

## Program Change Request

Date Submitted: 02/14/17 3:50 pm

Viewing: **BMEGPH : Biomedical Engineering, Doctor of Philosophy**

Last edit: 11/07/17 4:42 pm

Changes proposed by: kbalacha

Catalog Pages Using [Biomedical Engineering \(BMEG\)](#)  
this Program

Submitter: User ID: **kbalacha** Phone: **5-3376**

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 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)

Department Code: Department of Biomedical Engineering(BMEG)

Program Code: BMEGPH

Degree: Doctor of Philosophy

CIP Code: 14.0101 - Engineering, General.

Program Title: Biomedical Engineering, Doctor of Philosophy

Program Delivery Method: **On Campus**

Is this program interdisciplinary?  
**Yes**

College(s)/School(s): 

College/School Name
<b>College of Engineering(ENGR)</b>

Does this proposal impact any courses from another College/School?  
**No**

What are the total hours needed to complete the program? **72**

### In Workflow

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

### Approval Path

1. 02/24/17 12:49 pm Norman Dennis (ndennis): Approved for ENGR Dean Initial
2. 02/24/17 1:40 pm Patricia Koski (pkoski): Approved for GRAD Dean Initial
3. 02/27/17 10:36 am Alice Griffin (agriffin): Approved for Director of Program Assessment and Review
4. 03/08/17 11:59 am Lisa Kulczak (lkulcza): Rollback to Director of Program Assessment and Review for Registrar Initial
5. 03/10/17 3:12 pm Alice Griffin (agriffin): Approved for Director of

## Program Requirements and Description

### Requirements

**Admission to Degree Program:** Admission into the Ph.D. program with a concentration in Biomedical Engineering is a two-step process. First, the prospective student must be admitted to graduate standing by the University of Arkansas Graduate School (see "The Graduate School:

Objectives, Regulations, Degrees" in this catalog or visit [grad.uark.edu](http://grad.uark.edu) for details). Second, the student must be admitted to the Department of Biomedical Engineering on the basis of academic transcripts, standardized test scores, three letters of recommendation, and statement of purpose. All students in the Ph.D. program are offered either a research or teaching assistantship. A member of the faculty who is eligible (graduate faculty status of Group I), must agree to serve as the major adviser to the prospective student. Because of the multidisciplinary nature of Biomedical Engineering, students holding either Engineering or non-Engineering degrees are eligible to apply. Eligibility criteria are outlined below:

**Engineering Academic Background:** Students with a B.S. or M.S. degree in engineering or engineering equivalent are eligible to apply for the Ph.D. program.

**Non-engineering Academic Background:** Students with a non-engineering degree must fulfill the admission requirements for the Master of Science in Biomedical Engineering (M.S.B.M.E.) including the **Minimum Admission Criteria Basic Engineering Education Requirements (see admission requirements for non-Engineering Majors (see admission requirements for the M.S.B.M.E.)).** Students with a non-engineering background may be admitted directly into the Ph.D. program; however, it is recommended that students first complete the M.S.B.M.E. degree before entering the Ph.D. program.

Complete details for admission may be obtained in the applicable section from the [Biomedical Engineering website](#) as well as in the BMEG graduate program handbook.

**Degree Requirements for the Doctor of Philosophy in Engineering with a concentration in Biomedical Engineering:** In addition to the requirements of the Graduate School and the College of Engineering, candidates must meet the following requirements:

Develop a Plan of Study within the first year after matriculation.

Complete an Annual Progress Report for each subsequent year of study.

Complete at least 42 hours of course work beyond the B.S. **degree.**

**For BS to PhD candidates a degree—A minimum of 50% of the first 30 hours, and all of the remaining 30 semester hours of of course work must be at the graduate level (5000 or above). The cumulative grade-point average on all graduate courses work, must be at presented for the 5000 level or above. degree must be at least 3.0. Upon recommendation of the student's Program Advisory Committee, a student who has entered the Ph.D.**

**For MS to PhD candidates all course work must be at the 5000 level or above.**

**The cumulative grade-point average on all graduate courses presented for the degree must be at least 3.0. Upon recommendation of the student's Program Advisory Committee, a student who has entered the Ph.D.** program after a M.S. degree in engineering may receive credit for up to 24 hours of course work. See Coursework Requirements, below, for additional details.

Complete 30 hours of dissertation. Upon recommendation of the student's Program Advisory Committee, a student who has entered the Ph.D. program after a M.S. degree in engineering may receive credit for up to six hours of thesis research toward the dissertation requirement.

Satisfactorily pass both a written and oral candidacy examination administered by the student's Program Advisory Committee. Details of the candidacy exam are found in the BMEG graduate program handbook.

Assist in departmental teaching for two semesters.

Submit and defend the final dissertation to the student's Dissertation Committee.

**Coursework Requirements:** Students are required to complete 42 credit hours of coursework beyond the B.S. degree in engineering or equivalent in the following four categories.

- Program  
Assessment and Review
6. 04/10/17 3:10 pm  
Lisa Kulczak  
(lkulcza): Approved for Registrar Initial
  7. 04/11/17 11:09 am  
Raj Rao (rajrao): Approved for BMEG Chair
  8. 09/12/17 1:22 pm  
Manuel Rossetti (rossetti): Rollback to BMEG Chair for ENGR Curriculum Committee
  9. 09/14/17 12:08 pm  
Raj Rao (rajrao): Approved for BMEG Chair
  10. 11/02/17 1:41 pm  
Manuel Rossetti (rossetti): Rollback to BMEG Chair for ENGR Curriculum Committee
  11. 11/03/17 1:30 pm  
Raj Rao (rajrao): Approved for BMEG Chair
  12. 11/07/17 1:49 pm  
Manuel Rossetti (rossetti): Approved for ENGR Curriculum Committee
  13. 11/07/17 1:51 pm  
Norman Dennis (ndennis): Approved for ENGR Faculty
  14. 11/07/17 4:42 pm  
Norman Dennis (ndennis): Approved for ENGR Dean
  15. 11/07/17 4:50 pm  
Norman Dennis (ndennis): Approved for ENGR Dean
  16. 11/08/17 1:13 pm  
Kiersten Bible (kbible): Approved for Global Campus
  17. 11/10/17 10:36 am  
Terry Martin (tmartin): Approved for Provost Review
  18. 11/20/17 2:49 pm  
Alice Griffin (agriffin): Approved for University Course and Program Committee

19. 12/20/17 9:02 am  
 Patricia Koski  
 (pkoski): Approved  
 for Graduate  
 Committee

**Biomedical Engineering Graduate Core (12 hours)**

**12**

**Biomedical Engineering Graduate Core (5 hours)**

**5**

- BMEG 5103 Design and Analysis of Experiments in Biomedical Research (Irregular)
- ~~BMEG 5203~~ ~~Mathematical Modeling of Physiological Systems (Irregular)~~
- ~~BMEG 5504~~ ~~Biomedical Microscopy (Irregular)~~
- BMEG 5801 Graduate Seminar I (Fa)
- BMEG 5811 Graduate Seminar II (Sp)

Life Science – minimum of six hours approved by the student's Program Advisory Committee

Engineering Electives – minimum of nine hours approved by the student's Program Advisory Committee

BMEG Electives – minimum of six hours of graduate-level classes in Biomedical Engineering approved by the student's Program Advisory Committee

Detailed degree requirements may be obtained in the applicable program section from the [Biomedical Engineering website](#) as well as in the Biomedical Engineering graduate program handbook.

Students should also be aware of Graduate School requirements with regard to [doctoral degrees](#).

<b>No</b>	Are Similar Programs available in the area?
Estimated Student Demand for Program	<b>50</b>
Scheduled Program Review Date	<b>2018-2019</b>
Program Goals and Objectives	
<b>Program Goals and Objectives</b>	
Program goals are broad general statements of what the program intends to accomplish and describes what a student will be able to do after completing the program. The program goals are linked to the mission of the university and the new strategic plan of the College of Engineering (COE).	
Accordingly, the program goals of the MS and PhD programs in Biomedical Engineering at the University of Arkansas, Fayetteville are to produce graduates that are capable of:	
1. Succeeding in practice at the interface between life science and engineering, or in other professional activities, or in post-master's or Ph.D. studies.	
2. Utilizing their advanced engineering education in creating new knowledge or enabling technologies for improvement of human health and healthcare.	
3. Continuously upgrading their knowledge in their chosen specialty by initiating self-directed learning.	
Learning Outcomes	
<b>Learning Outcomes</b>	
Student Learning Outcomes are defined in terms of the knowledge, skills, and abilities that students will know and be able to do as a result of completing a program. These student learning outcomes are directly linked to the accomplishment of the program goals.	
The graduates of the MS and PhD programs in Biomedical Engineering will either be capable of the following or possess the following attributes:	
1. Conceiving, designing, analyzing, and implementing systems, processes and experiments related to improving human health and healthcare.	
2. Functioning in multidisciplinary teams to find effective solutions to complex technical problems and/or the design of new products and processes to improve human health and health care.	
3. Using modern analytical, simulation, and diagnostic tools and techniques used in healthcare industry.	
4. In-depth and up-to-date knowledge within a specialized field in Biomedical Engineering.	
5. An understanding of ethical and professional responsibility	
6. To effectively communicate their findings/ideas to a technical and non-technical audience	
The prescribed outcomes of the MSBME are met through the curriculum followed by the students.	

Description and justification of the request

Description of specific change	Justification for this change
1. Modifying admission requirements for students entering with a non-Engineering degree.	The requested changes are to streamline our program's admission and degree requirements with those of comparable programs in the nation.

Description of specific change	Justification for this change
2. Modifying core course requirements for the program.	The requested changes are to streamline our program's admission and degree requirements with those of comparable programs in the nation.
3. Specifying the minimum number of 5000 level courses required in the program	The requested changes are to streamline our program's admission and degree requirements with those of comparable programs in the nation.

## Upload attachments

Reviewer Comments

**Patricia Koski (pkoski) (02/14/17 2:09 pm):** Rollback: Please list the changes in the section on description of changes.

**Norman Dennis (ndennis) (02/14/17 3:43 pm):** Rollback: Please list the changes you are making in the Description and Justification for change section.

**Norman Dennis (ndennis) (02/17/17 8:45 am):** Added minimum credit hours for 5000 level courses.

**Norman Dennis (ndennis) (02/24/17 12:49 pm):** Modified the statement referring to 5000 level coursework to comply with ADHE requirements.

**Alice Griffin (agriffin) (02/27/17 10:32 am):** Updated program review date.

**Lisa Kulczak (lkulcza) (03/08/17 11:59 am):** Rollback: Are we in agreement that the effective date for these updates need to be Fall 2018?

**Alice Griffin (agriffin) (03/10/17 3:12 pm):** Due to approval timeline, changed effective date to fall 2018.

**Manuel Rossetti (rossetti) (09/12/17 1:22 pm):** Rollback: The EAPC suggests looking at the number of hours past the masters that would be in BMEG

**Manuel Rossetti (rossetti) (11/02/17 1:41 pm):** Rollback: To make requested changes

**Norman Dennis (ndennis) (11/07/17 4:42 pm):** added total hours required for the degree.

Key: 285