

Program Change Request

Date Submitted: 11/28/17 3:39 pm

Viewing: **BENGBS : Biological Engineering, Bachelor of Science in Biological Engineering**

Last approved: 04/19/16 5:21 pm

Last edit: 01/09/18 1:56 pm

Changes proposed by: lpate

In Workflow

1. ENGR Dean Initial
2. Director of Program Assessment and Review
3. Registrar Initial
4. BAEG Chair
5. ENGR Curriculum Committee
6. ENGR Faculty
7. AFLS Dean
8. ARSC Dean
9. ENGR Dean
10. Global Campus
11. Provost Review
12. University Course and Program Committee
13. Faculty Senate
14. Provost Final
15. Provost's Office-- Notification of Approval
16. Registrar Final
17. Catalog Editor Final

Catalog Pages Using this Program

- [Biological Engineering B.S.B.E.](#)
- [Biological and Agricultural Engineering \(BAEG\)](#)

Submitter: 575-2351 User ID: crsleaf1 Phone:

Program Status: Active

Academic Level: Undergraduate

Type of proposal: Major/Field of Study

Select a reason for this modification

Making Minor Changes to an Existing Degree (e.g. changing 15 or fewer hours, changing admission/graduation requirements, adding Focused Study)

Are you adding a concentration?
No

Are you adding a track?
No

Are you adding a focused study?
No

Effective Catalog Year: Fall 2018

College/School Code: College of Engineering(ENGR)

Approval Path

1. 11/30/17 12:49 pm
Norman Dennis (ndennis): Approved for ENGR Dean Initial
2. 12/01/17 8:59 am
Alice Griffin (agriffin): Approved

Department Code

- for Director of
Program
Assessment and
Review
3. 12/12/17 10:08 am
Lisa Kulczak
(lkulcza): Approved
for Registrar Initial
 4. 12/12/17 10:15 am
Lalit Verma
(lverma): Approved
for BAEG Chair
 5. 12/13/17 9:59 am
Manuel Rossetti
(rossetti): Approved
for ENGR
Curriculum
Committee
 6. 12/13/17 2:47 pm
Norman Dennis
(ndennis): Approved
for ENGR Faculty
 7. 12/13/17 3:56 pm
Michael Evans
(mrevans):
Approved for AFLS
Dean
 8. 12/15/17 3:48 pm
Jeannine Durdik
(jdurdik): Approved
for ARSC Dean
 9. 12/19/17 1:02 pm
Norman Dennis
(ndennis): Approved
for ENGR Dean
 10. 12/20/17 11:34 am
Kiersten Bible
(kbible): Approved
for Global Campus
 11. 01/08/18 1:00 pm

Terry Martin
(tmartin): Approved
for Provost Review
12. 01/29/18 9:39 am
Alice Griffin
(agriffin): Approved
for University
Course and Program
Committee

History

- 1. Aug 15, 2014 by
Leepfrog
Administrator
(clhelp)
- 2. Aug 15, 2014 by
Charlie Alison
(calison)
- 3. Apr 19, 2016 by
Linda Pate (lpate)

Department of Biological and Agricultural Engineering(BAEG)

Program Code BENGBS

Degree Bachelor of Science in Biological Engineering

CIP Code
14.4501 ~~14.0301~~ - **Biological/Biosystems** ~~Agricultural~~-Engineering.

Program Title
Biological Engineering, Bachelor of Science in Biological Engineering

Program Delivery

Method

On Campus

Is this program interdisciplinary?

Yes

College(s)/School(s)

College/School Name
Fulbright College of Arts and Sciences(ARSC)

College/School Name
College of Engineering(ENGR)

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

Yes

College(s)/School(s)

College/School Name
Bumpers College of Agricultural, Food, and Life Sciences(AFLS)
Fulbright College of Arts and Sciences(ARSC)

What are the total hours needed to complete the program? **128**

Program Requirements and Description

Requirements

The undergraduate program in biological engineering, leading to a Bachelor of Science degree in Biological Engineering, is accredited by the Engineering Accreditation Commission of [ABET](#). The B.S. in Biological Engineering degree is conferred by the College of Engineering and is granted after the successful completion of 128 hours of approved course work.

Diverse applications of biological engineering can be pursued through elective coursework. Each student is required to complete **12** ~~9~~-semester hours of **biological/engineering/technical** ~~technical/engineering~~ electives that are relevant to their career goals. At least 3 hours must be **selected from a list of acceptable biological electives. At least 3 hours must be** engineering courses within BENG or other engineering programs. The **remaining** ~~other six~~ hours can be selected from engineering, math, biology, agriculture, sustainability, and other science/technical areas. A list of suggested electives is maintained by the department. Students may petition their adviser **to seek approval of** ~~for~~ other electives that are not on this list. Courses must provide engineering or technical content that is value-added (i.e. not duplicating or remedial) and meets the career goals of the student.

8-Semester Plan

Biological Engineering B.S.B.E. Eight-Semester Degree Program

The Bachelor of Science in Biological Engineering program is eligible for students who want to participate in an Eight Semester Degree Program. See the [Eight-Semester Degree Policy](#) for more details. The plan below lists a semester-by-semester sequence of courses to finish the degree in eight semesters. University core courses for engineering are listed at the bottom of this page. Students may submit a maximum of four (4) hours of “D” in BENG Courses for their degree.

Some courses are not offered every semester, so students who deviate from the suggested sequence must pay careful attention to course scheduling and course pre-requisites.

First Year	Units
	FallSpring
GNEG 1111 Introduction to Engineering I (Sp, Fa)	1
ENGL 1013 Composition I (ACTS Equivalency = ENGL 1013) (Sp, Su, Fa)	3
CHEM 1103 University Chemistry I (ACTS Equivalency = CHEM 1414 Lecture) (Su, Fa)	3
MATH 2554 Calculus I (ACTS Equivalency = MATH 2405) (Sp, Su, Fa)	4
PHYS 2054 University Physics I (ACTS Equivalency = PHYS 2034) (Sp, Su, Fa)	4
GNEG 1121 Introduction to Engineering II (Sp, Fa)	1
ENGL 1033 Technical Composition II or ENGL 1023 Composition II	3
Freshman Engineering Science Elective 1	4
MATH 2564 Calculus II (ACTS Equivalency = MATH 2505) (Sp, Su, Fa)	4
HIST 2003 History of the American People to 1877 (ACTS Equivalency = HIST 2113) (Sp, Su, Fa)	3
or HIST 2013 History of the American People, 1877 to Present (ACTS Equivalency = HIST 2123) (Sp, Su, Fa)	
or PLSC 2003 American National Government (ACTS Equivalency = PLSC 2003) (Sp, Su, Fa)	
Year Total:	15 15

Second Year	Units
	FallSpring
BENG 2632 Biological Engineering Design Studio (Fa)	2
MATH 2574 Calculus III (ACTS Equivalency = MATH 2603) (Sp, Su, Fa)	4
Sophomore Science Elective2	4
BIOL 1543 Principles of Biology (ACTS Equivalency = BIOL 1014 Lecture) (Sp, Su, Fa)	3
BIOL 1541L Principles of Biology Laboratory (ACTS Equivalency = BIOL 1014 Lab) (Sp, Su, Fa)	1
MEEG 2003 Statics (Sp, Su, Fa)	3
BENG 2643 Biological Engineering Methods I (Sp)	3
MATH 2584 Elementary Differential Equations (Sp, Su, Fa)	4

Are Similar Programs available in the area?

No

Estimated Student Demand for Program 100

Scheduled Program Review Date 2020

Program Goals and Objectives

Program Goals and Objectives

The educational objectives of the Biological Engineering program at the University of Arkansas are to produce graduates to:

- 1) Successfully practice engineering involving the design and management of sustainable food, water, energy and related biological systems,
- 2) Make valuable and sustained contributions that benefit employers, communities, Arkansas and the world, and
- 3) Succeed in continuing professional development or graduate studies, as needed for professional growth.

Learning Outcomes

Learning Outcomes

In order to prepare graduates to attain our Educational Objectives, the following student outcomes were defined:

- a) An ability to apply knowledge of mathematics, science, and engineering.
- b) An ability to design and conduct experiments, as well as analyze and interpret data.
- c) An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- d) An ability to function on multidisciplinary teams.
- e) An ability to identify, formulate, and solve engineering problem.
- f) An understanding of professional and ethical responsibility.

Learning Outcomes

g) An ability to communicate effectively.

h) The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.

i) A recognition of the need for, and an ability to engage in life-long learning.

j) A knowledge of contemporary issues.

k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Description and justification of the request

Description of specific change	Justification for this change
<p>There are two parts to this request:</p> <p>(1) elimination of the degree requirement of BIOL 3863, General Ecology;</p>	<p>Due to varying student interests and career paths, not all of our students optimally benefit from taking BIOL 3863, General Ecology.</p>
<p>(2) The addition of a degree requirement of a 3 hour Biological Elective, selected from among a list of acceptable courses. A list of acceptable courses will be maintained by the department. At present, the courses we have chosen to populate the list are:</p> <p>BIOL 3863, General Ecology CSES 2203, Soil Science ENSC 4023, Water Quality CHEM 3613, Organic Chemistry II CHEM 3813, Elements of Biochemistry BIOL 2533, Cell Biology.</p>	<p>The Biological Elective will give students some flexibility in choosing the required biological content (allowing some courses in addition to Ecology) to accommodate varying student interests and career paths.</p>

Upload attachments

Reviewer Comments

Alice Griffin (agriffin) (01/09/18 1:56 pm): Corrected CIP Code from 14.0301 to 14.4501.
 Change had been updated on ADHE list 10/2/2014. Code updated in UAConnect on 8/15/2017.
 Directed to correct the CourseLeaf record by Gary Gunderman.

