Bioengineering

Website (https://bioe.northeastern.edu/)

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The Department of Bioengineering is driven by the conviction that the interface of engineering and medicine will be one of the great intellectual adventures of the 21st century. To prepare students for this adventure, the department strives to create an atmosphere of innovation and creativity that fosters excellence in instruction and research and provides a foundation for programs that drive forward the cutting edge of knowledge while establishing translational collaborations with clinical and industrial researchers.

Bioengineering is a relatively new field built on the recognition that engineering of biological systems or systems that interface with living systems requires a multidisciplinary approach that considers the mechanical, electrical, chemical, and materials properties of the biological system. Students with backgrounds from biochemistry to computer science and many fields in between are attracted to bioengineering as a field with the potential to make a great impact on human health. The MS and PhD programs are designed to integrate students with very different backgrounds and provide them with the coursework and research experience that will take advantage of their unique backgrounds and, where appropriate, fill in gaps in their backgrounds to help them grow into a more broadly informed student.

Recognizing the breadth of disciplines that contribute to bioengineering projects, the MS program allows students to choose one of four concentrations (biomechanics and mechanobiology; biomedical devices and bioimaging; molecular, cell, and tissue engineering; or systems, synthetic, and computational bioengineering) to develop deep expertise in an area of particular interest and encourages individual research through a one-semester master's project, or a master's project followed by a master's thesis.

The PhD program spans four core research areas for which the department has particular strengths: biomechanics and mechanobiology; biomedical devices and bioimaging; molecular, cell, and tissue engineering; and systems, synthetic, and computational bioengineering. Coursework is designed to strengthen student backgrounds in those areas most relevant to the interests of each student.

Mission of the Department

The mission of the Department of Bioengineering is the education of students in the fundamental principles and practice of bioengineering and, through basic and applied research, the creation of new knowledge at the interface of engineering and medicine to support development of new technologies for improvement of human health and healthcare.

Overview of Programs Offered

The Department of Bioengineering offers a Master of Science and a Doctor of Philosophy in Bioengineering. The MS degree is offered as a full-time or part-time program. The PhD degree program is only offered as a full-time program.

Candidates pursuing an MS or PhD are able to select thesis topics from a diverse range of faculty research. New graduate students may learn about ongoing research topics from individual faculty members, faculty websites, and bioengineering seminars.

Graduate Certificate Options

Students enrolled in a master's degree have the opportunity to also pursue one of the many engineering graduate certificate options in addition to or in combination with the MS degree. Students should consult their faculty advisor regarding these options (https://catalog.northeastern.edu/graduate/engineering/graduate-certificate-programs/).

GORDON INSTITUTE OF ENGINEERING LEADERSHIP OPTION

Students have the opportunity to pursue the Gordon Engineering Leadership Program (https://catalog.northeastern.edu/graduate/gordon-institute/) in combination with the MS degree.

Programs

Doctor of Philosophy (PhD)

- Bioengineering (https://catalog.northeastern.edu/graduate/engineering/bioengineering/bioengineering-bachelors-degree-entrance-phd/)
- Interdisciplinary Engineering (https://catalog.northeastern.edu/graduate/engineering/interdisciplinary-phd/interdisciplinary-engineering-phd/)

Master of Science in Bioengineering (MSBioE)

- Bioengineering (https://catalog.northeastern.edu/graduate/engineering/bioengineering/bioengineering-msbioe/)