

# Agricultural and Biological Engineering

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Graduate study is offered in the Department of Agricultural and Biological Engineering leading to the degree of Master of Science in Biological Engineering or a Doctor of Philosophy in Engineering. Major areas of study include the following:

- Agricultural machinery systems
- Precision agriculture
- Animal waste management
- Sustainable design
- Pesticide applications and protection
- Bioenvironmental systems
- Seed processing and storage
- Aquacultural systems
- Agricultural modeling
- Bioenergy
- Agricultural robotics and automation
- Agricultural big data and artificial intelligence
- Agricultural sensors and remote sensing

The department has several major research laboratories, such as remote sensing (the Kimbrough Precision Agriculture and Remote Sensing Engineering Laboratory); water quality and environmental engineering; cotton ginning (the MAFES/ABE Mini-Gin, a fully operational cotton gin); and bioenergy. A limited number of graduate research and teaching assistantships are available.

## Admission Criteria

Prerequisites for admission into the graduate program include all the general requirements of the Graduate School, an undergraduate engineering degree (or remedial engineering coursework), and identification of a departmental professor who is willing to serve as research director for the master's or Ph.D. project. International students must obtain a TOEFL score of 550 PBT (79 iBT) or IELTS score of 6.5 or higher.

## Provisional Admission

An applicant who has not fully met the GPA requirement stipulated by the University may be admitted on a provisional basis. The provisionally-admitted student is eligible for a change to regular status after receiving a 3.00 GPA on the first 9 hours of graduate courses at Mississippi State University (with no grade lower than a C). The first 9 hours of graduate courses must be within the student's program of study. Courses with an S grade, transfer credits, or credits earned while in Unclassified status cannot be used to satisfy this requirement. If a 3.00 is not attained, the provisional student **shall** be dismissed from the graduate program. Academic departments may set higher standards for students to fulfill provisional requirements; a student admitted with provisional status should contact the graduate coordinator for the program's specific requirements. **While in the provisional status, a student is not eligible to hold a graduate assistantship.**

## Contingent Admission

If a student applying to the M.S. program does not have an undergraduate degree in engineering, the student will be required to complete or have previous credit in 51 hours of engineering, mathematics, and physical science courses. The student will be granted contingent admission until the course requirement has been satisfied. Similarly, a student applying to the Ph.D. program must have a B.S. or M.S. degree in engineering. The same set of courses will be required before the student is fully admitted into the Ph.D. program.

## Academic Performance

Unsatisfactory performance in the graduate program in Biological Engineering is defined as any of the following

- Failure to maintain a B average in attempted graduate courses after admission to the program
- A grade of U, D, or F in any one course
- More than two grades below a B

- Failure of the qualifying or preliminary exam (Ph.D. students only)
- Failure of the research defense
- Unsatisfactory evaluation of a thesis or dissertation
- Failure of a required component of the program of study

Any one of these, or a combination of these, will constitute the basis for review for possible dismissal. The graduate coordinator will review the record, along with the student's graduate committee, and take a final course of action, which will be immediate dismissal or the establishment of a probationary period in which corrective action must take place. Appeal of dismissal can be made by submitting a written appeal statement to the department head. If the dismissal is upheld by the department head upon the student's appeal, the student can then submit a written appeal to the dean of the College of Engineering.

## Master of Science in Biological Engineering

ST 8114	Statistical Methods	4
Select at least one of the following:		1
ABE 8911	Agricultural and Biological Engineering Seminar I	
ABE 8921	Agricultural and Biological Engineering Seminar II	
ABE XXXX	Graduate course	3
Additional graduate-level coursework		16
ABE 8000	Thesis Research/ Thesis in Agricultural and Biological Engineering	6
<b>Total Hours</b>		<b>30</b>

A thesis and an oral comprehensive examination in defense of the thesis are required. The Master of Science in Biological Engineering requires 24 credit hours of coursework beyond the baccalaureate degree and 6 or more credit hours of thesis research/thesis.

## Doctor of Philosophy in Engineering with concentration in Biological Engineering

Beyond the baccalaureate degree

MA XXXX Graduate mathematics course		3
Select two of the following:		2
ABE 8911	Agricultural and Biological Engineering Seminar I	
ABE 8921	Agricultural and Biological Engineering Seminar II	
Graduate-level coursework as approved by the committee		33
8000-level coursework as approved by the committee		10
ABE 9000	Dissertation Research/ Dissertation in Agricultural and Biological Engineering	20
Minimum Hours		68 Beyond B.S.

Beyond the master's degree

MA XXXX Graduate Mathematics course		3
Select two of the following		
ABE 8911	Agricultural and Biological Engineering Seminar I	1
ABE 8921	Agricultural and Biological Engineering Seminar II	1
Graduate Level coursework as approved by the committee		19
Research/Dissertation		20
Minimum Hours		44 Beyond Master's

A preliminary examination, a dissertation, and an oral examination in defense of the dissertation are required. Doctoral students are required to take or have credit in a graduate-level math course, complete a minimum of 48 credit hours of coursework beyond the baccalaureate degree and complete 20-32 hours of dissertation research.