

**ADD, CHANGE OR DELETE UNIT, PROGRAM REQUIREMENTS, OR ACADEMIC POLICIES**

Complete this form consistent with the instructions in Academic Policy 1622.20. Use the form to add, change, or delete a program or unit or to change program policies. Proposed additions and changes must be consistent with Academic Policies 1100.40 and 1621.10 and any other policies which apply.

**SECTION I: Approvals**

Department / Program Chair _____	Date Submitted _____	Graduate Council Chair _____	Date _____
College Dean _____	Date _____	Faculty Senate Chair _____	Date _____
Honors College Dean _____	Date _____	Provost _____	Date _____
Core Curriculum Committee _____	Date _____	Board of Trustees Approval/Notification Date _____	
University Course and Programs Committee _____	Date _____	Arkansas Higher Education Coordinating Board Approval/Notification Date _____	

**SECTION II: Profile Data - Required Information and Name Change Information**

Academic Unit:  Major/Field of Study  Minor  Other Unit **Biomedical Engineering Conc.**  Policy  
 Level:  Undergraduate  Graduate  Law Effective Catalog Year 2013

Program changes are effective with the next available catalog. See Academic Policy Series 1622.20

Current Name **Ph.D. in Engineering with concentration in Biomedical Engineering**

College, School, Division **ENGR**

Department Code **ENGR**

Current Code (6 digit Alpha) **ENGRPH**

Proposed Code (6 digit Alpha)

Prior approval from the Office of the Registrar is required.

Interdisciplinary Program

CIP Code **14.0101**

Prior assignment from Office of Institutional Research is required.

Proposed Name

When a program name is changed, enrollment of current students reflects the new name.

**SECTION III: Add a New Program/Unit**

\_\_ For new program proposals, complete Sections II and VII and use as a cover sheet for a full program proposal as described in 'Criteria and Procedures for Preparing Proposals for New Programs in Arkansas.' ADHE  
<http://www.adhe.edu/divisions/academicaffairs/Pages/academicaffairs.aspx>

Program proposal uses courses offered by another academic college, and that college dean's office has been notified. The signature of the dean of that academic college is required here: \_\_\_\_\_

Fulbright College of Arts & Sciences

**SECTION IV: Eliminate an Existing Program/Unit**

Code/Name \_\_\_\_\_ Effective Catalog Year \_\_\_\_\_

No new students admitted to program after Term: \_\_\_\_ Year: \_\_\_\_\_

Allow students in program to complete under this program until Term: \_\_\_\_ Year: \_\_\_\_\_

## **SECTION V: Proposed Changes to an Existing Program or Program Policies**

- 1. Modified the admission requirements for students coming from non-engineering backgrounds. Previously, these students were granted conditional admission until the Basic Engineering Education Requirements were met. However, the graduate school does not recognize “conditional admission” and thus these students must first complete the engineering requirements prior to being admitted.**

### **Old Admission Requirements:**

Students with a non-engineering degree are eligible to apply for conditional admission to the Ph.D. program. These students must first fulfill the admission requirements for the M.S. in Biomedical Engineering (MSBME) as described in the Biomedical Engineering Department Graduate Student Handbook. Upon completion of the “Broader Preparation in Engineering Requirement” with a GPA of at least 3.0, students may be fully admitted into the Ph.D. program.

### **New Admission Requirements:**

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 Basic Engineering Education Requirements (see admission requirements for the M.S.B.M.E.).

- 2. Modified the Biomedical Engineering graduate core courses to reflect the proper names of approved courses and to be consistent with the M.S.B.M.E. graduate core.**

### **Old Core:**

**Biomedical Engineering (BMEG)** – minimum of 17 credit hours

The following three core courses (9 credit hours) are required for every student.

BMEG 5203 Mathematical Modeling of Physiological Systems  
or a graduate-level modeling or applied mathematics  
course with biomedical focus

BMEG 5103 Advanced Instrumentation or a graduate-level  
instrumentation with biomedical focus

BMEG 5703 Experimental Design and the Statistical Analysis  
of Experimental Data for Engineering research

Two courses (6 credit hours minimum) must be chosen from  
BMEG 5000-6000 level courses. (BMEG 5801 Graduate  
Seminar cannot be counted for this requirement).

Two semesters (2 credit hours) of BMEG 5801 Graduate Seminar

### **New Core:**

#### **(i) Biomedical Engineering Graduate Core (12 hours):**

- BMEG 5103 Design of Biomedical Experiments
- BMEG 5203 Mathematical Modeling of Physiological Systems
- BMEG 5504 Biomedical Microscopy
- BMEG 5801 Graduate Seminar I
- BMEG 5811 Graduate Seminar II

- 3. Removed the limitation on the number of credit hours of Special Problems that can be used to fulfill coursework requirements. It will be the responsibility of the student and the Program Advisory Committee to select the appropriate coursework.**

### **Old Requirements:**

NOTE: A maximum of 4 credit hours of Special Problems listings or any other catalog offering which does not have a regular meeting schedule/syllabus may be used to fulfill coursework requirements.

- Program change proposal adds courses offered by another academic college, and that college dean's office has been notified. The signature of the dean of that academic college is required here: \_\_\_\_\_
- Program change proposal deletes courses offered by another academic college, and that college dean's office has been notified. The signature of the dean of that academic college is required here: \_\_\_\_\_

Check all the boxes that apply and complete the required sections of the form:

- Change of Name and Code (Complete only sections I, II, V and VII.)
- Change Course Requirements: (Complete all sections of the form except "Proposed Name" in II, section III, and section IV.)
- Change Delivery Site/Method (Complete all sections of the form except "Proposed Name" in II, section III, and section IV.)
- Change Total Hours (Complete all sections of the form except "Proposed Name" in II, section III, and section IV.)
- Change in Program Policies

#### **SECTION VI: Justification**

*Justify this change and state its likely effect on any other degree program (including those outside the school or college). Identify any program or program components (other than courses) to be eliminated if this program is implemented. (Program and course change forms must also be submitted for such related changes.)*

**The change of admission requirements for non-engineers was made to comply with UA Graduate School policy. No other degree program is affected.**

**The BMEG graduate core was adjusted to reflect the recently approved courses and to agree with the graduate core established by the M.S.B.M.E. No other degree program is affected.**

**The limitation on Special Problems courses was removed to allow greater flexibility in completing coursework requirements for the Ph.D. No other degree program is affected.**

#### **SECTION VII: Catalog Text and Format**

*In the box below, insert the current catalog text which is to be changed, with changes highlighted with the color yellow. Include all proposed changes identified in Section V. Only changes explicitly stated in Section V will be considered for approval by the University Course and Programs Committee, the Graduate Council and the Faculty Senate. If you are proposing a new program, give proposed text with all of the elements listed below. If you are proposing modified text, include these elements as appropriate.*

**Include the following elements, in order, in the catalog text for proposed undergraduate program(s) or program changes:**

- State complete major/program name
- Briefly define or describe the major/program or discipline.
- Identify typical career goals or paths for graduates. (Optional)
- State admission requirements (if any) for entry or entry into upper/advanced level of major/program.
- Identify location in catalog of university, college/school, and department/program requirements which the student must meet in addition to hours in the major, but do not restate these requirements.
- State course requirements in the major and any allied areas, giving number of hours and specific courses; specify electives or elective areas and give numbers of hours and courses in elective pools or categories; identify any other course requirements.
- State any other requirements (required GPA, internship, exit exam, project, thesis, etc.).
- Identify name and requirements for each concentration (if any).
- Specify whether a minor or other program component is allowed or required and provide details.
- State eight-semester plan requirements

**For minors, state requirements in terms of hours, required courses, electives, etc.**

**For graduate program/units, include elements (as needed) parallel to those listed for undergraduate programs above.**

**For Law School program/units, prepare text consistent with current catalog style.**

**For centers, prepare text consistent with current catalog style.**

## Doctor of Philosophy (Ph.D.) in Engineering with emphasis in Biomedical Engineering

**Program Description:** The Ph.D. Degree in Engineering with emphasis in Biomedical Engineering is an interdisciplinary research degree awarded through the College of Engineering in cooperation with the Graduate School (at the University of Arkansas, there is a common Ph.D. degree for all engineering disciplines). The Ph.D. Degree is earned through advanced coursework and in-depth, specialized research. Graduates from this program will be well-prepared for careers in academia, industry or government or as entrepreneurs in technology-based start-up companies.

**Admission to Degree Program:** Admission into the Ph.D. program with Biomedical Engineering focus 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 <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, 3 letters of recommendation and a 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 status of group I, must agree to serve as the Major Adviser to the prospective student. Because of the multi-disciplinary 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 BS or MS 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 Basic Engineering Education Requirements (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 program section from the BMEG Website at <http://bmeg.uark.edu/>, as well as in the BMEG graduate program handbook.

**Degree Requirements for Ph.D. in Engineering with emphasis in Biomedical Engineering:** In addition to the requirements of the Graduate School and the College of Engineering, candidates must meet the following requirements:

1. Develop a Plan of Study within the first year after matriculation.
2. Complete an Annual Progress Report for each subsequent year of study.
3. Complete at least 42 hours of coursework beyond the BS degree. A minimum of 30 semester hours of course work must be at the graduate level (5000 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 coursework. See *Coursework Requirements* below for additional details.
4. 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 6 hours of thesis research toward the dissertation requirement.
5. 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.
6. Assist in departmental teaching for two semesters.
7. 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 BS degree in engineering or equivalent in the following four categories.

### (i) Biomedical Engineering Graduate Core (12 hours);

- BMEG 5103 Design of Biomedical Experiments
- BMEG 5203 Mathematical Modeling of Physiological Systems
- BMEG 5504 Biomedical Microscopy
- BMEG 5801 Graduate Seminar I
- BMEG 5811 Graduate Seminar II

### (ii) Life Science - minimum of 6 hours approved by the student's Program Advisory Committee

### (iii) Engineering Electives - minimum of 9 hours approved by the student's Program Advisory Committee

### (iv) General Electives - minimum of 6 hours approved by the student's Program Advisory Committee

Detailed degree requirements may be obtained in the applicable program section from the BMEG Website at <http://bmeg.uark.edu/>, as

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well as in the BMEG graduate program handbook.

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### SECTION VIII: Action Recorded by Registrar's Office

#### PROGRAM INVENTORY/DARS

PGRM \_\_\_\_\_ SUBJ \_\_\_\_\_ CIP \_\_\_\_\_ CRTS \_\_\_\_\_

DGRE \_\_\_\_\_ PGCT \_\_\_\_\_ OFFC&CRTY VALID \_\_\_\_\_

#### REPORTING CODES

PROG. DEF. \_\_\_\_\_ REQ. DEF. \_\_\_\_\_  
Initials \_\_\_\_\_ Date \_\_\_\_\_

#### Distribution

Notification to:  
(1) College (2) Department (3) Admissions (4) Institutional Research (5) Continuing Education (6) Graduate School  
(7) Treasurer (8) Undergraduate Program Committee

5/12/08