

Program Change Request

Date Submitted: 10/26/17 12:38 pm

Viewing: **BMEGBS : Biomedical Engineering, Bachelor of Science in Biomedical Engineering**

Last approved: 05/25/17 8:24 am

Last edit: 10/29/17 12:58 pm

Changes proposed by: mmkim

Catalog Pages Using this Program [Biomedical Engineering B.S.Bm.E.](#)
[Biomedical Engineering \(BMEG\)](#)

Submitter:	User ID:	crsleaf1	Phone:	5-5820		
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)					
Department Code	Department of Biomedical Engineering(BMEG)					
Program Code	BMEGBS					
Degree	Bachelor of Science in Biomedical Engineering					
CIP Code	14.0501 - Bioengineering and Biomedical Engineering.					
Program Title	Biomedical Engineering, Bachelor of Science in Biomedical Engineering					
Program Delivery Method	On Campus					
Is this program interdisciplinary?						
No Yes						
Does this proposal impact any courses from another College/School?						
Yes						
College(s)/School(s)	<table border="1"> <tr> <th>College/School Name</th> </tr> <tr> <td>Fulbright College of Arts and Sciences(ARSC)</td> </tr> </table>				College/School Name	Fulbright College of Arts and Sciences(ARSC)
College/School Name						
Fulbright College of Arts and Sciences(ARSC)						
What are the total hours needed to complete the program?	128					

In Workflow

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

Approval Path

1. 09/14/17 9:32 am Norman Dennis (ndennis): Rollback to Initiator
2. 09/26/17 10:38 am Norman Dennis (ndennis): Approved for ENGR Dean Initial
3. 10/03/17 3:43 pm Alice Griffin (agriffin): Approved for Director of Program Assessment and Review
4. 10/05/17 10:50 am Lisa Kulczak (lkulcza): Rollback to Director of Program Assessment and Review for Registrar Initial
5. 10/05/17 1:09 pm Alice Griffin (agriffin): Approved for Director of Program Assessment and Review

Program Requirements and Description

Requirements

Technical Options in Biomedical Engineering

Each student in biomedical engineering is required to complete nine semester hours of biomedical engineering technical electives. Biomedical engineering technical elective courses must be selected from a faculty-approved list of courses found in the department's Undergraduate Advising Handbook, which is available on the [department's website](#). Elective courses are chosen with the aid of an academic adviser to better prepare for employment or further study in areas such as:

- Bioengineering
- Pharmaceutical manufacturing or pharmacology
- Biomedical device design
- Medicine
- Business
- Law

Technical Elective Course

Each student in biomedical engineering is required to complete three semester hours of upper level science electives. Upper level (3000 and above) science electives will be chosen from courses in mathematics, engineering, and the sciences with the approval of their adviser. The department maintains a list of approved upper level science electives that may be found in the department's Undergraduate Advising Handbook, which is available on the [department's website](#).

- 6. 10/10/17 12:57 pm
Lisa Kulczak
(lkulcza): Approved for Registrar Initial
- 7. 10/26/17 12:33 pm
Raj Rao (rajrao): Rollback to Initiator
- 8. 10/27/17 3:26 pm
Norman Dennis (ndennis): Approved for ENGR Dean Initial
- 9. 10/29/17 12:58 pm
Alice Griffin (agriffin): Approved for Director of Program Assessment and Review
- 10. 11/02/17 10:51 am
Lisa Kulczak (lkulcza): Approved for Registrar Initial
- 11. 11/02/17 2:30 pm
Raj Rao (rajrao): Approved for BMEG Chair
- 12. 11/03/17 3:02 pm
Manuel Rossetti (rossetti): Approved for ENGR Curriculum Committee
- 13. 11/03/17 3:34 pm
Norman Dennis (ndennis): Approved for ENGR Faculty
- 14. 11/06/17 2:15 pm
Jeannine Durdik (jdurdik): Approved for ARSC Dean
- 15. 11/06/17 2:22 pm
Norman Dennis (ndennis): Approved for ENGR Dean
- 16. 11/07/17 9:56 am
Kiersten Bible (kbible): Approved for Global Campus
- 17. 11/08/17 12:53 pm
Terry Martin (tmartin): Approved for Provost Review
- 18. 11/20/17 2:49 pm
Alice Griffin (agriffin): Approved for University Course and Program Committee

History

8-Semester Plan

Biomedical Engineering B.S.Bm.E. Eight-Semester Degree Program

1. Aug 15, 2014 by
Leepfrog
Administrator
(clhelp)
2. Apr 21, 2015 by
Stacy Sanchez
(slperry)
3. Mar 8, 2016 by
Charlie Alison
(calison)
4. May 25, 2017 by
Charlie Alison
(calison)

The following section contains the list of courses required for the Bachelor of Science in Biomedical Engineering degree and a suggested sequence for students who enter the College through the Freshman Engineering Program. Not all courses are offered every semester, so students who deviate from the suggested sequence must pay careful attention to course scheduling and course prerequisites. Students wishing to follow the eight-semester degree plan should see the [Eight-Semester Degree Policy](#) in the Academic Regulations chapter for university requirements of the program.

First Year	Units
	FallSpring
ENGL 1013 Composition I (ACTS Equivalency = ENGL 1013) (Sp, 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) (with lab)	4
CHEM 1103 University Chemistry I (ACTS Equivalency = CHEM 1414 Lecture) (Su, Fa)	3
GNEG 1111 Introduction to Engineering I (Sp, Fa)	1
ENGL 1023 Composition II (ACTS Equivalency = ENGL 1023) (Sp, Su, Fa)	3
Freshman Science Elective with lab*	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)	
GNEG 1121 Introduction to Engineering II (Sp, Fa)	1
Year Total:	15 15

Second Year	Units
	FallSpring
BMEG 2613 Introduction to Biomedical Engineering (Fa)	3 -
MATH 2574 Calculus III (ACTS Equivalency = MATH 2603) (Sp, Su, Fa)	4 -
Sophomore Science Elective with lab**	4
BMEG 2614 Course BMEG 2614 Not Found	4
MATH 3083 Linear Algebra (Sp, Su, Fa)	3
BIOL 1543 Principles of Biology (ACTS Equivalency = BIOL 1014 Lecture) (Sp, Su, Fa)	4
& BIOL 1541L Principles of Biology Laboratory (ACTS Equivalency = BIOL 1014 Lab) (Sp, Su, Fa)	
BMEG 2813 Biomechanical Engineering (Sp)	3
BMEG 2904 Biomedical Instrumentation (Sp) (with Lab)	4
MATH 2584 Elementary Differential Equations (Sp, Su, Fa)	4
BIOL 2533 Cell Biology (Sp, Fa)	3
Fine Arts Elective (from Univ/State Core List)	3
Year Total:	15 17

Third Year	Units
	FallSpring
BMEG 3634 Biomaterials (Fa) (with lab)	4
BMEG 3124 Biomedical Signals and Systems (Fa) (with lab)	4
CHEG 2313 Thermodynamics of Single-Component Systems (Sp, Su, Fa)	3
or MEEG 2403 Thermodynamics (Sp, Su, Fa)	
CHEM 3603 Organic Chemistry I (Su, Fa)	4
& CHEM 3601L Organic Chemistry I Laboratory (Su, Fa)	
Social Science Elective (from Univ/State Core List)	3
BMEG 3653 Biomedical Modeling and Numerical Methods (Sp)	3
BMEG 3824 Biomolecular Engineering (Sp) (with lab)	4
BMEG 3801 Course BMEG 3801 Not Found	1
CHEG 2133 Fluid Mechanics (Sp, Su, Fa)	3
or MEEG 3503 Mechanics of Fluids (Su, Fa)	
BIOL 2213 Human Physiology (ACTS Equivalency = BIOL 2414 Lecture) (Sp, Fa)	4
& BIOL 2211L Human Physiology Laboratory (ACTS Equivalency = BIOL 2414 Lab) (Sp, Fa)	
CHEM 3613 Organic Chemistry II (Sp, Su)	- 4
& CHEM 3611L Organic Chemistry II Laboratory (Sp, Su)	
STAT 2023 Biostatistics (Sp)	3
Year Total:	18 18

Fourth Year		Units
		Fall/Spring
BMEG 4813 Biomedical Engineering Design I (Fa)		3
BMEG 4623 Biomedical Transport Phenomena (Fa)		3
BMEG Elective		3
Science Elective		3
Social Science Elective (from Univ/State Core List)		3
BMEG 4823 Biomedical Engineering Design II (Sp)		3
BMEG Elective		3
BMEG Elective		3
Social Science Elective (from Univ/State Core List)		3
Humanities Elective (from Univ/State Core List)		3
Year Total:		15 15
Total Units in Sequence:		128

* The Freshman Science Elective must be chosen from either [CHEM 1123/CHEM 1121L](#) or [PHYS 2074](#).

**The Sophomore Science Elective must be either [PHYS 2074](#) or [CHEM 1123/CHEM 1121L](#). (Whichever was not chosen as the Freshman Engineering Science Elective).

No	Are Similar Programs available in the area?
Estimated Student Demand for Program	60 per year
Scheduled Program Review Date	2018-2019
Program Goals and Objectives	
Program Goals and Objectives	
unchanged	
Learning Outcomes	
Learning Outcomes	
Please remove all references to CHEM 1113 and CHEM 1133/31L from the Program change language. This includes footnotes that directly result from the courses being offered to students in place of CHEM 1103 and CHEM 1123/21L. (The coded box above does not allow me to edit with any confidence, so please see attached file.)	

Description and justification of the request

Description of specific change	Justification for this change
Removed MATH 2574 Calculus III and added MATH 3083 Linear Algebra	Faculty agreed that contents of Linear Algebra are more relevant and useful for students in BMEG degree plan than Calculus III. This change has been discussed with MATH and agreed upon.
Removed CHEM 3613/11L Organic Chemistry II and added STAT 2023	Faculty agreed that Organic Chemistry II is not a common requirement in BMEG curriculum across the country. However, statistics is an essential component that has been missing in our curriculum that we would like to start requiring. This change has been discussed with MATH and agreed upon.
Added BMEG 3801 Clinical Observations and Needs Finding	New course that will be a prerequisite to Senior Design. Students will work in groups to observe at local clinical partners and find needs to be solved using Biomedical Engineering Design. Course proposed in Courseleaf.
Changed BMEG 2613 to BMEG 2614	Course change to include drill as extra 1 hour has been proposed and under approval process.

Upload attachments

Reviewer Comments

Norman Dennis (ndennis) (09/14/17 9:32 am): Rollback: Please initiate a new course request for BMEG 3801 to flow concurrent with this program change.

Alice Griffin (agriffin) (10/03/17 3:42 pm): Removed reference to new course in 8 SDCP to clean up catalog copy.

Lisa Kulczak (lkulcza) (10/05/17 10:50 am): Rollback: Are these interdisciplinary?

Alice Griffin (agriffin) (10/05/17 1:09 pm): Removed ARSC has a inter-disciplinary program. Since BMEGBS uses courses from Math, left the other referral to ARSC. That will provide an opportunity for Fulbright to have a voice in the approval process.

Lisa Kulczak (lkulcza) (10/10/17 12:57 pm): BMEG 3801 in approval process for fall 2018

Raj Rao (rajrao) (10/26/17 12:33 pm): Rollback: To include changes to Intro course and curriculum as was discussed.

Alice Griffin (agriffin) (10/29/17 12:58 pm): Cleaned up language entered with proposed

course (BMEG 3801) and course change (BMEG 2614) in eight semester plan. Course titles will be inserted by catalog editor at the completion of the approval process. Both courses have been submitted for approval.

Key: 473