

# AGRICULTURAL AND BIOLOGICAL ENGINEERING

## Degree Requirements

### Master of science (M.S.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-600 Research Degree Policies. (<https://gradschool.psu.edu/graduate-education-policies/>)

A minimum of 30 credits at the 400, 500, 600, or 800 level is required, with at least 18 credits at the 500 and 600 level, combined. A minimum of 12 credits in course work (400, 500, and 800 series) must be completed in the major program (BE or ABE). A thesis is required and a minimum of 6 credits in thesis research (600 or 610) must be completed. The thesis must be accepted by the advisers, committee members, the head of the graduate program, and the Graduate School, and the student must pass a thesis defense.

Each M.S. program of study must meet the following requirements:

Code	Title	Credits
ABE 500	Research Methods	3
BRS 502	Human Behavior and ethics in Management and Technology (or other Ethics course from a list of approved courses maintained by the program office.)	3
	One 500-level STAT course	3
ABE 590	Colloquium (1 credit per semester for 3 semesters)	3
	Additional 400-level BE courses (limit 3 credits), 500-level or 800-level ABE courses	6
ABE 600	Thesis Research	6
	Additional 400, 500, or 800-level courses or ABE 600 Thesis Research	6
<b>Total Credits</b>		<b>30</b>

In addition to the above listed course work requirements, every graduate student must fulfill the Scholarship and Research Integrity (SARI) requirement. SARI requirement consists of two parts: 1) completion of ABE 500 with a grade of B or better and 2) completion of online training program at: <http://www.research.psu.edu/training/sari> (<http://www.research.psu.edu/training/sari/>) Responsible Conduct of Research (RCR) for Engineers. The online SARI requirement must be completed within one year from date of enrollment in the program of study. A copy of the completion certificate of the online SARI training program should be given to the Graduate Administrative Assistant. This will be placed in the student's department folder.

A minimum grade point average of 3.00 is required for graduation. Only grades of C or better are accepted for graduate credit. All courses must be approved by the Advisory Committee as having significance and value for the degree program. All requirements for M.S. degree, whether satisfied on this campus or elsewhere, must be met within eight years from the first semester of graduate study.

### Doctor of Philosophy (Ph.D.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-600 Research Degree Policies. (<https://gradschool.psu.edu/graduate-education-policies/>)

Ph.D. degree requirements include successful completion of the following: approved graduate course work, a qualifying examination, English Competence requirements, a comprehensive examination, and a final oral examination (the dissertation defense). To earn the Ph.D. degree, doctoral candidates must write a dissertation that is accepted by the Ph.D. committee, the head of the graduate program, and the Graduate School.

Each Ph.D. program of study, for students holding a masters level engineering degree, must meet the following requirements (courses taken previously do not have to be repeated, except ABE 590):

Code	Title	Credits
ABE 500	Research Methods (unless previously taken)	3
BRS 502	Human Behavior and ethics in Management and Technology (or other ethics course from a list of approved courses maintained by the program office, unless previously taken)	3
ABE 590	Colloquium (1 credit per semester for 4 semesters)	4
	500 and/or 800-level ABE courses (excluding ABE 500, 590-596) <sup>1</sup>	6
EDCE 530	Teaching and Learning in Agricultural Science (B grade minimum) <sup>2</sup>	3
ABE 602	Supervised Experience in College Teaching	1-3
	Communications <sup>2</sup>	3
Additional course work as approved by the Ph.D. Committee		

<sup>1</sup> One 500-level ABE course (3 credits) and one engineering graduate (500-level) course (3 credits) from the list of approved courses maintained by the program office fulfills this requirement.

<sup>2</sup> B- does not mean this requirement.

Except as specified above, no particular course levels, total number of courses or total credits are required by the department. The Dissertation committee will determine the minimum requirements in such supporting areas as mathematics, engineering, agricultural/biological sciences, and physical sciences. The candidate is expected to develop a program of study and submit it to the Dissertation Committee for consideration and approval.

In addition to the above listed course work requirements, every graduate student must fulfill the Scholarship and Research integrity (SARI) requirement. SARI requirement consists of two parts: 1) completion of ABE 500 with a grade of B or better, and 2) completion of online training program at <http://www.research.psu.edu/training/sari>- Responsible Conduct of Research (RCR) for Engineers. The online SARI requirement must be completed within one year from date of enrollment in the program of study. A copy of the completion certificate of the online training program should be given to the Graduate Administrative Assistant. This will be placed in the student's department folder.

It is expected that each Ph.D. student not holding an M.S. engineering degree will satisfy the intent of the M.S. degree coursework requirements specified elsewhere in this document. Research credits (ABE 600) are in addition to coursework credits.

All requirements for a Ph.D. degree must be completed within eight years after passing the Qualifying Examination.

A Ph.D. candidate is not required to have a minor field of study. However, if the student selects a minor field, the minor must consist of not fewer than 15 graduate credits above and beyond any credits

used for a master's minor. The coursework must be distinct from the student's primary academic and research focus regardless of the course abbreviation/prefix. All credits must be approved by the graduate major program and graduate minor program heads. The minor must meet Graduate Council policy requirements listed under GCAC-611 Minor – Research Doctorate (<https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-600/gcac-611-minor-research-doctorate/>).