Program Change Request

EP.26.100_FINAL
Approved by EP 02/02/2026

Date Submitted: 11/20/24 6:05 pm

Viewing: 10KS5163PHD : Agricultural & Biological Engineering, PhD

Last approved: 01/14/22 2:49 pm

Last edit: 02/05/26 10:12 am

Changes proposed by: Kent Rausch

Catalog Pages Using this Program	Agricultural & Biological Engineering, PhD

Proposal Type:
Major (ex. Special Education)

This proposal is for a:
Revision

In Workflow

1. U Program Review
2. 1227-ENG Head
3. 1741-ABE Committee Chair
4. 1741-ABE Head
5. KL Committee Chair
6. KL Dean
7. KP Committee Chair
8. KP Dean
9. University Librarian
10. Grad_College
11. COTE Programs
12. Provost
13. Senate EPC
14. Senate
15. U Senate Conf
16. Board of Trustees
17. IBHE
18. HLC
19. DOE
20. Catalog Editor
21. DMI

Approval Path

1. 12/02/24 10:31 am Donna Butler (dbutler): Approved for U Program Review
2. 03/06/25 1:21 pm Keri Pipkins (kcp): Approved for 1227-ENG Head
3. 03/06/25 2:55 pm

Kent Rausch (krausch): Approved for 1741-ABE Committee Chair

4. 03/06/25 3:10 pm Ronaldo Maghirang (ronaldom): Approved for 1741-ABE Head
5. 03/06/25 3:20 pm Brianna Gregg (bjgray2): Approved for KL Committee Chair
6. 03/07/25 6:06 am Anna Ball (aball): Approved for KL Dean
7. 03/24/25 12:30 pm Keri Pipkins (kcp): Approved for KP Committee Chair
8. 03/24/25 12:32 pm Cindy Pruitt (cpruitt): Rollback to KP Committee Chair for KP Dean
9. 09/11/25 4:44 pm Keri Pipkins (kcp): Approved for KP Committee Chair
10. 09/12/25 7:07 am Melissa Engel (engelm): Approved for KP Dean
11. 09/15/25 2:02 pm Tom Teper (tteper): Approved for University Librarian
12. 10/06/25 3:20 pm

Allison McKinney (agrindly): Approved for Grad_College

13. 10/06/25 4:04 pm Suzanne Lee (suzannel): Approved for COTE Programs
14. 10/06/25 4:09 pm Brooke Newell (bsnewell): Rollback to Grad_College for Provost
15. 10/08/25 3:41 pm Allison McKinney (agrindly): Approved for Grad_College
16. 10/08/25 3:44 pm Suzanne Lee (suzannel): Approved for COTE Programs
17. 10/13/25 9:11 am Brooke Newell (bsnewell): Rollback to KP Committee Chair for Provost
18. 10/13/25 9:58 am Keri Pipkins (kcp): Rollback to 1741-ABE Committee Chair for KP Committee Chair
19. 12/02/25 5:00 pm Kent Rausch (krausch): Approved for 1741-ABE Committee Chair
20. 12/03/25 3:16 am Ronaldo Maghirang

(ronaldom): Approved for 1741-ABE Head

21. 12/03/25 11:31 am Brianna Gregg (bjgray2): Approved for KL Committee Chair
22. 12/03/25 1:43 pm Anna Ball (aball): Approved for KL Dean
23. 12/03/25 6:30 pm Keri Pipkins (kcp): Approved for KP Committee Chair
24. 12/04/25 9:00 am Brittany Brunson (bhitchi2): Approved for KP Dean
25. 12/04/25 9:29 am Tom Teper (tteper): Approved for University Librarian
26. 01/12/26 3:07 pm Allison McKinney (agrindly): Approved for Grad_College
27. 01/12/26 4:16 pm Suzanne Lee (suzannel): Approved for COTE Programs
28. 01/14/26 12:55 pm Brooke Newell (bsnewell): Approved for Provost

History

1. Feb 18, 2019 by Deb Forgacs (dforgacs)
2. Mar 14, 2019 by Deb Forgacs (dforgacs)
3. Mar 22, 2019 by Deb Forgacs (dforgacs)
4. Feb 9, 2021 by Keri Pipkins (kcp)
5. Jan 14, 2022 by Mary Lowry (lowry)
6. Jan 14, 2022 by Mary Lowry (lowry)

Administration Details

Official Program Name	Agricultural & Biological Engineering, PhD
Diploma Title	
Sponsor College	Grainger College of Engineering
Sponsor Department	Engineering Administration
Sponsor Name	Kent Rausch
Sponsor Email	krausch@illinois.edu
College Contact	Keri Pipkins ~~Daniel Bodony~~
College Contact Email	kcp@illinois.edu ~~bodony@illinois.edu~~
College Budget Officer	Tessa Hile
College Budget Officer Email	tmhile@illinois.edu

If additional stakeholders other than the Sponsor and College Contacts listed above should be contacted if questions during the review process arise, please list them here.

Kent Rausch (krausch@illinois.edu), Ronaldo Maghirang (ronaldom@illinois.edu)

Does this program have inter-departmental administration?

Yes

Interdisciplinary Colleges and Departments (list other colleges/departments which are involved other than the sponsor chosen above)

Please describe the oversight/governance for this program, e.g., traditional departmental/college governance, roles of elected faculty committees and of any advisory committees.

The Agricultural & Biological Engineering department is interdisciplinary.

College	Agr, Consumer & Env Sciences
Department	Agricultural & Biological Engr

Is there an additional department involved in governance?

No

Effective Catalog Term

Effective Catalog Term	Fall 2025
Effective Catalog	2025-2026

Proposal Title

Proposal Title (either Establish/Revise/Eliminate the Degree Name in Program Name in the College of XXXX, i.e., Establish the Bachelor of Science in Entomology in the College of Liberal Arts and Sciences, include the Graduate College for Grad Programs)

Revise the Doctor of Philosophy in Agricultural and Biological Engineering in the Grainger College of Engineering and the Graduate College

Does this proposal have any related proposals that will also be revised at this time and the programs depend on each other? Consider Majors, Minors, Concentrations & Joint Programs in your department. Please know that this information is used administratively to move related proposals through workflow efficiently and together as needed. Format your response like the following "This BS proposal (key 567) is related to the Concentration A proposal (key 145)"

The PhD proposal revision (key 576) is related to the ABE-MS proposal revision (key 516).

Program Justification

Provide a brief description, using a numbered item list, of the proposed changes to the program.

1. Revision to required Research and required Coursework credit hours for the PhD programs. Total credit hours are unchanged at 64 and 96 hours, respectively, for the PhD with MS and Direct PhD (those entering with approved BA/BS degree), respectively.

PhD with MS: Research: up to 41 credit hours; Coursework: 23 hours total, Required coursework: 12 to 17 credit hours. Total hours unchanged at 64 hours.

Direct PhD: Research: increased from 40 to 52 credit hours; Coursework increased from 43 hours minimum to 44 hours minimum; Required coursework increased from 22 to 24 hours minimum.

Direct PhD is expected to take 5 years; PhD with MS expected to take 3 years.

2. A revised set of required Graduate Seminar courses (ABE 501, 502, 503; 1 hour each) are now required. ABE 594 will be deactivated; ABE 502 will cover all topics in ABE 594.

3. Approved courses for mathematics, statistical design and analysis, and instrumentation and measurement are now listed directly in the Program of Study table; these were previously linked to pages outside of the POS pages. Letters of support from respective departments are attached to this proposal.

4. Allowed credit for ABE 597 Independent Study (Direct PhD program) has been reduced from 6 hours to 4 hours.

5. Admission requirements have been revised. Applicants must hold at least a 3.50 (previously 3.75) or higher GPA to be considered for admission to the Direct PhD. Under exceptional circumstances, the Graduate Committee can approve a petition to admit outstanding applicants with a GPA lower than 3.50 (previously 3.75), (but higher than 3.25, rather than 3.50) to the ABE Direct PhD program. In addition, the Graduate Record Examination (GRE) is optional (previously required).

Did the program content change 25% or more in relation to the total credit hours, since the most recent university accreditation visit? See the italicized text below for more details.

No

Provide the reasoning for why each change was necessary, using a corresponding numbered item list as it relates to the brief description numbered list above.

1. Credit totals for research and coursework are revised so that the Direct PhD path (those entering with approved BA/BS degree) is more competitive with our peers and aligns more closely with the current MS plus PhD degree path. Total credit hours are 96 hours for Direct PhD and MS+PhD.

Under the current curriculum, students admitted into the Direct PhD degree program are required to take 56 credit hours of coursework and 40 credit hours of research. This is hindering ABE from recruiting top talent into its graduate program in the direct PhD option.

Many of our peer ABE doctoral programs with an option of the direct PhD program require fewer credit hours of coursework. Examples of direct PhD in ABE: University of California, Davis (49 credit hours), Purdue University (42 credit hours), Texas A&M University (36 credit hours), Iowa State University (42 credit hours) and University of Florida (48 credit hours). This difference places Illinois at a distinct disadvantage when recruiting top applicants who intend to pursue a PhD degree.

Revising the requirements for the Direct PhD option (44 credit hours of coursework and up to 52 credit hours of research) keeps us competitive with our peers while remaining a top PhD program in the nation.

2. The revised set of courses for our graduate students (ABE 501, 502, 503) will aid students in conducting their research projects, develop skills to maintain mental wellness and work/life balance, and assist in achieving career goals. Each course is 1 hour and addresses skills needed by MS and PhD students (basic orientation, job search, mental wellness, work/life balance, and research/teaching skills). ABE 594 (0 hr, similar in scope to new 502) will be deactivated and replaced with ABE 502 (1 hr). ABE 503 relates to teaching and communication skills needed by new PhDs.

3. Lists of approved courses in mathematics, statistical design and analysis, and instrumentation and measurement were maintained outside the Program of Study table; these courses are now listed within the respective POS tables (with Masters and Direct PhD programs).

4. ABE 597 credit reduced from 6 hours to 4 hours in Direct PhD: we feel this is a more reasonable limit to ensure degree rigor.

5. Program admission requirements were revised slightly to allow students with a broader range of backgrounds to have access to our graduate programs.

Instructional Resources

Will there be any reduction in other course offerings, programs or concentrations by your department as a resul of this new program/proposed change?

No

Does this new program/proposed change result in the replacement of another program?

No

Does the program include other courses/subjects outside of the sponsoring department impacted by the creation/revision of this program? If Yes is selected, indicate the appropriate courses and attach the letter of support/acknowledgement.

Yes

Courses outside of the sponsoring department/interdisciplinary departments:

MATH 412 - Graph Theory
MATH 413 - Intro to Combinatorics
MATH 416 - Abstract Linear Algebra
MATH 432 - Set Theory and Topology
MATH 442 - Intro Partial Diff Equations
MATH 444 - Elementary Real Analysis
MATH 450 - Numerical Analysis
MATH 489 - Dynamics & Differential Eqns
MATH 553 - Partial Differential Equations
ME 462 - Advanced Computer Control
ME 520 - Heat Conduction
ME 521 - Convective Heat Transfer
TAM 541 - Mathematical Methods I
TAM 542 - Mathematical Methods II
IB 494 - Theoretical Biology + Models
ABE 445 - Statistical Methods
CEE 491 - Decision and Risk Analysis
CPSC 540 - Applied Statistical Methods II
CPSC 543 - Appl. Multivariate Statistics
STAT 410 - Statistics and Probability II

STAT 420 - Methods of Applied Statistics
STAT 424 - Design of Experiments
STAT 425 - Statistical Modeling I
STAT 429 - Time Series Analysis
STAT 448 - Advanced Data Analysis
STAT 530 - Bioinformatics
STAT 542 - Statistical Learning
STAT 571 - Multivariate Analysis
CHEM 420 - Instrumental Characterization
CHEM 440 - Physical Chemistry Principles
ECE 414 - Biomedical Instrumentation
ECE 415 - Biomedical Instrumentation Lab
CEE 458 - Water Resources Field Methods
ME 461 - Computer Cntrl of Mech Systems

Please attach any letters of support/ acknowledgement for any Instructional Resources. Consider faculty, students, and/or other impacted units as appropriate.	ABE Letter Packet_250324.pdf ABE program of study update_SSCDS_April 2025.pdf

Program Features

Academic Level	Graduate
Does this major have transcripted concentrations?	Yes ~~No~~

Concentrations

Concentrations(s)
Computational Science & Engineering Concentration - Floating
Data Science and Engineering - Floating
Entrepreneurship & Innovation - Floating (on campus & online)

Will you admit to the concentration directly?	No
Is a concentration required for graduation?	No

What is the longest/maximum time to completion of this program?

5 ~~2~~ years

What are the minimum Total Credit Hours required for this program?

64

What is the required GPA?	3.0
CIP Code	140301 - Agricultural Engineering.

Is this program part of an ISBE approved licensure program?

No

Will specialized accreditation be sought for this program?

No

Does this program prepare graduates for entry into a career or profession that is regulated by the State of Illinois?

No

Program of Study

Revised programs

Catalog Page Text - Overview Tab

Catalog Page Overview Text

Opportunity exists for specializing in computational science and engineering via the Computational Science & Engineering optional graduate concentration.

Admission Requirements

Admission ~~The degree of Doctor of Philosophy, primarily a research degree, requires from three~~ to ~~four years of graduate study beyond~~ the ~~master's degree or with direct admit~~ PhD program is limited to individuals who have demonstrated exceptional ability through outstanding performance in obtaining an MS degree and/or through a high degree of technical ~~requires from five~~ and professional accomplishment. ~~six year past the bachelor's degree.~~ Candidates must also satisfy entrance requirements for the MS degree program.

All applicants whose native language is not English must submit a minimum TOEFL score of 88 (iBT), 230 (CBT) or 570 (PBT); or minimum International English Language Testing System (IELTS) academic exam scores of 6.5 overall. Applicants may be exempt from the TOEFL if certain criteria are met. For those taking the TOEFL or IELTS, full admission status is granted for scores greater than 102 (TOEFL iBT), 253 (TOEFL CBT), 610 (TOEFL PBT), or 7.0 (IELTS). Limited status is granted for lesser scores and requires enrollment in English as a Second Language (ESL) courses based on an ESL Placement Test (EPT) taken upon arrival to campus.

Financial Aid

Fellowships, supported by University, College ~~The major area~~ of Agricultural, Consumer ~~specialization encompasses courses~~ and Environmental Sciences, and The Grainger College of Engineering funds, ~~research that~~ are available on ~~closely related, but the courses need not be offered by~~ a competitive basis. ~~single major department.~~ A limited number of assistantships, providing both teaching and research experience, are often available on a half-time basis. Starting in Fall 2020, Grainger Engineering PhD students in their first five years ~~Candidates must demonstrate a capacity for independent research by preparing an original thesis on a topic within the major field~~ of enrollment who ~~study, must~~ meet the minimum eligibility ~~qualifying~~ requirements are guaranteed a funded appointment for fall ~~or examination in the area of specialization,~~ and spring that includes a full tuition waiver, a partial fee waiver, ~~must pass both preliminary~~ and a stipend. ~~final examinations.~~

International students who wish to be considered for a Teaching Assistantship are required to submit the results of an accepted test as evidence of spoken English language proficiency. Information about this requirement is found on For additional details and requirements refer to the department's Graduate Handbook and the Graduate College website. Handbook. All new teaching assistants are required to participate in the Graduate Academy for College Teaching conducted prior to the start of the semester.

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 PhD candidates in this program. For details of expectations, see the department's Graduate Handbook.

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 website.

Is the overview text above correct?

Yes

Statement for
Programs of Study
Catalog

Entering with approved M.S./M.A. degree

~~degree~~

ABE 501	Graduate Seminar: Foundations of Success	1
~~ABE 594~~	~~Course ABE 594 Not Found~~	~~0~~
~~One MATH course beyond differential equations from an approved list~~		~~3-4~~
~~At least one course in statistical design and analysis from an approved list~~		~~3-5~~
~~One course in instrumentation and measurement from an approved list~~		~~3-5~~
ABE 502	Graduate Seminar: Advanced Career Skills	1
ABE 503	Graduate Seminar: Integrity, Teaching and Research	1

ABE 501, 502, and 503 not required if taken for the ABE-MS.		
One mathematics intensive course beyond differential equations (3 hour credit versions permitted)		**3-4**
IB 494	Theoretical Biology + Models	
MATH 412	Graph Theory	
MATH 413	Intro to Combinatorics	
MATH 416	Abstract Linear Algebra	
MATH 432	Set Theory and Topology	
MATH 442	Intro Partial Diff Equations	
MATH 444	Elementary Real Analysis	
MATH/CS 450	Numerical Analysis	
MATH 489	Dynamics & Differential Eqns	
MATH 553	Partial Differential Equations	
ME 462	Advanced Computer Control	
ME 520	Heat Conduction	
ME 521	Convective Heat Transfer	
TAM 541	Mathematical Methods I	
TAM 542	Mathematical Methods II	
One course in statistical design and analysis (3 hour credit versions permitted)		**3-4**
ABE/ANSC 445	Statistical Methods	
CEE 491	Decision and Risk Analysis	
CPSC 540	Applied Statistical Methods II	
CPSC 543	Appl. Multivariate Statistics	
STAT 410	Statistics and Probability II	
STAT 420	Methods of Applied Statistics	
STAT 424	Design of Experiments	
STAT 425	Statistical Modeling I	
STAT 429	Time Series Analysis	

STAT 448	Advanced Data Analysis	
STAT 530/ CHBE 571	Bioinformatics	
STAT 542	Statistical Learning	
STAT 571	Multivariate Analysis	
One course in instrumentation and measurement (3 hour credit versions permitted)		**3-6**
ABE 425	Engrg Measurement Systems	
CHEM 420 & CHEM 440	Instrumental Characterization and Physical Chemistry Principles	
CEE 458	Water Resources Field Methods	
ME 461	Computer Cntrl of Mech Systems	
BIOE 414 & BIOE 415	Biomedical Instrumentation and Biomedical Instrumentation Lab	
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)		1-8
ABE 599	Thesis Research	up to 41
Total Hours		**64**

Other Requirements and Conditions (may overlap)

~~degreeOther 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.

Additional courses may be approved in consultation with the Director of Graduate Studies

Teaching experience determined in consultation with advisor using guidance provided by the department's Graduate Handbook.

The minimum program GPA is 3.0.

Ph.D. exam and dissertation requirements:

Preliminary exam

Final Exam or dissertation defense

Dissertation deposit		
Entering with approved B.S./B.A. degree (Direct PhD)		
ABE 501	Graduate Seminar: Foundations of Success	1
~~ABE 594~~	~~Course ABE 594 Not Found (minimum 6 semesters)~~	~~0~~
~~At least one MATH course beyond differential equations from an approved list~~		~~3-4~~
~~At least one course in statistical design and analysis from an approved list~~		~~3-5~~
~~At least one course in instrumentation and measurement from an approved list~~		~~3-5~~
~~In addition to above 3 courses in math, stats, and instrumentation, the student is required to take two more courses from any of the three areas (math, stats, or instrumentation) above~~		~~6-10~~
~~Two 500-level courses (taken for at least 3 credit hours) in an area of specialization – chosen in consultation with advisor~~		~~6-10~~
ABE 502	Graduate Seminar: Advanced Career Skills	1
ABE 503	Graduate Seminar: Integrity, Teaching and Research	1
One mathematics intensive course beyond differential equations (3 hour credit versions permitted)		**3-4**
IB 494	Theoretical Biology + Models	
MATH 412	Graph Theory	
MATH 413	Intro to Combinatorics	
MATH 416	Abstract Linear Algebra	
MATH 432	Set Theory and Topology	
MATH 442	Intro Partial Diff Equations	
MATH 444	Elementary Real Analysis	
MATH/CS 450	Numerical Analysis	
MATH 489	Dynamics & Differential Eqns	
MATH 553	Partial Differential Equations	
ME 462	Advanced Computer Control	
ME 520	Heat Conduction	
ME 521	Convective Heat Transfer	
TAM 541	Mathematical Methods I	

TAM 542	Mathematical Methods II	
One course in statistical design and analysis (3 hour credit versions permitted)		**3-4**
ABE/ANSC 445	Statistical Methods	
CEE 491	Decision and Risk Analysis	
CPSC 540	Applied Statistical Methods II	
CPSC 543	Appl. Multivariate Statistics	
STAT 410	Statistics and Probability II	
STAT 420	Methods of Applied Statistics	
STAT 424	Design of Experiments	
STAT 425	Statistical Modeling I	
STAT 429	Time Series Analysis	
STAT 448	Advanced Data Analysis	
STAT 530/ CHBE 571	Bioinformatics	
STAT 542	Statistical Learning	
STAT 571	Multivariate Analysis	
One course in instrumentation and measurement (3 hour credit versions permitted)		**3-6**
ABE 425	Engrg Measurement Systems	
CEE 458	Water Resources Field Methods	
CHEM 420 & CHEM 440	Instrumental Characterization and Physical Chemistry Principles	
BIOE 414 & BIOE 415	Biomedical Instrumentation and Biomedical Instrumentation Lab	
ME 461	Computer Cntrl of Mech Systems	
Two 500-level courses (taken for at least 3 credit hours each) in an area of specialization – chosen in consultation with advisor		6-10
Two additional courses from any of the three categories above (mathematics intensive, statistical design and analysis, and/or instrumentation and measurement)		6-12
Elective courses – chosen in consultation with advisor (subject to Other Requirements and Conditions below)		7-20

ABE 599	Thesis Research	up to 52
Total Hours		**96**

Other Requirements and Conditions (may overlap)

Two 500-level courses must be formal coursework, not seminar courses, special topics or independent study.

~~A maximum of 6 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.~~

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 using guidance provided by the department's Graduate Handbook.

The minimum program GPA is 3.0.

Ph.D. exam and dissertation requirements:

~~Qualifying requirements review in the 2nd year: It is required to complete all courses in math, stats, and instrumentation by the 3rd semester with a 3.25 or higher GPA.~~

Qualifying requirements review in the 2nd year: It is required to complete all courses in math, statistics and instrumentation by the 3rd semester with a 3.0 or higher GPA.

Preliminary exam

Final Exam or dissertation defense

Dissertation deposit

~~degree Other Requirements and Conditions (may overlap)~~

Corresponding Degree	PhD Doctor of Philosophy

Program Regulation and Assessment

Plan to Assess and Improve Student Learning

Illinois Administrative Code: 1050.30(b)(1)(D) Provision is made for guidance and counseling of students, evaluations of student performance, continuous monitoring of progress of students toward their degree objectives and appropriate academic record keeping.

Are the learning outcomes for the program listed in the Academic Catalog?

Yes

Student Learning Outcomes

Student learning objectives of the program are based on student outcomes suggested by ABET, Inc.:

1. An ~~an~~ ability to ~~acquire and~~ apply ~~new~~ knowledge of mathematics, science, and engineering;
2. ~~as needed, using appropriate learning strategies.~~ An ~~an~~ ability to design ~~plan~~ and conduct experiments, as well as to analyze ~~independent research with expertise in research design, methods,~~ and interpret data;
3. ~~analysis.~~ ~~an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, andmathematics.2.~~An ~~an~~ ability to ~~apply engineering~~ design a system, component, or process to ~~produce solutions that~~ meet ~~desired specified~~ needs within realistic constraints such ~~with consideration of public health, safety, and welfare,~~ as economic, environmental, ~~well as global, cultural,~~ social, political, ethical, health and safety, manufacturability, ~~environmental,~~ and sustainability;
4. ~~economic factors.~~ An ability to function in multidisciplinary teams;
5. An ~~an~~ ability to identify, formulate, and solve ~~complex~~ engineering problems;
6. ~~problems by applying principles of engineering, science, and mathematics.~~ An understanding of professional and ethical responsibility;
7. ~~3.~~An ~~an~~ ability to communicate effectively;
8. ~~effectively with a range of audiences.~~ ~~4.~~The broad education necessary ~~an ability~~ to understand ~~recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider~~ the impact of engineering solutions in a global, economic, environmental, and societal context;
9. ~~contexts.~~ A recognition of the need for and an ability to engage in life-long learning;
10. A knowledge of contemporary issues;
11. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice;
12. Conduct independent research with expertise in research design, methods, and analysis;
13. Function effectively in leadership roles in their professional careers and activities in professional societies.
14. For Ph.D. ~~5.an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meetobjectives.6.an ability to acquire and apply new knowledge as needed, using appropriate learningstrategies.7.an ability to plan and conduct independent research with expertise in research design, methods, andanalysis.~~graduates entering academia, function effectively as instructors with presentation skills, e.g., teaching skills (in addition to 1-13)

These learning objectives/outcomes will be assessed by the advisor and the PhD thesis research committee. In the ABE department, each graduate student is required to submit an annual review report by meeting with their advisors to assess their progress to their degrees, including courses, research, publications, and teaching experience. The ABE department

provides detailed written feedback to students on strengths and weaknesses in either electronic or paper format based on the evaluations by their advisors. In addition, students have an opportunity to discuss their review in person with their advisor and/or administrators in the department. In the event that a student does not receive a satisfactory review, the ABE department will develop, in consultation with the student and advisor, an academic plan to monitor progress over the next six months toward timely degree completion. This plan will also address possible outcomes if progress is not made within the outlined timeframe. The Director of Graduate Studies also serves as a gate-keeper to verify the requirement for the students, including course work, credit hours, and other requirements (such as ESL classes for international students). The ability to conduct independent research is assessed through the Preliminary Examination and Final Examination.

Did you make any revisions to the learning outcomes you copied and pasted from the current academic catalog?

Yes

Describe how, when, and where these learning outcomes will be assessed.

Describe here:

Identify faculty expectations for students' achievement of each of the stated student learning outcomes. What score, rating, or level of expertise will signify that students have met each outcome? Provide rating rubrics as necessary.

Explain the process that will be implemented to ensure that assessment results are used to improve student learning.

Program Description and Requirements
Attach Documents

Delivery Method

This program is available:

On Campus - Students are required to be on campus, they may take some online courses.

Admission Requirements

Desired Effective Admissions Term: Fall 2025

Is this revision a change to the admission status of the program?

No

Provide a brief narrative description of the admission requirements for this program. Where relevant, include information about licensure requirements, student background checks, GRE and TOEFL scores, and admission requirements for transfer students.

Admission to the ABE Direct PhD program will require applicants to have a bachelor's degree in ABE or an equivalent bachelor's degree from an accredited institution whose requirements for the bachelor's degree are substantially equivalent to those of the University of Illinois. Applicants must hold at least a 3.50 ~~3.75~~ or higher GPA to be considered for admission to the Direct PhD. ~~admission.~~ Under exceptional circumstances, the Graduate Committee can approve a petition to admit outstanding applicants with a GPA lower than 3.50, ~~3.75,~~ (but higher than 3.25) ~~3.50)~~ to the ABE Direct PhD program. In addition, the Graduate Record Examination (GRE) is optional. ~~required.~~

All applicants whose native language is not English must submit a minimum TOEFL score of 88 (iBT), or minimum International English Language Testing System (IELTS) academic exam scores of 6.5 overall and 6.0 in all subsections. Applicants may be exempt from the TOEFL if certain criteria are met. For those taking the TOEFL or IELTS, full admission status is granted for scores greater than 102 (TOEFL iBT), or 7.0 (IELTS). Limited status is granted for lesser scores and requires enrollment in English as a Second Language (ESL) courses based on an ESL Placement Test (EPT) taken upon arrival to campus.

Enrollment

Describe how this revision or phase down/elimination will impact enrollment and degrees awarded. If this is an elimination/phase down proposal include the plans for the students left in the program.

No impact is anticipated.

Estimated Annual Number of Degrees Awarded

Year One Estimate admin 5th Year Estimate (or when fully

implemented) admin

What is the matriculation term for this program?

Fall

Budget

Are there budgetary implications for this revision? No

Will the program or revision require staffing (faculty, advisors, etc.) beyond what is currently available?

No

Additional Budget Information

Attach File(s)

Financial Resources

How does the unit intend to financially support this proposal?

There will not be any budgetary obligations due to these changes to the ABE PhD curriculum. The program implementations will be carried out with existing resources.

Will the unit need to seek campus or other external resources?

No

Attach letters of support

What tuition rate do you expect to charge for this program? e.g, Undergraduate Base Tuition, or Engineering Differential, or Social Work Online (no dollar amounts necessary)

Graduate Engineering Differential

Are you seeking a change in the tuition rate or differential for this program?

No

Is this program requesting self-supporting status?

No

Faculty Resources

Please address the impact on faculty resources including any changes in numbers of faculty, class size, teaching loads, student-faculty ratios, etc.

No impact on faculty resources is anticipated.

Library Resources

Describe your proposal's impact on the University Library's resources, collections, and services. If necessary please consult with the appropriate disciplinary specialist within the University Library.

The proposal team consulted with Mike Dickinson and, based upon their input, determined that the Library's resources, collections, and services are sufficient to meet the needs of the program outlined in this proposal.

EP Documentation

EP Control Number	EP.26.100
Attach Rollback/ Approval Notices	

Non-EP Documentation

U Program Review Comments	
Rollback Documentation and Attachment	

DMI Documentation

Attach Final Approval Notices	U Program Review Comments KEY 576 9-24-2024.docx U Program Review Comments KEY 576 11-13-2024.docx
Banner/Codebook	

Name

PHD: Agr & Biol Engr -UIUC

Program Code: 10KS5163PHD

Minor Code	Conc Code	Degree Code	PHD Major Code
5163			

Senate Approval Date

Senate Conference Approval Date

BOT Approval Date

IBHE Approval Date

HLC Approval Date

DOE Approval Date

Effective Date:

Program Reviewer Comments

Brooke Newell (bsnewell) (12/07/22 10:12 am): Rollback: per request

Brooke Newell (bsnewell) (12/14/22 3:43 pm): Rollback: Email sent to Heather, Kent, Brianna, and Keri (ENG)

Mary Lowry (lowry) (02/19/24 9:31 pm): Rollback: Please see email dated 2-19-24, and let us know if you have any questions.

Mary Lowry (lowry) (05/21/24 12:28 pm): Rollback: Please see email dated 5-21-24

Mary Lowry (lowry) (09/24/24 8:42 am): Rollback: Rollback requested. U Program Review comments attached in DMI Documentation section.

Mary Lowry (lowry) (11/13/24 3:28 pm): U Program Review comments attached in DMI Documentation section.

Mary Lowry (lowry) (11/14/24 11:27 am): Rollback: KP committee requested rollback.

Kent Rausch (krausch) (11/20/24 6:06 pm): We are waiting on some letters of support and will add them in CIM-P once they arrive.

Cindy Pruitt (cpruitt) (03/24/25 12:32 pm): Rollback: Accidentally approved

Brooke Newell (bsnewell) (10/06/25 4:09 pm): Rollback: Per request from Allison M.

Brooke Newell (bsnewell) (10/13/25 9:11 am): Rollback: Per email with Kent and Keri.

Keri Pipkins (kcp) (10/13/25 9:58 am): Rollback: Please review & correct Jutification: Note from Brooke Newell: 1. In the justification #1, it is noted “PhD with MS: Research unchanged at 32

credit hours; Coursework unchanged at 32 hours total, required coursework increased from 13 to 16 credit hours. Total hours unchanged at 64." However, the ABE 599 Thesis Research requirement has been changed from 32 hours to now be 44 hours in the Program of Study table with this revision. As such, there appears to be an inconsistency with the changes in the POS table and the Justification information. Please review and revise both justification prompts for accuracy and clarity.

Brooke Newell (bsnewell) (01/13/26 10:14 am): Per discussion with Mary L, added the names of the transcripted concentrations to the CIM-P record.

Key: 576