Date Submitted: 09/18/23 4:16 pm

Viewing: BENGPH : Engineering (Biological Engineering), Doctor of Philosophy

Last approved: 07/01/21 11:25 am

Last edit: 11/06/23 8:41 am

Changes proposed by: jwkim

Catalog Pages Using this Program

Biological and Agricultural Engineering (BAEG)

Submitter: User ID: jwkim ~~lkulcza~~ Phone: 3402 ~~7456~~

Program Status Active

Academic Level Graduate

Type of proposal Major/Field of Study

Select a reason for this modification

Making Minor Changes to an Existing Certificate, Degree or Program (including 15 or fewer hours, admission/graduation requirements, Focused Studies or Tracks)

Are you adding a concentration?

No

Are you adding or modifying a track?

No

Are you adding or modifying a focused study?

No

Effective Catalog Year Fall 2024

College/School Code

College of Engineering (ENGR)

Department Code

Department of Biological and Agricultural Engineering (BAEG)

In Workflow

1. ENGR Dean Initial
2. GRAD Dean Initial
3. Director of Curriculum Review and Program Assessment
4. Registrar Initial
5. Institutional Research
6. BAEG Chair
7. ENGR Curriculum Committee
8. ENGR Faculty
9. ENGR Dean
10. Global Campus
11. Provost Review
12. Graduate Council
13. Faculty Senate
14. Provost Final
15. Registrar Final
16. Catalog Editor Final

Approval Path

1. 09/19/23 8:39 am Kevin Hall (kdhall): Approved for ENGR Dean Initial
2. 09/19/23 1:47 pm Ed Bengtson (egbengts): Approved for GRAD Dean Initial
3. 10/20/23 4:43 pm Lisa Kulczak (lkulcza): Approved for Director of Curriculum Review

Program Code	BENGPH
Degree	Doctor of Philosophy
CIP Code	

and Program Assessment

4. 10/23/23 8:03 am Gina Daugherty (gdaugher): Approved for Registrar Initial
5. 10/23/23 11:00 am Doug Miles (dmiles): Approved for Institutional Research
6. 10/24/23 2:31 pm Terry Howell Jr (tahowell): Approved for BAEG Chair
7. 11/03/23 8:03 am Manuel Rossetti (rossetti): Approved for ENGR Curriculum Committee
8. 11/03/23 2:38 pm Kevin Hall (kdhall): Approved for ENGR Faculty
9. 11/03/23 2:39 pm Kevin Hall (kdhall): Approved for ENGR Dean
10. 11/03/23 2:51 pm Suzanne Kenner (skenner): Approved for Global Campus
11. 11/06/23 8:41 am Jim Gigantino (jgiganti): Approved for Provost Review
12. 11/17/23 3:39 pm Ed Bengtson

(egbengts): Approved for Graduate Council

History

1. May 24, 2017 by Charlie Alison (calison)
2. Apr 26, 2018 by Linda Pate (lpate)
3. Apr 26, 2018 by Charlie Alison (calison)
4. Jul 1, 2021 by Lisa Kulczak (lkulcza)

14.0101 - Engineering, General.

Program Title

Engineering (Biological Engineering), Doctor of Philosophy

Program Delivery Method

On Campus

Is this program interdisciplinary?

No

Does this proposal impact any courses from another College/School?

No

What are the total hours needed to complete the program? 78

Program Requirements and Description

Requirements

Admission to ~~the~~ Degree Program: Admission to the Biological Engineering graduate program is a three-step process. First, the prospective student must be admitted to graduate standing by the University of Arkansas Graduate School. Second, the student must be accepted into the department's program ~~program, which depends~~

on the basis of academic transcripts, three letters of recommendation, ~~recommendations,~~ a statement of ~~of~~ purpose, a resume, and standardized test scores. Finally, a member of the faculty who is eligible (graduate faculty status of group I) must agree to serve as the major advisor to the prospective student. ~~the following additional requirements:~~ Students holding either engineering or non-engineering degrees are eligible to apply. Eligibility criteria are as follow:

Engineering academic background: Students with ~~to~~ a B.S. ~~Ph.D. Students with an ABET-accredited or equivalent Engineering DegreeStudents seeking admission to thePh.D.program who have aB.S.~~or ~~and~~ M.S. ~~degree inengineering:A score on score of 301 or above (verbal and quantitative) on the Graduate Record Examination (GRE) to meet the Graduate School requirement of a standardizedexam. .A TOEFL score of at least 550 (paper-based) or 213 (computer-based) or 80 (Internet-based). For students This requirement is waived for applicants whose first native language is not English, English or who earn a demonstration of English-language proficiency which meets the requirements of the GraduateSchool. Bachelor's or Master's degree from a a U.S. institution.GPA of 3.00 or higher on the last 60 hours of aB.S.degree orB.S.and/orM.S.degrees.B.S.~~degree in engineering ~~from an ABET-accredited program~~ or engineering equivalent are eligible to apply for the Ph.D. ~~equivalent.~~ program.

Non-engineering academic background: Students with a non-engineering background may be admitted into the Ph.D. program; however, must complete the minimum deficiency coursework for non-engineering majors.

~~Students to aPh.D.program directly from aB.S.degree inengineering:A score on the Graduate Record Examination (GRE) to meet the Graduate School requirement of a standardizedexam.A score of 307 or above (verbal and quantitative) on theGRE.A TOEFL score of at least 550 (paper-based) or 213 (computer-based) or 80(Internet-based).For students This requirement is waived for applicants whose first native language is not English, English or who earn a demonstration of English-language proficiency which meets the requirements of the GraduateSchool.Bachelor's or master's degree from a U.S. institution.A cumulative GPA of 3.5 or above for undergraduatework.B.S.degree in engineering from an ABET-accredited program orequivalent.Students witho ut an Engineering DegreeStudents seeking admission to aPh.D.program from non-engineeringB.S.plusM.S.degrees:A score on the Graduate Record Examination (GRE) to meet the Graduate School requirement of a standardizedexam.A score of 301 or above (verbal and quantitative) on theGRE.A TOEFL score of at least 550 (paper-based) or 213 (computer-based) or 80 (Internet-based). For students This requirement is waived for applicants whose first native language is not English, English or who earn a demonstration of English-language proficiency which meets the requirements of the GraduateSchool.Bachelor's or master's degree from a U.S. institution.GPA of 3.00 or higher on the last 60 hours ofB.S.and/orM.S.degrees.Completion of 18 hours of engineering coursework.Students to aPh.D.program directly from a non-engineeringB.S.degree:A score on the Graduate Record Examination (GRE) to meet the Graduate School requirement of a standardizedexam.A score of 307 or above (verbal and quantitative) with 155 (quantitative) and 4.5 or above in writing on theGRE.A TOEFL score of at least 580 (paper-based) or 237 (computer-based) or 92 (Internet-based). For students This requirement is waived for applicants whose first native language is not English, English or who earn a demonstration of English-language proficiency which meets the requirements of the GraduateSchool.Bachelor's or master's degree from a U.S. institution.A cumulative GPA of 3.5 or above for undergraduatework.Completion of 18 hours of engineering coursework.Finally, a member of the faculty who is eligible (graduate status of group II or higher) must agree to serve as the major adviser to the prospectivestudent.~~An explanation of admission ~~Detailed~~ requirements ~~are in the Biological~~ and procedures can be found in the Biological and Agricultural Engineering Department Graduate Student Handbook, available at bio-ag-engineering.uark.edu ~~baeg.uark.edu~~.

Degree Requirements for the Doctor of Philosophy in Engineering with a Concentration in Biological Engineering: (Minimum 78 hours). Degree requirements are given below, however, explanation of requirements and procedures may be obtained from the Biological and Agricultural Engineering Department Graduate Student Handbook, available at bio-ag-engineering.uark.edu. Students should also be aware of Graduate School requirements with regard to doctoral degrees (catalog.uark.edu). ~~-~~

~~Requirements for the Doctor of PhilosophyDegree:(Minimum 78 hours). In addition to the requirements of the Graduate School, the department follows the College of Engineering's requirements with an additionalrequirement:Students entering directly with an engineeringB.S.degree:~~All students must complete a minimum of 78 semester hours of graduate-level credit beyond the engineering bachelor's degree, including a minimum of 48 semester hours of coursework ~~course work~~ and a minimum of 30 semester hours of dissertation research credits.

1. **Students entering directly with ~~to~~ a B.S. ~~Ph.D.~~ degree**: Of the 78 hours required for the Ph.D. degree, up to 12 semester hours of 4000-level courses may be taken for graduate credit in the first 30 semester hours of coursework. ~~course work.~~ The remaining credits (minimum of 66 semester hours, 36 semester hours of coursework and 30 semester hours of dissertation) must be at the 5000 level or above.
2. **Students entering with a master's degree**: ~~master's degree:~~ Upon recommendation of the student's advisory committee, a student who has entered the Ph.D. program after a master's degree may receive credit for up to 30 semester hours toward the required 78 credit hours. If the 30 hours includes master's thesis research, the advisory committee may credit up to 6 hours of thesis research toward the minimum dissertation research requirement. All subsequent coursework presented for the PhD degree must be at the 5000 level or above.
3. **Students with a non-engineering B.S. and/or M.S. degrees**: ~~degree:~~In addition to the requirements in 1 or ~~and~~ 2 above, students must complete 18 hours of deficiency engineering coursework ~~course work~~ to demonstrate engineering competence.

   Complete a minimum of nine semester credit hours of coursework in a set of coherent courses in a related subject area approved by the student's advisory committee.

   Earn a minimum cumulative grade-point average of 3.0 on all graduate courses attempted. The minimum acceptable grade on a graduate course is "C."

   Satisfactorily pass a preliminary examination (Note that the Engineering College defines this examination as a qualifying examination). After ~~After~~ completing the course requirements, ~~requirements~~ the prospective candidate must take the preliminary examination. ~~examination. Students may retake a failed preliminary exam once, contingent upon approval of the student's advisory committee.~~ Students may retake a failed preliminary exam once, contingent upon approval of the student's advisory committee. A student who fails the preliminary examination twice will be terminated from the program.

   Satisfactorily pass a proposal defense. ~~Satisfactorily pass a proposal defense.~~ The prospective candidate must present the dissertation research proposal to the advisory committee after completing the preliminary examination, and at least one year before completing all other requirements. Students may retake a failed proposal defense once, contingent upon approval of the student's advisory committee. A student who fails the proposal defense twice will be terminated from the program.

   Satisfactorily pass a final comprehensive oral examination and complete and submit a dissertation.

   Candidates must prepare a paper suitable for submission to a refereed journal from research done for a dissertation.

Complete Exit Review.

Deficiency Course Requirement for Students with non-Engineering Degree: Prior to completing the above-listed Ph.D. degree requirements, students admitted to the Ph.D. ~~degree in engineering from an ABET-accredited~~ program without an ABET-accredited or equivalent engineering B.S. ~~equivalent.~~ and/or M.S. degrees must demonstrate engineering competence by passing ~~Completion of~~ 18 hours of the following deficiency engineering coursework. ~~engineering course work.~~ The deficiency course work does not count toward ~~(Minimum 78 hours). In addition to~~ the course requirements of the Ph.D. ~~Graduate School, the department follows the College of Engineering's requirements with an additional requirement:~~ degree. The required deficiency courses are:

A minimum of 15 credit hours of 2000 level or above of engineering courses (with course prefix BENG, BMEG, CHEG, CVEG, CENG, ELEG, INEG, or MEEG) currently allowed for credit within the BENG undergraduate program. Minimum ~~Completion~~ of 3 credit ~~18~~ hours of one of the following BENG courses: ~~engineering course work.~~ BENG 3653 (Global Bio-Energy Engineering), BENG 4743 (Food and Bio-Product Systems Engineering), BENG 4933 (Sustainable Watershed Engineering), and BENG 4663 (Sustainable Biosystems Design).

Specific deficiency courses are to be determined in consultation with the student's major advisor and advisory committee. Note that courses in addition to those listed above may be required for students without required prerequisites for the deficiency courses (such as life sciences and/or math/physics/chemistry prerequisite courses).

Detailed requirements may be obtained from the ~~are in the~~ Biological and Agricultural Engineering Department Graduate Student Handbook, available at ~~at~~bio-ag-engineering.uark.edu. Students should also be aware of Graduate School requirements with regard to doctoral degrees (catalog.uark.edu).

~~Students should also be aware of Graduate School requirements with regard to doctoral degrees.~~

Are Similar Programs available in the area?

No

Estimated Student Demand for Program	NA
Scheduled Program Review Date	2026-2027 ~~2018-2019~~

Program Goals and Objectives

Program Goals and Objectives
1. Prepare students for independent research to contribute new scientific knowledge of fundamental importance to the fields of Biological Engineering. 2. Contribute new knowledge of fundamental importance or significantly modify, amplify, or interpret existing knowledge in a new and important manner.

Learning Outcomes

Learning Outcomes
1. Students will make satisfactory progress toward the completion of course requirements in preparation for independent research to contribute new and fundamentally important knowledge to Biological Engineering.

Learning Outcomes
2. Students will be prepared for independent research in Biological Engineering. 3. Students will be prepared to contribute new and fundamentally important knowledge to Biological Engineering. 4. Students will contribute new and fundamentally important knowledge to Biological Engineering or significantly modify, amplify, or interpret existing knowledge in a new and important manner. 5. Students will be able to communicate effectively in a professional, scientific setting.

Description and justification of the request

Description of specific change	Justification for this change
Editorial changes are made to the existing Ph.D. degree.	These changes are to further clarify the admission and degree requirements of the existing Ph.D. degree.

Upload attachments

Reviewer Comments

Lisa Kulczak (lkulcza) (10/20/23 4:40 pm): Updated submitter ID and phone # and next scheduled program review date.

Gina Daugherty (gdaugher) (10/23/23 8:03 am): Removed Undergraduate Council from workflow.

Jim Gigantino (jgiganti) (11/06/23 8:41 am): Changed the following as per Kevin Hall via email 11-6-23: 1. Change to the major advisor needs "graduate status of group II or higher" 2. Changed admission requirements to "explanation of admission requirements and procedures" can be found in the graduate handbook 3. Changed degree requirements to "Degree requirements are given below, however, explanation of requirements and procedures may be obtained from the" graduate handbook. 4. Changed 4000-level courses to "up to 12 semester hours of 4000-level courses may be taken for graduate credit"

Key: 276