

Program Change Request

Date Submitted: 10/16/18 4:03 pm

Viewing: **MINOR-BMEN : Biomedical Engineering - Minor**

Last approved: 03/07/17 4:02 pm

Last edit: 11/08/18 8:09 pm

Changes proposed by: mlyons

Catalog Pages Using [Biomedical Engineering - Minor](#)
this Program

Contact(s)

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Academic level	Undergraduate
Effective Term	2019-2020
Department	Biomedical Engineering
College	Engineering
Program type	Minor
With a minor in	Biomedical Engineering (BMEN)
Associated Program	Not Applicable

Catalog Program Title
Biomedical Engineering - Minor

Rationale for Proposal

~~BMEN 282 is no longer offered therefore another course must replace it. Due to the fact that VIBS 243 is a 2 hour course, students can select from three different 1 hour BMEN course options to satisfy the 15 hour minor. The department formally advertises technical elective options to students on~~ For consistency in hours across all tracks and because of changes in prerequisites, ~~BMEN 207 was removed from the departmental website and needs to officially list required courses in the courses in Howdy. Bioinstrumentation track. These courses match the technical electives for their respective major technical track and were approved by the respective departments to be taken by BMEN students.~~

Program hours	15
Is this program eligible for financial aid?	Yes
Will program hours change (increase/decrease) due to the proposed curriculum changes?	No

In Workflow

1. **BMEN Department Head**
2. **Curricular Services Review**
3. **EN Committee Preparer UG**
4. **EN Committee Chair UG**
5. **EN College Dean UG**
6. **UCC Preparer**
7. **UCC Chair**
8. **Faculty Senate Preparer**
9. Faculty Senate
10. Provost II
11. President
12. Curricular Services

Approval Path

1. 10/16/18 5:29 pm
Michael McShane (mcshane): Approved for BMEN Department Head
2. 10/19/18 11:00 am
Angel Mario Carrizales (carr1214): Approved for Curricular Services Review
3. 10/22/18 5:34 pm
Eileen Hoy (ehoy): Approved for EN Committee Preparer UG
4. 10/23/18 10:05 am
Prasad Enjeti (enjeti): Approved for EN Committee Chair UG
5. 10/23/18 10:19 am
Prasad Enjeti (enjeti): Approved for EN College Dean UG
6. 11/06/18 9:18 am
Sandra Williams (sandra-williams): Approved for UCC Preparer
7. 12/10/18 10:34 am
Terra Bissett (t.bissett): Approved for UCC Chair

History

1. Mar 7, 2017 by Emily Dykes (edykes)

Catalog Program Requirements

Code	Title	Course List	Semester Credit Hours
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Code	Title	Semester Credit Hours
VIBS 243	Introductory Mammalian Histology	2
Select one from the following:		
BMEN 101	Introduction to Biomedical Engineering	1
BMEN 253	Medical Device Design I	
BMEN 450	Case Studies	
Select 12 hours from one area: 1		
12		
Bioinstrumentation Area 2		
BMEN 321	Biomedical Electronics	
or ECEN 214	or Electrical Circuit Theory	
BMEN 420	Medical Imaging	
Bioinstrumentation technical electives 3		
Select 6 hours from the following bioinstrumentation technical electives		
BMEN 322	Biosignal Analysis	
BMEN 401	Principles and Analysis of Biological Control Systems	
BMEN 422	Bioelectromagnetism	
BMEN 425	Biophotonics	
BMEN 427	Magnetic Resonance Engineering	
or ECEN 463	or Magnetic Resonance Engineering	
BMEN 428/CSCE 461	Embedded Systems for Medical Applications	
BMEN 448	Healthcare Technology in the Developing World	
ECEN 411	Introduction to Magnetic Resonance Imaging and Magnetic Resonance Spectroscopy	
ECEN 412	Ultrasound Imaging	
ECEN 414	Biosensors	
ECEN 447	Digital Image Processing	
Biomaterials Area 2		
BMEN 343	Introduction to Biomaterials	
or MEEN 222/MSEN 222	or Materials Science	
BMEN 344	Biological Responses to Medical Devices	
Biomaterials technical electives 3		
Select 6 hours of the following biomaterials technical electives		
BMEN 480	Biomedical Engineering of Tissues	
BMEN 482	Polymeric Biomaterials	
BMEN 483	Polymeric Biomaterial Synthesis	
BMEN 486	Biomedical Nanotechnology	
BMEN 487	Drug Delivery	
CHEM 466	Polymer Chemistry	
CHEN 451	Introduction to Polymer Engineering	
MEEN 458	Processing and Characterization of Polymers	
MSEN 410	Materials Processing	
MSEN 420	Polymer Science	
Biomechanics Area 2		
BMEN 341	Biofluid Mechanics	
BMEN 361	Biosolid Mechanics	
or MEEN 368	or Solid Mechanics in Mechanical Design	
Biomechanics technical electives 3		
Select 6 hours from the following biomechanics technical electives		
BMEN 432	Molecular and Cellular Biomechanics	
BMEN 457	Orthopedic Biomechanics	
BMEN 458	Motion Biomechanics	
BMEN 461	Cardiac Mechanics	
BMEN 463	Soft Tissue Mechanics and Finite Element Methods	
BMEN 471	Numerical Methods in Biomedical Engineering	
MEEN 363	Dynamics and Vibrations	
MEEN 440	Bio-inspired Engineering Design	
MEEN 441	Design of Mechanical Components and Systems	
MEEN 442	Computer Aided Engineering	
MEEN 444	Finite Element Analysis in Mechanical Engineering	
Total Semester Credit Hours		15

1 Students must select courses exclusively from one of the three areas represented and not mixed.

2 Students may use no more than 6 hours from their home department to satisfy minor requirements. All substitutions must be approved by the BMEN academic advisor and director.

3 See the departmental academic advisor for a complete list of technical electives.

Students must be admitted to a degree sequence in the College of Engineering or to the degree sequence in Biological and Agricultural Engineering. **Students should know that all tracks require completion of math through Differential Equations (MATH 308).** Applications are available in the Biomedical Engineering Advising Office

and will be reviewed on a competitive **basis at the end of every fall and spring semester.** ~~basis-~~

Additional information	The curriculum changes for the degree evaluation include updates for both the major and the minor.
Required Proposal	201731 BMEN minor changes supporting docs.pdf
Forms	President Approval Faculty Senate Items 121216.pdf 201931 Catalog Curriculum Changes-1.pdf
Reviewer Comments	Angel Mario Carrizales (carri1214) (10/19/18 10:52 am): Removed documents that applied to a previous submission and also change the uploaded evaluation document to display only the minor program requirements. Angel Mario Carrizales (carri1214) (10/19/18 11:00 am): Edits made to conform to catalog style guidelines. Terra Bissett (t.bissett) (12/10/18 10:34 am): UCC approved December 2018.

Key: 44

unofficial evaluation

Area : Biomedical Engineering (15.000 credits) - Not Met

Description : Minimum of 6 hours at 300-400 level.
Must complete 12hrs from one area of concentration.
See BMEN academic advisor for admission criteria.
See BMEN academic advisor for complete list of technical electives.

Met	Condition	Rule	Subject	Attribute	Low	High	Required Credits	Required Courses	Term	Subject	Course Title	Attribute	Credits	Grade	Source
No		A.	VIBS 243				2hrs								
No	AND	B	BMEN 101 or 253 or 450				1hr								
No	AND (	C	Biomechanics				12hrs								
<p>Take BMEN 341, 361; Select 6 hrs from biomechanics technical electives (chosen in consultation with academic advisor).</p>															
No	)OR(	D	Biomaterials				12hrs								
<p>Take BMEN 343, 344; Select 6 hours from biomaterials technical electives (chosen in consultation with academic advisor).</p>															
No	)OR(	E	Bioinstrumentation				12hrs								
<p>Take BMEN 207, 321, 420; Select 3 hrs from bioinstrumentation technical elective (chosen in consultation with academic advisor).</p>															

Handwritten notes:
I. BMEN 341
II. BMEN 361 or CVEN 305 or MEEN 366
III. Select 6 hours from BMEN 432, 457, 458, 461, 463, 471; (MEEN 363 or 440 or 441 or 442 or 444)

Handwritten notes:
I. BMEN 343 or MEEN/MSEN 222
II. BMEN 344
III. Select 6 hours from BMEN 480, 482, 483, 486, 487; (CHEM 466 or CHEN 451 or MEEN 458 or MSEN 410 or MSEN 420)

Handwritten notes:
I. BMEN 321 or ECEN 214 or 215
II. BMEN 420
III. Select 6 hours from BMEN 322, 401, 422, 425, (BMEN 427 or ECEN 463), (BMEN 428 or C SCE 461), 448; (ECEN 411 or 412 or 414 or 447)

Total Credits and GPA 0.000 .00

unofficial evaluation

Area University Writing Requirement - Not Met

Met	Condition	Rule	Subject	Attribute	Low	High	Required Credits	Required Courses	Term	Subject	Course Title	Attribute	Credits	Grade	Source
No		A.	Writing Requirement												
<p>Two courses required. <i>101 or 450</i> Only sections of BMEN 450, ENGR 482 or PHIL 482 with the Writing attribute [UWRT] may be used to satisfy this requirement.</p>															

Total Credits and GPA 0.000 .00

unofficial evaluation

Area Int'l & Cult Diversity - Not Met

Met	Condition	Rule	Subject	Attribute	Low	High	Required Credits	Required Courses	Term	Subject	Course Title	Attribute	Credits	Grade	Source
No		A.	Int'l & Cultural Diversity				6hr								
<p>Select from courses with the International and Cultural Diversity attribute [UICD] (except sections of BUSN 289 with the UWRT attribute).</p>															

Total Credits and GPA 0.000 .00

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Area Foreign Language - Not Met

Met	Condition	Rule	Subject	Attribute	Low	High	Required Credits	Required Courses	Term	Subject	Course Title	Attribute	Credits	Grade	Source
No		A.	Foreign Language Rqmt												
<p>Complete one of the following: 1. Two years of the same foreign language in High School. 2. A two semester sequence of the same foreign language for University credit.</p>															

Total Credits and GPA 0.000 .00

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