BIOENGINEERING, MS

for the degree of Master of Science in Bioengineering

The Department of Bioengineering offers both an MS with thesis and an MS non-thesis program. Students in the MS with thesis program 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 opportunities.

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/).

The Department of Bioengineering offers studies leading to the Master of Engineering in Bioengineering (MEng), the Master of Science in Bioengineering (MS), Master of Science in Biomedical Image Computing (MS in BIC), 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 Bio-Imaging at Multi-Scale, Molecular, Cellular and Tissue Engineering, Bio-Micro and Nanotechnology, Computational and Systems Bioengineering, and Synthetic Bioengineering.

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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/).

Bioengineering, MS

Thesis Option

Code	Title	Hours
BIOE 599	Thesis Research (min-max applied toward degree)	4
BIOE 500	Graduate Seminar (BIOE 500 must be taken at least twice. A maximum of 2 hours may be applied toward the degree.)	2
BIOE 501	Seminar Discussion	1
BIOE 502	Bioengineering Professionalism	2
BIOE 504	Analytical Methods in Bioeng	4
BIOE 505	Computational Bioengineering	4
BIOE 506	Molecular Biotechniques	4
BIOE 507	Advanced Bioinstrumentation	4
Elective Courses		7
Total Hours		**32**

Other Requirements and Conditions

Requirement	Description
Minimum GPA:	3.0

Non-Thesis Option

Code	Title	Hours
BIOE 500	Graduate Seminar (BIOE 500 must be taken at least twice. A maximum of 2 hours may be applied toward the degree.)	2
BIOE 501	Seminar Discussion	1
BIOE 502	Bioengineering Professionalism	2
BIOE 504	Analytical Methods in Bioeng	4
BIOE 505	Computational Bioengineering	4
BIOE 506	Molecular Biotechniques	4
BIOE 507	Advanced Bioinstrumentation	4
Elective Courses		19
Total Hours		**40**

Other Requirements and Conditions

Requirement	Description
Minimum GPA:	3.0

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Thesis Option

1. Ability to apply **quantitative skills and engineering principles** to propose novel and practical solutions to medical/human health problems
2. Understanding of **professional and ethical responsibilities**
3. Ability to **communicate** scientific problems and solutions, as well as their impact, effectively to a diverse audience and stakeholders, both orally and in writing
4. Demonstrate moderate **technical** mastery in chosen research area, shown by the ability to identify an important scientific problem, formulate a hypothesis, and design experiments to conduct research and data analysis to test the hypothesis. The student should also be able to formulate alternatives.
5. Develop effective **leadership** skills in order to foster the ability to conduct **collaborative** research and work with a diverse team

Non-Thesis Option

1. Ability to apply quantitative skills and engineering principles to propose novel and practical solutions to medical/human health problems
2. Understanding of professional and ethical responsibilities
3. Ability to communicate scientific problems and solutions, as well as their impact, effectively to a diverse audience and stakeholders, both orally and in writing

4. Demonstrate moderate conceptual mastery in chosen research area, with the capability of expanding it into a future research project in preparation for an industry career or PhD degree
5. Develop effective leadership skills in order to foster the ability to conduct collaborative research and work with a diverse team

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Admission Requirements

Applicants should have an undergraduate 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. The GRE exam score requirement may be waived at the department's discretion.

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.

All applicants whose native language is not English must submit a minimum TOEFL (http://www.toefl.org/) score of 102 (iBT), 253 (CBT), or 610 (PBT); or minimum International English Language Testing System (IELTS) (http://www.ielts.org/) academic exam scores of 7.0 overall to be admitted on full status. Applicants may be exempt from the TOEFL if certain criteria (http://grad.illinois.edu/admissions/instructions/04c/) are met. 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.

Financial Aid

Qualified students may qualify 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 (https://citl.illinois.edu/citl-101/teaching-learning/grad-academy-for-college-teaching/) conducted prior to the start of the semester.

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Graduate Programs in Bioengineering

- Majors
  - Bioengineering,MEng (http://catalog.illinois.edu/graduate/engineering/bioengineering-meng/)
    - 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 (p. 1)
    - optional concentrations
      - Biomechanics (http://catalog.illinois.edu/graduate/engineering/concentration/biomechanics/)
      - Cancer Nanotechnology (http://catalog.illinois.edu/graduate/engineering/concentration/cancer-nanotechnology/)
  - Bioengineering, PhD (http://catalog.illinois.edu/graduate/engineering/bioengineering-phd/)
    - optional concentrations
      - Biomechanics (http://catalog.illinois.edu/graduate/engineering/concentration/biomechanics/)
      - Cancer Nanotechnology (http://catalog.illinois.edu/graduate/engineering/concentration/cancer-nanotechnology/)
      - Computational Science and Engineering (http://catalog.illinois.edu/graduate/engineering/concentration/computational-science-engineering/)
  - Biomedical Image Computing, MS (http://catalog.illinois.edu/graduate/engineering/biomedical-image-computing-ms/)
- Concentrations
  - Bioinstrumentation (http://catalog.illinois.edu/graduate/engineering/bioengineering-meng/bioinstrumentation/)
    - available for:
      - Bioengineering,MEng (http://catalog.illinois.edu/graduate/engineering/bioengineering-meng/)
  - Biomechanics (http://catalog.illinois.edu/graduate/engineering/concentration/biomechanics/)
    - available for:
      - 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-science-engineering-ms/)
      - 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, MS (http://catalog.illinois.edu/graduate/engineering/mechanical-engineering-ms/)
      - Mechanical Engineering, MEng (http://catalog.illinois.edu/graduate/engineering/mechanical-engineering-meng/)

    - Mechanical Engineering, PhD (http://catalog.illinois.edu/graduate/engineering/mechanical-engineering-phd/)
    - Computational Science and Engineering (http://catalog.illinois.edu/graduate/engineering/concentration/computational-science-engineering/)
    - 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/)
- Cancer Nanotechnology (http://catalog.illinois.edu/graduate/engineering/concentration/cancer-nanotechnology/)
    - available for:
        - 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-science-engineering-ms/)
        - 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, MS (http://catalog.illinois.edu/graduate/engineering/mechanical-engineering-ms/)
        - Mechanical Engineering, MEng (http://catalog.illinois.edu/graduate/engineering/mechanical-engineering-meng/)
        - Mechanical Engineering, PhD (http://catalog.illinois.edu/graduate/engineering/mechanical-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/)

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Department of Bioengineering

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Grainger College of Engineering
Grainger College of Engineering website (https://grainger.illinois.edu/)

Admissions
Graduate Contact: Liezl Bowman (liezlb@illinois.edu)
Department Admissions & Requirements (https://bioemeng.illinois.edu/admissions/)
Graduate College Admissions & Requirements (https://grad.illinois.edu/admissions/apply/)