEGE OF ARTS + SCIENCES

Biophysics

Pre-Health



When people asked you what you wanted to be when you grew up, you never knew whether to say doctor or scientist. Astronaut or surgeon. You're fascinated with the universe and all its questions, and you have a passion for studying medicine or saving lives. Loyno's Biophysics Pre-Health program is designed for you. It's for students who want to apply to medical school; become medical physicists or biomedical engineers; complete foundational study and research in physics; and develop a deep understanding of methods, diagnostic and therapeutic, that modern medicine uses. You'll work with faculty members studying fields like cellular biophysics, biomechanics, and neural control. You'll apply sophisticated experimental techniques such as patch-clamping and advanced computational methods to biomedical problems. And above all, you'll leave Loyno with the experience you need to stand out on a med school or graduate school application.

This is the place.

New Orleans is the perfect place to study physics and medicine. A variety of our city's expanding industries depend on both. We're becoming a hub for the medical industry and biomedical engineering. In addition to Ochsner's strong presence, we've built a \$1.1 billion University Medical Center. If you are interested in biophysics, there are Loyno graduates working in neuroscience in the medical center.

At Loyno, undergraduate students are encouraged to collaborate with faculty on research projects, and our department offers use of sophisticated research facilities that live up to our students' research ambitions (the biophysics lab, for instance, just acquired a new \$100,000 patch-clamping robot), so you get hands-on experience while you're here. After graduation, this experience will propel you into successful careers or further study.

Courses

Biophysics students will take foundational courses in physics, mathematics, chemistry and biology, in addition to specialized biophysics courses, such as Cell Biophysics, Biomechanics or Intro Neural Networks.

Cellular Biophysics

This course focuses on selected physiological processes occurring in biological cells, such as cell homeostasis or action potential in neurons. Although these are biological phenomena, their analysis is inherently multidisciplinary, involving both physical and chemical principles. The course also introduces students to basic mathematical modeling of biophysical phenomena.

Biomechanics & Neural Control

This course is an introduction to biomechanics and the underlying neuromuscular control. In the process, students will learn theoretical and numerical techniques to model and analyze biomechanical systems and simple neural circuits. Every student completes a numerical research project on terrestrial locomotion.

Introduction to Neural Networks and Their Applications

This course will introduce students to neural networks and their applications to intelligent systems and robotics. In the process, students will learn how a crude imitation of a human brain allows a machine to make "guesses" and develop an intelligent behavior from its own experience. The students will learn basic programming techniques and be given a research project in which a machine will have to develop its own strategy to achieve a given task.