BIOENGINEERING, PHD

for the degree of Doctor of Philosophy in Bioengineering

department head: Mark Anastasio (mfi@illinois.edu)
director of graduate studies: Gregory Underhill (bodony@illinois.edu)
overview of admissions & requirements: https://bioengineering.illinois.edu/admissions/graduate/
overview of grad college admissions & requirements: https://grad.illinois.edu/admissions/apply
department website: https://bioengineering.illinois.edu/
program website: https://bioengineering.illinois.edu/academics/graduate/phd/
department faculty: https://bioengineering.illinois.edu/directory/
college website: https://grainger.illinois.edu/
contact: Krista Smith (kristasm@illinois.edu)
address: 1240 Everitt Laboratory, 1406 W Green St, Urbana, IL 61801
phone: (217) 333-1867
email: bioe-gradprograms@illinois.edu
(bioengineering@illinois.edu)

The Department of Bioengineering offers both a traditional doctoral program (for students with a previous master's degree) and a direct doctoral program (for students with only a bachelor's degree). Students in both programs are required to have a research advisor and applicants are encouraged to contact department faculty (https://bioengineering.illinois.edu/directory/) in their areas of interest to inquire about possible research and funding opportunities.

Opportunity exists for specializing in i) biomechanics via the Biomechanics (http://catalog.illinois.edu/graduate/engineering/concentration/biomechanics) optional graduate concentration, ii) cancer nanotechnology via the Cancer Nanotechnology (http://catalog.illinois.edu/graduate/engineering/concentration/cancer-nanotechnology) optional graduate concentration, and iii) computational science and engineering via the Computational Science & Engineering (http://catalog.illinois.edu/graduate/engineering/concentration/computational-science-engineering) optional graduate concentration.

Admission Requirements
Applicants should have an undergraduate or graduate degree in a natural science, computer science, or engineering. A minimum grade point average of 3.00 (A = 4.00) for the last two years of undergraduate study is required. Applicants should show evidence of strong quantitative skills and of serious interest in the life sciences. All applicants must submit results from the Graduate Record Examination (GRE) (http://www.ets.org) general test.

All applicants whose native language is not English are required to submit TOEFL (http://www.toefl.org) or International English Language Testing System (IELTS) (http://www.ielts.org) scores as evidence of English proficiency. Minimum admission requirements (https://grad.illinois.edu/admissions/instructions/04c) are set by the Graduate College.

Financial Aid
Qualified students may apply for financial aid in the form of fellowships, teaching and research assistantships, and waivers of tuition and service fees. Starting in Fall 2020, Grainger Engineering PhD students in their first five years of enrollment who meet the minimum eligibility requirements (https://grainger.illinois.edu/academics/graduate/phd-funding-guarantee) are guaranteed a funded appointment for fall and spring that includes a full tuition waiver, a partial fee waiver, and a stipend.

All applicants, regardless of US citizenship, whose native language is not English and who wish to be considered for teaching assistantships must demonstrate spoken English language proficiency (http://grad.illinois.edu/admissions/taengprof.htm) by achieving a minimum score of 24 on the speaking subsection of the TOEFL iBT or 8 on the speaking subsection of the IELTS. For students who are unable to take the iBT or IELTS, a minimum score of 4CP is required on the EPI test (http://cte.illinois.edu/testing/oral_eng/epi_overview.html), offered on campus. All new teaching assistants are required to participate in the Graduate Academy for College Teaching (http://cte.illinois.edu/programs/ta_train.html) conducted prior to the start of the semester.

Department Research
Bioengineering faculty perform research in the areas of Bio-Imaging at Multi-Scale; Molecular, Cellular and Tissue Engineering; Bio-Micro and Nanotechnology; Computational and Systems Bioengineering; and Synthetic Bioengineering. In addition to Bioengineering faculty, the Department of Bioengineering has more than 50 affiliate faculty (http://bioengineering.illinois.edu/directory).

Other Graduate Programs in the Department of Bioengineering
degrees:

Bioengineering, MEng (http://catalog.illinois.edu/graduate/engineering/bioengineering-meng)
optional concentrations:
- Bioinstrumentation (http://catalog.illinois.edu/graduate/engineering/bioengineering-meng/bioinstrumentation)
- Computational Genomics (http://catalog.illinois.edu/graduate/engineering/bioengineering-meng/computational-genomics)
- General Bioengineering (http://catalog.illinois.edu/graduate/engineering/bioengineering-meng/general-bioengineering)

Bioengineering, MS (http://catalog.illinois.edu/graduate/engineering/bioengineering-ms)
optional concentrations:
- Biomechanics (http://catalog.illinois.edu/graduate/engineering/bioengineering-meng/biomechanics)
- Cancer Nanotechnology (http://catalog.illinois.edu/graduate/engineering/concentration/cancer-nanotechnology)
Information listed in this catalog is current as of 06/2020

**Biomechanics** (http://catalog.illinois.edu/graduate/engineering/concentration/biomechanics)
available for:
- Bioinformatics: Bioengineering, MS (http://catalog.illinois.edu/graduate/engineering/concentration/bioengineering/bioinformatics)
- Electrical & Computer Engineering, MS (http://catalog.illinois.edu/graduate/engineering/electrical-computer-engineering-ms)
- Electrical & Computer Engineering, PhD (http://catalog.illinois.edu/graduate/engineering/electrical-computer-engineering-phd)
- Materials Engineering, MEng (http://catalog.illinois.edu/graduate/engineering/materials-engineering-meng)
- Materials Science & Engineering, MS (http://catalog.illinois.edu/graduate/engineering/materials-science-engineering-ms)
- Materials Science & Engineering, PhD (http://catalog.illinois.edu/graduate/engineering/materials-science-engineering-phd)
- Mechanical Engineering, MEng (http://catalog.illinois.edu/graduate/engineering/materials-engineering-meng)

**Cancer Nanotechnology** (http://catalog.illinois.edu/graduate/engineering/concentration/cancer-nanotechnology)
available for:
- Bioinformatics: Bioengineering, MS (http://catalog.illinois.edu/graduate/engineering/concentration/bioinformatics)
- Electrical & Computer Engineering, MS (http://catalog.illinois.edu/graduate/engineering/electrical-computer-engineering-ms)
- Electrical & Computer Engineering, PhD (http://catalog.illinois.edu/graduate/engineering/electrical-computer-engineering-phd)
- Materials Engineering, MEng (http://catalog.illinois.edu/graduate/engineering/materials-engineering-meng)
- Materials Science & Engineering, MS (http://catalog.illinois.edu/graduate/engineering/materials-science-engineering-ms)
- Materials Science & Engineering, PhD (http://catalog.illinois.edu/graduate/engineering/materials-science-engineering-phd)
- Mechanical Engineering, MEng (http://catalog.illinois.edu/graduate/engineering/materials-engineering-meng)
- Mechanical Engineering, PhD (http://catalog.illinois.edu/graduate/engineering/materials-engineering-phd)
- Theoretical & Applied Mechanics, MS (http://catalog.illinois.edu/graduate/engineering/theoretical-applied-mechanics-ms)
- Theoretical & Applied Mechanics, PhD (http://catalog.illinois.edu/graduate/engineering/theoretical-applied-mechanics-phd)

**Electrical & Computer Engineering, PhD** (http://catalog.illinois.edu/graduate/engineering/electrical-computer-engineering-phd)

**Materials Engineering, MEng** (http://catalog.illinois.edu/graduate/engineering/materials-engineering-meng)

**Materials Science & Engineering, MS** (http://catalog.illinois.edu/graduate/engineering/materials-science-engineering-ms)

**Materials Science & Engineering, PhD** (http://catalog.illinois.edu/graduate/engineering/materials-science-engineering-phd)

**Mechanical Engineering, MEng** (http://catalog.illinois.edu/graduate/engineering/materials-engineering-meng)

**Mechanical Engineering, PhD** (http://catalog.illinois.edu/graduate/engineering/materials-engineering-phd)

**Theoretical & Applied Mechanics, MS** (http://catalog.illinois.edu/graduate/engineering/theoretical-applied-mechanics-ms)

**Theoretical & Applied Mechanics, PhD** (http://catalog.illinois.edu/graduate/engineering/theoretical-applied-mechanics-phd)

The Department of Bioengineering offers studies leading to the Master of Engineering in Bioengineering (MEng), the Master of Science in Bioengineering (MS), and the Doctor of Philosophy (PhD) in Bioengineering. The Bioengineering Graduate Program provides students with educational and research experiences that integrate the sciences of biology and medicine with the practices and principles of engineering. For the MS and PhD programs, areas of focus include Bioimaging, Cell & Tissue Engineering, Micro and Molecular Technologies, and Computational Biology.

Opportunity also exists for specializing in energy and sustainability engineering via the

**Energy and Sustainability Engineering (EaSE) Graduate Certificate Option** (http://ease.illinois.edu)

For the degree of Doctor of Philosophy in Bioengineering

For additional details and requirements for all degrees, please refer to the department’s Graduate Studies Web site (http://bioengineering.illinois.edu) and the Graduate College Handbook (http://grad.illinois.edu/gradhandbook).

### Entering with approved M.S. degree

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>BIOE 599</td>
<td>Thesis Research (min-max applied toward degree)</td>
<td>52</td>
</tr>
</tbody>
</table>

**Other Requirements and Conditions**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Description</th>
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<tbody>
<tr>
<td>Minimum program GPA:</td>
<td>3.0</td>
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<tr>
<td>A Masters degree is required for admission to the Ph.D. program.</td>
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<tr>
<td>Qualifying exam</td>
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<tr>
<td>Preliminary exam</td>
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<td>Final exam and dissertation defense</td>
<td></td>
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<tr>
<td>Dissertation deposit</td>
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1. Qualifying Examination information (http://bioengineering.illinois.edu/graduate-programs/current-graduate-students/qualifying-exam)

### Entering with B.S. degree

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<td>55</td>
</tr>
</tbody>
</table>

**500-level BioE courses:** See approved list

**Elective courses:** At least 12 hours must be engineering graduate-level courses. See website for more details.

**Total hours**

| 96 |

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1 Qualifying Examination information (http://bioengineering.illinois.edu/graduate-programs/current-graduate-students/qualifying-exam)