AGRICULTURAL AND BIOLOGICAL ENGINEERING

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Major: Agricultural and Biological Engineering
Degrees offered: M.S. and Ph.D.

Major: Technical Systems Management
Degrees offered: M.S.
Graduate Concentration: Professional Science Master's

Medical Scholars Program: Doctor of Philosophy (Ph.D.) in Agricultural and Biological Engineering and Doctor of Medicine (M.D.) through the Medical Scholars Program (http://med.illinois.edu/mdphd)

Graduate Degree Programs

The Department of Agricultural and Biological Engineering offers a graduate degree program which is at the forefront of the application of engineering principles to solve problems of agricultural production, utilization, environmental control, and biological systems and to improve the quality of life. Students may concentrate study in one of the faculty research interest areas listed below. Supporting course work includes: mathematics; computer science; statistics; engineering mechanics; chemical, civil, electrical, and mechanical engineering; animal science; crop sciences; food science; and other appropriate fields. Opportunity also exists for specializing in

1. computational science and engineering and
2. energy and sustainability engineering within the department's graduate programs via the Computational Science and Engineering (CSE) Option (http://cse.illinois.edu/education/cse-educational-programs-overview) and the Energy and Sustainability Engineering (EaSE) Option (http://ease.illinois.edu)

The Medical Scholars Program (http://med.illinois.edu/mdphd) permits highly qualified students to integrate the study of medicine with study for a graduate degree in a second discipline, including Agricultural and Biological Engineering.

Admission

Admission requirements for either master's program include completion of an undergraduate program equivalent to the Agricultural and Biological Engineering (ABE) curriculum (in the case of the ABE M.S.) or the Technical Systems Management (TSM) curriculum (in the case of the TSM M.S,) with at least a 3.0 grade point average (A = 4.0) for the last two years of undergraduate course work. Applicants must submit Graduate Record Examination (GRE) scores.

Admission to the Ph.D. program is limited to individuals who have demonstrated exceptional ability through outstanding performance in obtaining a Master of Science degree and/or through a high degree of technical and professional accomplishment. Candidates must also satisfy entrance requirements for the M.S. degree program.

All applicants whose native language is not English must submit a minimum TOEFL (http://www.toefl.org) score of 88 (iBT), 230 (CBT) or 570 (PBT); or minimum International English Language Testing System (IELTS) (http://www.ielts.org) academic exam scores of 6.5 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. For those taking the TOEFL or IELTS, full admission status (http://grad.illinois.edu/admissions/instructions/04c) is granted for scores greater than 102 (TOEFL iBT), 253 (TOEFL CBT), 610 (TOEFL PBT), or 6.5 (IELTS). 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.

Students may apply to the Medical Scholars Program prior to beginning graduate school or while in the graduate program. Applicants to the Medical Scholars Program must meet the admissions standards for and be accepted into both Agricultural and Biological Engineering and the College of Medicine. An application to the Medical Scholars Program will also serve as the application to the Agricultural and Biological Engineering graduate program. Further information on this program is available by contacting the Medical Scholars Program (125 Medical Sciences Building, (217) 333-8146, mspo@illinois.edu).

Medical Scholars Program

Students in the Medical Scholars program must meet the specific requirements for both the medical (https://www.med.illinois.edu/mdphd) and graduate degrees. On average, students take eight years to complete both degrees. The first year of the combined program is typically spent meeting requirements of the Agricultural and Biological Engineering graduate degree.

Graduate Teaching Experience

Experience in teaching is considered a vital part of the graduate program and is required as part of the academic work of all Ph.D. candidates in this program. For details of expectations, see the department's Graduate Handbook (http://abe.illinois.edu/graduate/handbook).

Faculty Research Interests

Current research interests of the faculty include off-road equipment engineering (robotics and machinery automation, remote sensing and precision agriculture, machinery management systems, pesticide application technology, engines and biofuels); soil and water resources (hydrology, erosion and sediment transport, water management, wetlands, and water quality); bioenvironmental engineering (building environment and energy conservation, air quality, renewable energy, biomass to bioenergy conversion, structural analysis and facility design, building materials evaluation, environmental control and ergonomic design for plant, animal, and human housing systems and facilities); food and bioprocess engineering (engineering properties of foods, physical properties of biological products, grain drying, grain quality evaluation, dry-grind corn processing, wet and dry milling, modified bioprocesses for improved co-products, fuel and chemicals, fermentation, and transport phenomenon in biological materials); or electronic and electrical systems (biosensors and controls, energy systems, machine vision, near-infrared spectroscopy applications, bionanotechnology, microfabricated devices, bioconjugation techniques, transcriptional control, modeling life support

systems, and multiscale biological processes). For more details, visit the department's graduate program Web site. (http://abe.illinois.edu/graduate/areas)

Financial Aid

Illinois PSM students may not hold assistantships or other tuition and fee waiver-generating appointments; statutory waivers and tuition scholarships are accepted. For all other students, fellowships, supported by University, College of Agricultural, Consumer and Environmental Sciences, and College of Engineering funds, are available on a competitive basis. A limited number of assistantships, providing both teaching and research experience, are often available on a half-time basis. 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.

- Master of Science in Agricultural and Biological Engineering (http://catalog.illinois.edu/graduate/graduate-majors/ag-biol-engin/ms-ag-biol-engin)
- Master of Science in Technical Systems Management (http://catalog.illinois.edu/graduate/graduate-majors/ag-biol-engin/ms-tech-systems-mgmt)
- Master of Science in Technical Systems Management, Professional Science Masters Concentration (http://catalog.illinois.edu/graduate/graduate-majors/ag-biol-engin/ms-technical-systems-management-psm-concentration)

Doctor of Philosophy in Agricultural and Biological Engineering

ABE 594	Graduate Seminar (0 hours registration every term while in residence)	0
One MATH course beyond differential equations from an approved list (http://abe.illinois.edu/graduate/handbook)		3-4
One course in statistical design and analysis from an approved list (http://abe.illinois.edu/graduate/handbook) [1]		3-5
pagelinkhttp://abe.illinois.edu/graduate/handbook:One course in instrumentation and measurement from an approved list		3-5
One 500-level course (taken for at least 3 credit hours) in an area of specialization – chosen in consultation with advisor		3-5
Elective courses – chosen in consultation with advisor (subject to Other Requirements and Conditions below)		11-22
ABE 599	Thesis Research (min-max applied toward degree)	32
Total Hours		64

Other Requirements [1]

Other Requirements and Conditions may overlap	
	A maximum of 4 hours of ABE 597 (or other independent study) may be applied toward the elective course work requirement.
	Teaching experience determined in consultation with advisor with guidance provided by the department's Graduate Handbook.
	The minimum program GPA is 3.0.
	A Masters degree is required for admission to the Ph.D. program.
Ph.D. exam and dissertation requirements:	
	Qualifying exam
	Preliminary exam
	Final Exam or dissertation defense
	dissertation deposit

[1] *For additional details and requirements for all degrees, please refer to the program's Graduate Degree Requirements* (http://www.psm.illinois.edu/prospectivestudents/programs/agripro.html) *and the Graduate College Handbook* (http://www.grad.illinois.edu/gradhandbook).