BIOMECHANICS CONCENTRATION

For the Biomechanics Graduate Concentration

The Biomechanics Concentration prepares students for collaborative research across the disciplines of engineering, biology, and the sciences. Students must be enrolled in a graduate degree program:

- Bioengineering, MS (http://catalog.illinois.edu/graduate/graduate-majors/bio-engin/ms-bioengineering)
- Bioengineering, PhD (http://catalog.illinois.edu/graduate/graduate-majors/bio-engin/doctoraltext)
- Electrical & Computer Engineering, MS (http://catalog.illinois.edu/graduate/graduate-majors/ece/ms-ece)
- Electrical & Computer Engineering, PhD (http://catalog.illinois.edu/graduate/graduate-majors/ece/doctoraltext)
- Materials Engineering, MEng (http://catalog.illinois.edu/graduate/graduate-majors/matse/master-eng-materials-eng)
- Materials Science & Engineering, MS (http://catalog.illinois.edu/graduate/graduate-majors/matse/master-eng-materials-science-eng)
- Materials Science & Engineering, PhD (http://catalog.illinois.edu/graduate/graduate-majors/matse/doctoraltext)
- Mechanical Engineering, MS (http://catalog.illinois.edu/graduate/graduate-majors/mechse/ms-mech-eng)
- Mechanical Engineering, MEng (http://catalog.illinois.edu/graduate/graduate-majors/mechse/doctoraltext)
- Mechanical Engineering, PhD (http://catalog.illinois.edu/graduate/graduate-majors/mechse/doctoraltext)
- Theoretical & Applied Mechanics, MS (http://catalog.illinois.edu/graduate/graduate-majors/mechse/doctoraltext)
- Theoretical & Applied Mechanics, PhD (http://catalog.illinois.edu/graduate/graduate-majors/mechse/doctoraltext)

The Biomechanics Concentration requires students to earn a B or better in each concentration course and complete at least 12 hours. Fulfillment of these requirements will be monitored jointly by the graduate coordinators in Bioengineering and in Mechanical Science and Engineering.

Graduate Degree Programs 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.

Bioengineering: Bioinstrumentation, MEng (http://catalog.illinois.edu/graduate/engineering/bioengineering-meng/bioinstrumentation)
Bioengineering: Computational Genomics, MEng (http://catalog.illinois.edu/graduate/engineering/bioengineering-meng/computational-genomics)
Bioengineering: General Bioengineering, MEng (http://catalog.illinois.edu/graduate/engineering/bioengineering-meng/general-bioengineering)
Bioengineering, MS (http://catalog.illinois.edu/graduate/graduate-majors/bio-engin/ms-bioengineering)
Bioengineering, PhD (http://catalog.illinois.edu/graduate/graduate-majors/bio-engin/doctoraltext)
Bioinformatics: Bioengineering, MS (http://catalog.illinois.edu/graduate/graduate-majors/bio-engin/ms-bioinfo-conc-bioeng)

Graduate Concentration in Biomechanics (p. 1)

Graduate Concentration in Cancer Nanotechnology (http://catalog.illinois.edu/graduate/graduate-majors/bio-engin/grad-conc-cancer-nanotechnology)

For the M.S. and Ph.D. programs, areas of focus include Bio-imaging, Cell & Tissue Engineering, Micro and Molecular Technologies, and Computational Biology. Opportunity also exists for specializing in (1) computational science and engineering and (2) energy and sustainability engineering via the Computational Science and Engineering (CSE) track (http://cse.illinois.edu/education-programs/graduate-program)transcriptable concentration and the Energy and Sustainability Engineering (EaSE) Option (http://ease.illinois.edu).

Admission

Students must select one of the concentrations under the M.Eng. in Bioengineering program to apply to and will not be able to complete multiple concentrations. Students should have an undergraduate degree in science related field or must have taken engineering or science related coursework. Applicants should have a minimum grade point average of 3.00 (A = 4.00) or equivalent for the last two years of undergraduate study and show evidence of strong quantitative skills and of serious interest in the life sciences. In addition, applicants must submit results from the Graduate Record Examination (GRE) (http://www.ets.org) general test. Students in the program are not expected to continue in and do not have automatic admission to the Ph.D. program in any engineering department.

All applicants whose native language is not English must submit a minimum TOEFL (http://www.toefl.org) score of 103 (iBT), 257 (CBT), or 613 (PBT); or minimum International English Language Testing System (IELTS) (http://www.ielts.org) academic exam scores of 7.0 overall and 6.0 in all subsections. Applicants may be exempt from the TOEFL if certain criteria (http://grad.illinois.edu/admissions/instructions/04c) are met. Applicants with lesser scores may still apply. Limited status (http://grad.illinois.edu/admissions/instructions/04c) is granted for lesser scores and requires enrollment in English as a Second Language (ESL) courses (http://linguistics.illinois.edu/students/esl/guidelines) based on an ESL Placement Test (EPT) taken upon arrival to campus.

Faculty Research Interests

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 (http://
Bioengineering.illinois.edu/directory), Department of Bioengineering has more than 50 affiliate faculty (http://bioengineering.illinois.edu/directory).

Financial Aid
For the M.S. and Ph.D. programs, qualified students may apply for financial aid in the form of fellowships, teaching and research assistantships, and waivers of tuition and service fees. All applicants, regardless of U.S. 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.

Please see the financial aid eligibility for the M.Eng. in Bioengineering under the "Masters" tab.

For the Biomechanics Graduate Concentration

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABE 446</td>
<td>Biological Nanoengineering</td>
<td></td>
</tr>
<tr>
<td>BIOE 482</td>
<td>Musculoskel Tissue Mechanics</td>
<td></td>
</tr>
<tr>
<td>ME 483</td>
<td>Mechanobiology</td>
<td></td>
</tr>
<tr>
<td>MSE 474</td>
<td>Biomaterials and Nanomedicine</td>
<td></td>
</tr>
<tr>
<td>PHYS 550</td>
<td>Biomolecular Physics</td>
<td></td>
</tr>
<tr>
<td>TAM 461</td>
<td>Cellular Biomechanics</td>
<td></td>
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</tbody>
</table>

Alternate courses may be applicable to the Biomechanics Concentration pending joint approval by the Bioengineering and Mechanical Science and Engineering Graduate Programs.

Total hours required for the concentration: 12

Requirement Description
Courses taken toward this concentration will count toward the student's graduate degree.
Students must notify their department of their plan to pursue this concentration.
When choosing courses, students must work directly with their department to ensure that all degree requirements will be met.
Note that students who intend to complete both a Biomechanics Concentration and a Cancer Nanotechnology Concentration may only overlap one course between the two concentrations.

Information listed in this catalog is current as of 09/2019