Cover Sheet: Request 11753

Biosystems Engineering Departmental Electives

Info

Process	Specialization|New/Modify/Close|Ugrad
Status	Pending at PV - University Curriculum Committee (UCC)
Submitter	James Leary drleary@ufl.edu
Created	8/7/2017 3:05:16 PM
Updated	10/23/2017 4:08:06 PM
Description of request	Change two required course categories to Departmental Elective categories and expand the listing of ABE electives from which the students can select.

Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	ENG - Agricultural and Biological Engineering 514907000	James Leary		8/11/2017
Biosystems Catalog Channges 8.3.2017.docx Biosystems Departmental Electives Memo.docx					8/7/2017 8/7/2017
College	Approved	ENG - College of Engineering	James Leary	Approved by Faculty Council 10/12	10/23/2017
No document changes					
University Curriculum Committee	Commented	PV - University Curriculum Committee (UCC)	James Leary	Added to November agenda.	10/23/2017
No document changes					
University Curriculum Committee	Pending	PV - University Curriculum Committee (UCC)			10/23/2017
No document changes					
Office of the Registrar					
No document changes					
Student Academic Support System					
No document changes					
Catalog					
No document changes					
College Notified					
No document changes					

Specialization|Modify for request 11753

Info

Request: Biosystems Engineering Departmental Electives
Description of request: Change two required course categories to Departmental Elective categories and expand the listing of ABE electives from which the students can select.
Submitter: James Leary drleary@ufl.edu
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Form version: 1

Responses

Specialization Name Biosystems Engineering
Specialization Code BIE
Effective Term Earliest Available
Effective Year Earliest Available
Is this an Undergraduate Innovation Academy Program No
Current Curriculum for Specialization These are the only items in the Biosystems Engineering specialization that are being considered for changes:

- ABE4033, Fundamentals and Applications of Biosensors, or ABE4413C, Post Harvest Operations Engineering

- ABE4033 or ABE4812, Food and Unit Operations and

- Departmental Elective
  Select from: ABE4034, ABE4231, ABE4413C, ABE4905

Proposed Changes The proposed changes to the categories listed above will result in two additional Department Elective categories to replace the ABE4033 or ABE4413C category and the ABE4033 or ABE4812 category. The changes to these two categories allows for multiple ABE Department classes to be used as Departmental Electives including the three courses listed above. The full list of classes includes:
ABE3212C (4), Land and Water Resources Engineering
ABE4033 (3), Fundamentals and Applications of Biosensors
ABE4034 (3), Remote Sensing
ABE4231 (4), Irrigation and Drainage
ABE4413C (3), Post Harvest Operations Engineering
ABE4655C (3), Bio-Based Products
ABE4812 (4), Food and Unit Operations
ABE4905 (1-4), Independent Study (including Industrial Hygiene)
ABE4932 (3), Special Topics (including Bioprocess Engineering)
ABE4935 (2), Grant Writing for Undergraduates
ABE4949 (1-3), Work Experience for Biological Engineers
One AOM course or one PKG course
Graduate-level courses
Pedagogical Rationale/Justification The proposed changes will help clarify and streamline course requirements. The problem is that three course categories actually have multiple course possibilities beyond those listed, and tend to be confusing to students. Those categories are:

- ABE4033, Fundamentals and Applications of Biosensors, or ABE4413C, Post Harvest Operations Engineering

- ABE4033 or ABE4812, Food and Unit Operations and

- Departmental Elective
  Select from: ABE4034, ABE4231, ABE4413C, ABE4905

Because other courses are being used as substitutes for these listed categories of courses, The ABE Curriculum Committee proposes listing these categories as Departmental Elective categories using

the courses listed above as courses from which to select Departmental Elective classes. This expanded offering of allows for new classes developed by newer faculty to be included among the electives proposed.

Impact on Other Programs There is no impact on other programs nor departments as this is an change only to the Biosystems Engineering specialization. It involves the same number of credits under the proposed changes as the original specialization.

Assessment Data Review The result of having to often manually substitute suitable ABE courses for the listed courses, has created unnecessary "red tape". When students encounter the the two "or" categories of ABE4033 or ABE4413C, AND ABE4033 or ABE4812, there options appear limited. Always explaining that there are several other classes that can be used for these two classes is unnecessary when all possible classes can be listed.

Academic Learning Compact and Academic Assessment Plan There are no changes to the Academic Learning Compact and Academic Assessment Plan that result from the proposed changes.

Biosystems Engineering

Critical TrackingModel Semester Plan

Required courses: ~~6~~ 3 credits

~~ABE 4033 Fundamentals and Applications of Biosensors (3) or~~

~~ABE 4812 Food and Bioprocess Engineering Unit Operations (4)~~

ABE 4662 Quantification of Biological Processes (3)

Department electives: ~~3~~ 9 credits minimum

Engineering electives: 10 credits minimum

Technical electives: 6 credits

Critical Tracking

Critical Tracking records each student's progress in courses that are required for entry to each major. Please note the critical-tracking requirements below on a per-semester basis.

Equivalent critical-tracking courses as determined by the State of Florida Common Course Prerequisites may be used for transfer students.

Semester 1

Complete 1 of 8 tracking courses with a minimum grade of C within two attempts: CHM 2045 or CHM 2095, CHM 2046 or CHM 2096, MAC 2311, MAC 2312, MAC 2313, MAP 2302, PHY 2048, PHY 2049

2.5 GPA required for all critical-tracking courses

2.0 UF GPA required

Semester 2

Complete 1 additional tracking course with a minimum grade of C within two attempts

2.5 GPA required for all critical-tracking courses

2.0 UF GPA required

Semester 3

Complete 2 additional tracking courses with minimum grades of C within two attempts

2.5 GPA required for all critical-tracking courses

2.0 UF GPA required

Semester 4

Complete 2 additional tracking courses with minimum grades of C within two attempts

2.5 GPA required for all critical-tracking courses

2.0 UF GPA required

Semester 5

Complete all 8 critical-tracking courses with minimum grades of C in each course within two attempts

2.5 GPA required for all critical-tracking courses

2.0 UF GPA required

Back to Top

Model Semester Plan

To remain on track, students must complete the appropriate critical-tracking courses, which appear in bold. These courses must be completed by the terms as listed above in the Critical Tracking criteria.

This semester plan represents an example progression through the major. Actual courses and course order may be different depending on the student's academic record and scheduling availability of courses. Prerequisites still apply.

Semester 1	Credits
CHM 2045 General Chemistry 1 or	
CHM 2095 Chemistry for Engineers 1	
GE-B/P	3
CHM 2045L General Chemistry 1 Laboratory	
GE-P	1
MAC 2311 Analytic Geometry and Calculus 1	
State Core GE-M	4
Humanities	
State Core GE-H, N or D	3
Social and Behavioral Sciences	
State Core GE-S, D or N	3
Total	14

Semester 2	Credits
ABE 2062 Biology for Engineers or	

BSC 2010 Intermediate Biology 1

GE-B/P 3

CHM 2046 General Chemistry and Qualitative Analysis or

CHM 2096 Chemistry for Engineers 2

State Core GE-B/P 3

CHM 2046L General Chemistry 2 Laboratory

GE-B/P 1

IUF 1000 What is the Good Life

GE-H 3

MAC 2312 Analytic Geometry and Calculus 2

GE-M 4

Total 14

Semester 3 Credits

ABE 2012C Introduction to Biological Engineering 3

MAC 2313 Analytic Geometry and Calculus 3

GE-M 4

PHY 2048 with Calculus 1

GE-B/P 3

PHY 2048L Physics with Calculus 1 Laboratory

GE-B/P 1

ENC 1101 Expository and Argumentative Writing or

ENC 1102 Argument and Persuasion

State Core GE-C 3

Total 14

Semester 4 Credits

EGM 2511 Engineering Mechanics: Statics 3

EML 3007 Elements of Thermodynamics and Heat Transfer 3

MAP 2302 Elementary Differential Equations

GE-M 3

PHY 2049 Physics with Calculus 2

GE-B/P 3

PHY 2049L Laboratory for Physics with Calculus 2

GE-B/P 1

Social and Behavioral Sciences

GE-S, D or N 3

Total 16

Semester 5 Credits

CGN 2328 Technical Drawing and Visualization or

EML 2023 Computer Aided Graphics and Design 3

CGN 3710 Experimentation and Instrumentation in Civil Engineering or

EEL 3003 Elements of Electrical Engineering 3

CHM 2200 Fundamentals of Organic Chemistry or

BCH 3023 Elementary Organic and Biological Chemistry 3

EGM 3520 Mechanics of Materials 3

Total 12

Semester 6 Credits

ABE 3612C Heat and Mass Transfer in Biological Systems 4

CGN 3421 Computer Methods in Civil Engineering, 4 credits, or

ENV 3040C Computer Methods in Environmental Engineering, 3 credits, or

ESI 4327C Matric/Numerical Methods in Systems Engineering, 4 credits 3-4

EGM 3400 Elements of Dynamics 2

ENC 3246 Professional Communication for Engineers (GE-C) 3

Technical elective 3

~~Department-approved 3~~

Total 15-16

Semester 7 Credits

ABE 3000C Applications in Biological Engineering 3

ABE 3652C Physical and Rheological Properties of Biological Materials, 3 credits, or

CGN 3501C Civil Engineering Materials, 4 credits 3-4

~~ABE 4033 Fundamentals and Applications of Biosensors or~~

~~ABE 4413C Post Harvest Operations Engineering 3~~

Departmental-approved 3

ABE 4931 Professional Issues in Biological Engineering 1

EGN 3353C Fluid Mechanics, 3 credits, or

CWR 3201 Hydrodynamics, 4 credits 3-4

Total 13-15

Semester 8 Credits

ABE 4042C Biological Engineering Design 1 2

ABE 4171 Power and Machines for Biological Systems 3

ABE 4662 Quantification of Biological Processes 3

Engineering electives 6

~~Department-approved 6~~

Total 14

Semester 9 Credits

~~ABE 4033 Fundamentals and Applications of Biosensors, 3 credits, (If not taken previously) or~~

~~ABE 4812 Food Engineering Unit Operations, 4 credits 3-4~~

Departmental-approved 3-4

ABE 4043C Biological Engineering Design 2 2

~~Department elective~~

Department-approved 3

Engineering electives 5

~~Department-approved 5~~

Technical elective 3

~~Department-approved 3~~

Total 16-17

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Memo

Date: August 7, 2017

To: COE Curriculum Committee

From: James D. Leary, ABE Department

Re: Curriculum Changes

At its April 21, 2017 meeting, the ABE Curriculum Committee approved changes to the *Biosystems* specialization in the Biological Engineering major. The changes were the made to clarify course requirements. The problem was that three course categories actually had multiple course possibilities beyond those listed, and tended to be confusing to students. Those categories were:

- ABE4033, *Fundamentals and Applications of Biosensors*, or ABE4413C, *Post Harvest Operations Engineering*
- ABE4033 or ABE4812, *Food and Unit Operations* and
- Departmental Elective
  Select from: ABE4034, ABE4231, ABE4413C, ABE4905

Because other courses have been used as substitutes for the listed courses, Jim Leary proposed changing the first two categories into Departmental Elective categories, resulting in three 3-credit Departmentlal Elective cateories. This expands the list, including those listed above, to list shown below.

ABE3212C (4), *Land and Water Resources Engineering*
ABE4033 (3), *Fundamentals and Applications of Biosensors*
ABE4034 (3), *Remote Sensing*
ABE4231 (4), *Irrigation and Drainage*
ABE4413C (3), *Post Harvest Operations Engineering*
ABE4655C (3), *Bio-Based Products*
ABE4812 (4), *Food and Unit Operations*
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ABE4935 (2), *Grant Writing for Undergraduates*
ABE4949 (1-3), *Work Experience for Biological Engineers*
One AOM course or one PKG course
Graduate-level courses if not dual listed or if considering BS/MS Combined program

Biosystems Engineering Core and **Biological Engineering Concentration** copied from the degree audit for the Biosystems Engineerng specialization.

BIOSYSTEMS ENGINEERING CORE

- 11)

ABE4033 - FUNDAMENTAL APPLICATIONS OF BIOSENSORS (3)
OR ABE4413C - POST HARVEST OPERATIONS ENGINEERING (3)

BIOSYSTEMS ENGINEERING CONCENTRATION

- 2)

FUNDAMENTALS AND APPLICATIONS OF BIOSENSORS - ABE4033
OR FOOD ENGINEERING UNIT OPERATIONS ABE4812 (4)

- 5)

DEPARTMENTAL ELECTIVE
NEEDS: 3.00 HOURS
SELECT FROM: ABE4034 , ABE4231 , ABE4413C , ABE4905