AGRICULTURAL & BIOLOGICAL ENGINEERING, MS

for the degree of Master of Science in Agricultural & Biological Engineering

department head: Ronaldo G Maghirang (ronaldom@illinois.edu)
director of graduate studies: Xinlei Wang (xwang2@illinois.edu)
overview of admissions & requirements: https://abe.illinois.edu/
apply#graduate (https://abe.illinois.edu/apply/#graduate)
overview of grad college admissions & requirements: https://
grad.illinois.edu/admissions/apply (https://grad.illinois.edu/admissions/apply/)
department website: https://abe.illinois.edu/
program website: https://abe.illinois.edu/graduate (https://
abe.illinois.edu/graduate/)
department faculty: https://abe.illinois.edu/directory/faculty
(https://abe.illinois.edu/directory/faculty/)
college websites: https://grainger.illinois.edu/ and https://
aces.illinois.edu/
contact: Heather Crump (horcump@illinois.edu)
address: 338 Agricultural Engineering Sciences Bldg, 1304 W
Pennsylvania Ave, Urbana, IL 61801
phone: (217) 333-3570
e-mail: abe@illinois.edu

Opportunity exists for specializing in computational science and
engineering via the Computational Science & Engineering (http://
catalog.illinois.edu/graduate/engineering/concentration/computational-
science-engineering/) optional graduate concentration.

Admission Requirements

Admission requirements include completion of an undergraduate
program equivalent to the Agricultural and Biological Engineering (ABE)
curriculum 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.

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.
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 7.0 (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.

Financial Aid

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 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/epl_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.

Department Research

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 research Web site. (https://abe.illinois.edu/research/
areas/)

Other Graduate Programs in the Department of
Agricultural & Biological Engineering

degrees:

Agricultural & Biological Engineering, PhD (http://
catalog.illinois.edu/graduate/engineering/agricultural-
biological-engineering-phd/)
optional concentration:
Computational Science & Engineering (http://
catalog.illinois.edu/graduate/engineering/concentration/
computational-science-engineering/)
Technical Systems Management, MS (http://
catalog.illinois.edu/graduate/aces/technical-systems-
management-ms/)
Technical Systems Management, MS - Professional Science
Master’s (http://catalog.illinois.edu/graduate/aces/technical-
systems-management-ms-professional-science-masters/)
The Department of Agricultural & 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;
Agricultural & Biological Engineering, MS

chemical, civil, electrical, and mechanical engineering; animal science; crop sciences; food science; and other appropriate fields.

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 additional details and requirements refer to the department’s Graduate Handbook (http://abe.illinois.edu/graduate/handbook/) and the Graduate College Handbook (http://grad.illinois.edu/gradhandbook/).

### Thesis Option

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABE 599</td>
<td>Thesis Research</td>
<td>8</td>
</tr>
<tr>
<td>ABE 594</td>
<td>Graduate Seminar (Registration of 0 hours required every term while in residence)</td>
<td>0</td>
</tr>
<tr>
<td>ABE 501</td>
<td>Graduate Research I</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>One MATH course beyond differential equations from an approved list (<a href="http://abe.illinois.edu/graduate-students/abe-graduate-student-course-requirements/">http://abe.illinois.edu/graduate-students/abe-graduate-student-course-requirements/</a>)</td>
<td>3-4</td>
</tr>
<tr>
<td></td>
<td>One course in statistical design and analysis from an approved list (<a href="http://abe.illinois.edu/graduate-students/abe-graduate-student-course-requirements/">http://abe.illinois.edu/graduate-students/abe-graduate-student-course-requirements/</a>)</td>
<td>3-5</td>
</tr>
<tr>
<td></td>
<td>One course in instrumentation and measurement from an approved list (<a href="http://abe.illinois.edu/graduate-students/abe-graduate-student-course-requirements/">http://abe.illinois.edu/graduate-students/abe-graduate-student-course-requirements/</a>)</td>
<td>3-5</td>
</tr>
<tr>
<td></td>
<td>One 500-level course (taken for at least 3 credit hours) in an area of specialization – chosen in consultation with advisor</td>
<td>3-5</td>
</tr>
<tr>
<td></td>
<td>Elective courses – chosen in consultation with advisor (subject to Other Requirements and Conditions below)</td>
<td>4-11</td>
</tr>
</tbody>
</table>

**Total Hours:** 32

### Other Requirements and Conditions

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Requirements and Conditions may overlap</td>
<td>A maximum of 4 hours of ABE 597 (or other independent study) may be applied toward the elective course work requirement.</td>
</tr>
<tr>
<td></td>
<td>A minimum of 12 500-level credit hours applied toward the degree.</td>
</tr>
<tr>
<td>Minimum GPA</td>
<td>3.0</td>
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</table>

### Non-Thesis Option

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABE 594</td>
<td>Graduate Seminar (Registration of 0 hours required for every term while in residence)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>One MATH course beyond differential equations from an approved list (<a href="http://abe.illinois.edu/graduate-students/abe-graduate-student-course-requirements/">http://abe.illinois.edu/graduate-students/abe-graduate-student-course-requirements/</a>)</td>
<td>3-4</td>
</tr>
<tr>
<td></td>
<td>One course in statistical design and analysis from an approved list (<a href="http://abe.illinois.edu/graduate-students/abe-graduate-student-course-requirements/">http://abe.illinois.edu/graduate-students/abe-graduate-student-course-requirements/</a>)</td>
<td>3-5</td>
</tr>
</tbody>
</table>

**Total Hours:** 36

### Other Requirements and Conditions

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Requirements and Conditions may overlap</td>
<td>A maximum of 4 hours of ABE 597 (or other independent study) may be applied toward the elective course work requirement.</td>
</tr>
<tr>
<td></td>
<td>A minimum of 12 500-level credit hours applied toward the degree.</td>
</tr>
<tr>
<td>The non-thesis option is only allowed with departmental approval at or before initiation of graduate study, and a final report is required.</td>
<td></td>
</tr>
<tr>
<td>Minimum GPA</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Information listed in this catalog is current as of 09/2021