Cover Sheet: Request 15535

Request to make EGN2020C a required course for Biological Engineering

Info

Process	Major Curriculum|Modify|Ugrad/Pro
Status	Pending at PV - University Curriculum Committee (UCC)
Submitter	Ana Martin-Ryals admartin@ufl.edu
Created	12/1/2020 8:53:44 PM
Updated	4/23/2021 4:33:52 PM
Description of request	The Biological Engineering Department is requesting to make EGN2020C: Engineering Design and Society a required course for all BE undergraduate students. This two credit course will replace two credits of currently required elective coursework within the BE curriculum, keeping the total number of required credits the same (128 credit hours total). The proposed change would apply to all four specializations within the BE major. Response to first round of review by the HWCOE curriculum committee: An updated 8-semester plan with incorporation of Quest 2 has been submitted for approval (Request number 15917). The instructor of EGN2020 approved placement of EGN2020C in semester 4. This will accommodate ABE transfer students.

Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	ENG - Agricultural and Biological Engineering 514907000	Kati Migliaccio		12/2/2020
Ag_Bio_Eng_EGN2020C_Support_Letter.pdf					12/1/2020
College	Recycled	ENG - College of Engineering	Heidi Dublin	Resubmit when ready for review.	2/11/2021
No document changes					
Department	Approved	ENG - Agricultural and Biological Engineering 514907000	Kati Migliaccio		3/2/2021
No document changes					
College	Approved	ENG - College of Engineering	Heidi Dublin	approved by HWCOE curriculum committee and Faculty council	4/13/2021
Catalog Copy Tracked Changes_8 Semester Plan with Quest 2 and EGN2020 - All Concentrations.docx					3/2/2021
Associate Provost for Undergraduate Affairs	Approved	PV - APUG Review	Casey Griffith		4/23/2021
No document changes					
University Curriculum Committee	Pending	PV - University Curriculum Committee (UCC)			4/23/2021
No document changes					
Office of the Registrar					
No document changes					
Catalog					
No document changes					

Step	Status	Group	User	Comment	Updated
Student Academic Support System					
No document changes					
Academic Assessment Committee Notified					
No document changes					
College Notified					
No document changes					

Major|Modify_Curriculum for request 15535

Info

Request: Request to make EGN2020C a required course for Biological Engineering
Description of request: The Biological Engineering Department is requesting to make EGN2020C: Engineering Design and Society a required course for all BE undergraduate students. This two credit course will replace two credits of currently required elective coursework within the BE curriculum, keeping the total number of required credits the same (128 credit hours total). The proposed change would apply to all four specializations within the BE major.

Response to first round of review by the HWCOE curriculum committee: An updated 8-semester plan with incorporation of Quest 2 has been submitted for approval (Request number 15917). The instructor of EGN2020 approved placement of EGN2020C in semester 4. This will accommodate ABE transfer students.

Submitter: Ana Martin-Ryals admartin@ufl.edu
Created: 12/1/2020 7:51:27 PM
Form version: 1

Responses

Major Name
Enter the name of the major. Example: "Mathematical Modeling"

Response:
Biological Engineering

Major Code
Enter the two-letter or three-letter major code.

Response:
BE

Degree Program Name
Enter the name of the degree program in which the major is offered.

Response:
Engineering

Undergraduate Innovation Academy Program
Is this an undergraduate program in the Innovation Academy?

Response:
No

Effective Term
Enter the term (semester and year) that the curriculum change would be effective.

Response:
Fall

Effective Year

Response:
2021

Current Curriculum for Major

Response:
Currently, Biological Engineering undergraduate students are required to complete 128 credits of coursework. This applies to all four specializations within the BE program (Agricultural Production Engineering, Biosystems Engineering, Land and Water Resource Engineering, and Packaging Engineering). Each specialization has a slightly different set of required courses and elective credits that must be fulfilled. We are proposing to replace two credits of currently required elective credit, with the two credit introductory engineering course, EGN2020C: Engineering Design and Society. The current elective credit requirements for each BE specialization are also follows:
Agricultural Production Engineering: Department electives - 3 credits, Engineering electives - 6 credits, Technical electives - 6 credits
Biosystems Engineering: Department electives - 9 credits, Engineering electives - 7 credits, Technical electives - 6 credits
Land and Water Resource Engineering: Department electives - 3 credits, Engineering electives - 4 credits, Technical electives - 3 credits
Packaging Engineering: Department electives - 0 credits, Engineering electives - 3 credits, Technical electives - 7-8 credits

Proposed Curriculum Changes
Describe the proposed changes to the curriculum. If the change is to offer the program through UF Online, please explain and attach a letter of support from the Director of UF Online.

Response:
The Biological Engineering Department is proposing to make EGN2020C: Engineering Design and Society a required course for all undergraduate BE students. EGN2020C is an introductory engineering design course that will provide students will foundational knowledge and skills beneficial for later coursework. We propose that this two credit course take the place of two credits of elective coursework, thus the total number of required credit for the BE program would remain at 128. The proposed change will apply to all four specializations within the BE major (Agricultural Production Engineering, Biosystems Engineering, Land and Water Resource Engineering, and Packaging Engineering). Within the four year model semester plans for each specialization, EGN2020C will be placed in the fourth semester (Spring semester of student's second year). If the proposed change is granted, the elective credit requirements for each of the BE specializations would be also follows:
Agricultural Production Engineering: Department electives - 4 credits, Engineering electives - 3 credits, Technical electives - 6 credits
Biosystems Engineering: Department electives - 9 credits, Engineering electives - 5 credits, Technical electives - 6 credits
Land and Water Resource Engineering: Department electives - 3 credits, Engineering and/or Technical electives - 5 credits
Packaging Engineering: Department electives - 0 credits, Engineering electives - 3 credits, Technical electives - 5-6 credits

UF Online Curriculum Change
Will this curriculum change be applied to a UF online program as well?

Response:

No

Pedagogical Rationale/Justification
Describe the rationale for the proposed changes to the curriculum.

Response:
EGN2020C is an introductory engineering design course that will provide students will foundational knowledge and skills beneficial for later coursework. This includes introduction to the design process as well as hands-one experience with microcontrollers, programming, 3D printing, and other engineering design tools. By gaining experiencing with these tools early in their academic career students will have a framework with which they can relate later curriculum. Students will also have greater confidence in using these tools in later courses, and in particular for their capstone design projects.

Impact on Enrollment, Retention, Graduation
Describe any potential impact of the curriculum changes on students who are currently in the major.

Response:
There is no expected impact to students who are currently in the major. The change is expected to have a positive impact on future enrollment in the BE program. Many first year engineering students take EGN2020C as an exploratory class, Requiring BE students to take this class will increase the representation of BE students in the class, and create greater awareness among first year engineering students as to what the BE major is. This proposal to make EGN2020C a required course in the BE program is expected to increase enrollment in EGN2020C by 30-35 students per year.

Assessment Data Review
Describe the Student Learning Outcome and/or program goal data that was reviewed to support the proposed changes.

Response:
Data for Student Learning Outcome 3: Critical Thinking - Design a biological and/or agricultural system, component or process to meet desired needs within realistic economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability constraints in biological engineering, was reviewed to support the proposed change. The proposed change is expected to further support this SLO, which is assessed in the senior year capstone design courses of the BE program.

Academic Learning Compact and Academic Assessment Plan
Describe the modifications to the Academic Learning Compact (for undergraduate programs) and Academic Assessment Plan that result from the proposed change.

Response:
No modifications to the Academic Learning Compact or Academic Assessment Plan will result from the proposed change.

Catalog Copy
Submitter agrees to prepare and upload document showing the catalog copy with the current and proposed curricula edited using the "track changes" feature in Word.

Response:

Yes

AGRICULTURAL PRODUCTION ENGINEERING

Code	Title	Credits
Required Courses		
ABE 4033	Fundamentals and Applications of Biosensors	3
ABE 4413C	Post-Harvest Operations Engineering	3
CEG 4011	Soil Mechanics	4
Electives		
Department Eelectives (minimum)		43
Engineering Eelectives (minimum)		36
Technical Eelectives (minimum)		36
Total Credits		**205**

Model Semester Plan:

SEMESTER ONE		CREDITS
Select one:		3
CHM 2045	General Chemistry 1 (**Critical Tracking**; Gen Ed Biological Sciences and Physical Sciences)	
CHM 2095	Chemistry for Engineers 1 (**Critical Tracking**; Gen Ed Biological Sciences and Physical Sciences)	
CHM 2045L	General Chemistry 1 Laboratory (Gen Ed Biological and Physical Sciences)	1

MAC 2311	Analytic Geometry and Calculus 1 (**Critical Tracking**; State Core Gen Ed Mathematics)	4
State Core Gen Ed Humanities (with Diversity or International and Words as needed)		3
State Core Gen Ed Social and Behavioral Sciences (with Diversity or International and Words as needed)		3
Quest 1 (with Words as needed)		3
	Credits	**17~~4~~**
SEMESTER TWO		
Select one:		3
ABE 2062	Biology for Engineers (Gen Ed Biological and Physical Sciences)	
BSC 2010	Integrated Principles of Biology 1 (Gen Ed Biological and Physical Sciences)	
Select one:		3
CHM 2046	General Chemistry 2 (**Critical Tracking**; Gen Ed Biological Sciences and Physical Sciences)	
CHM 2096	Chemistry for Engineers 2 (**Critical Tracking**; Gen Ed Biological Sciences and Physical Sciences)	
CHM 2046L	General Chemistry 2 Laboratory (Gen Ed Biological and Physical Sciences)	1
MAC 2312	Analytic Geometry and Calculus 2 (**Critical Tracking**; State Core Gen Ed Mathematics)	4
~~Quest 1 (Gen Ed Humanities)~~		~~3~~
Gen Ed Social and Behavioral Sciences (with Diversity or International and Words as needed)		3
Quest 2 (with Words as needed)		3
	Credits	**17~~4~~**

SEMESTER THREE		
ABE 2012C	Introduction to Biological Engineering (Writing Requirement: 2,000 words)	3
MAC 2313	Analytic Geometry and Calculus 3 (**Critical Tracking**; Gen Ed Mathematics)	4
PHY 2048	Physics with Calculus 1 (**Critical Tracking**; State Core Gen Ed Biological and Physical Sciences)	3
PHY 2048L	Laboratory for Physics with Calculus 1 (Gen Ed Biological and Physical Sciences)	1
CGN 2328 or EML 2023	Technical Drawing and Visualization or Computer Aided Graphics and Design	3
Select one:		3
ENC 1101	Expository and Argumentative Writing (State Core Gen Ed Composition; Writing Requirement: 6,000 words)	
ENC 1102	Argument and Persuasion (State Core Gen Ed Composition; Writing Requirement: 6,000 words)	
	Credits	**174**
SEMESTER FOUR		
EGM 2511	Engineering Mechanics: Statics	3
EML 3007	Elements of Thermodynamics and Heat Transfer	3
MAP 2302	Elementary Differential Equations (**Critical Tracking**; Gen Ed Mathematics)	3
PHY 2049	Physics with Calculus 2 (**Critical Tracking**; Gen Ed Biological Sciences and Physical Sciences)	3
PHY 2049L	Laboratory for Physics with Calculus 2 (Gen Ed Biological and Physical Sciences)	1

EGN 2020C	Engineering Design and Society	2
~~Gen Ed Social and Behavioral Sciences with Diversity or International; Writing Requirement: 6,000 words~~		~~3~~
	Credits	**15~~6~~**
~~SEMESTER FIVE~~		
~~CGN 2328 or EML 2023~~	~~Technical Drawing and Visualization or Computer Aided Graphics and Design~~	~~3~~
~~CGN 3710 or EEL 3003~~	~~Experimentation and Instrumentation in Civil Engineering or Elements of Electrical Engineering~~	~~3~~
~~CHM 2200 or BCH 3023~~	~~Fundamentals of Organic Chemistry or Elementary Organic and Biological Chemistry~~	~~3~~
~~EGM 3520~~	~~Mechanics of Materials (**Critical Tracking**)~~	~~3~~
~~-~~	~~**Credits**~~	~~**12**~~
SEMESTER FIVE ~~SIX~~		
ABE 3612C	Heat and Mass Transfer in Biological Systems	4
Select one:		3-4
CGN 3421	Computer Methods in Civil Engineering	
ENV 3040C	Computational Methods in Environmental Engineering	
~~ESI 3327C~~ COP 2271 & lab	~~Matrix and Numerical Methods in Systems Engineering~~ Computer Programming for Engineers	
EGM 3400	Elements of Dynamics	2

EGM 3520	Mechanics of Materials (**Critical Tracking**)	3
CGN 3710 or EEL 3003	Experimentation and Instrumentation in Civil Engineering or Elements of Electrical Engineering	3
~~ENC 3246~~	~~Professional Communication for Engineers (**Critical Tracking**; State Core Gen Ed Composition; Writing Requirement: 6,000 words)~~	~~3~~
~~Technical elective~~		~~3~~
	Credits	**15-16**
SEMESTER SIX ~~SEVEN~~		
ABE 3000C	Applications in Biological Engineering (**Critical Tracking**)	3
CHM 2200 or BCH 3023	Fundamentals of Organic Chemistry or Elementary Organic and Biological Chemistry	3
~~ABE 3212C~~	~~Land and Water Resources Engineering~~	~~4~~
ABE 3652C or CGN 3501C	Physical and Rheological Properties of Biological Materials or Civil Engineering Materials	3-4
~~ABE 4931~~	~~Professional Issues in Agricultural and Biological Engineering~~	~~1~~
EGN 3353C or CWR 3201	Fluid Mechanics or Hydrodynamics	3-4
ABE 4413C	Post-Harvest Operations Engineering	3
	Credits	**15~~4~~-17~~6~~**
SEMESTER SEVEN ~~EIGHT~~		
ABE 4042C	Biological Engineering Design 1 (**Critical Tracking**)	2

ABE 4171	Power and Machines for Biological Systems	3
CEG 4011	Soil Mechanics	4
ENC 3246	Professional Communication for Engineers (**Critical Tracking**; State Core Gen Ed Composition; Writing Requirement: 6,000 words)	3
Department Eelective		43
~~Technical elective~~		~~3~~
	Credits	**165**
SEMESTER EIGHT~~NINE~~		
ABE 4033	Fundamentals and Applications of Biosensors	3
ABE 3212C	Land and Water Resources Engineering	4
ABE 4043C	Biological Engineering Design 2 (**Critical Tracking**)	2
~~ABE 4413C~~	~~Post-Harvest Operations Engineering~~	~~3~~
EGS4034, EML2920 or ECH4934	Engineering Professionalism & Ethics course	1
~~Engineering~~ Technical Eelective~~s~~		36
Engineering Elective		3
	Credits	**164**
	Total Credits	**128**

BIOSYSTEMS ENGINEERING

Code	Title	Credits
Required Courses		
ABE 4662	Quantification of Biological Processes	3
Electives		
Department Electives (minimum)		8~~9~~
Engineering Electives (minimum)		3~~11~~
Technical Electives (minimum)		6
Total Credits		20~~29~~
Course List		

Model Semester Plan:

SEMESTER ONE		CREDITS
Select one:		3
CHM 2045	General Chemistry 1 (**Critical Tracking**; Gen Ed Biological Sciences and Physical Sciences)	
CHM 2095	Chemistry for Engineers 1 (**Critical Tracking**; Gen Ed Biological Sciences and Physical Sciences)	

CHM 2045L	General Chemistry 1 Laboratory (Gen Ed Physical Sciences)	1
MAC 2311	Analytic Geometry and Calculus 1 (**Critical Tracking**; State Core Gen Ed Mathematics)	4
State Core Gen Ed Humanities (with Diversity or International and Words as needed)		3
State Core Gen Ed Social and Behavioral Sciences (with Diversity or International and Words as needed)		3
Quest 1 (with Words as needed)		3
	Credits	**174**
SEMESTER TWO		
Select one:		3
ABE 2062	Biology for Engineers (Gen Ed Biological and Physical Sciences)	
BSC 2010	Integrated Principles of Biology 1 (Gen Ed Biological and Physical Sciences)	
Select one:		3
CHM 2046	General Chemistry 2 (**Critical Tracking**; State Core Gen Ed Biological and Physical Sciences)	
CHM 2096	Chemistry for Engineers 2 (**Critical Tracking**; State Core Gen Ed Biological and Physical Sciences)	
CHM 2046L	General Chemistry 2 Laboratory (Gen Ed Biological and Physical Sciences)	1
MAC 2312	Analytic Geometry and Calculus 2 (**Critical Tracking**; Gen Ed Mathematics)	4
~~Quest 1 (Gen Ed Humanities)~~		~~3~~
Gen Ed Social and Behavioral Sciences (with Diversity or International and Words as needed)		3
Quest 2 (with Words as needed)		3

	Credits	**174**
SEMESTER THREE		
ABE 2012C	Introduction to Biological Engineering (Writing Requirement: 2,000 words)	3
MAC 2313	Analytic Geometry and Calculus 3 (**Critical Tracking**; Gen Ed Mathematics)	4
PHY 2048	Physics with Calculus 1 (**Critical Tracking**; Gen Ed Biological Sciences and Physical Sciences)	3
PHY 2048L	Laboratory for Physics with Calculus 1 (Gen Ed Biological and Physical Sciences)	1
Select one:		3
ENC 1101	Expository and Argumentative Writing (State Core Gen Ed Composition)	
ENC 1102	Argument and Persuasion (State Core Gen Ed Composition)	
CGN 2328 or EML 2023	Technical Drawing and Visualization or Computer Aided Graphics and Design	3
	Credits	**174**
SEMESTER FOUR		
EGM 2511	Engineering Mechanics: Statics	3
EML 3007	Elements of Thermodynamics and Heat Transfer	3
MAP 2302	Elementary Differential Equations (**Critical Tracking**; Gen Ed Mathematics)	3
PHY 2049	Physics with Calculus 2 (**Critical Tracking**; Gen Ed Biological Sciences and Physical Sciences)	3
PHY 2049L	Laboratory for Physics with Calculus 2 (Gen Ed Biological and Physical Sciences)	1

EGN2020C	Engineering Design and Society	2
~~Gen Ed Social and Behavioral Sciences with Diversity or International~~		~~3~~
	Credits	**15~~6~~**
~~SEMESTER FIVE~~		
~~CGN 2328 or EML 2023~~	~~Technical Drawing and Visualization or Computer Aided Graphics and Design~~	~~3~~
~~CGN 3710 or EEL 3003~~	~~Experimentation and Instrumentation in Civil Engineering or Elements of Electrical Engineering~~	~~3~~
~~CHM 2200 or BCH 3023~~	~~Fundamentals of Organic Chemistry or Elementary Organic and Biological Chemistry~~	~~3~~
~~EGM 3520~~	~~Mechanics of Materials (**Critical Tracking**)~~	~~3~~
~~-~~	~~**Credits**~~	~~**12**~~
SEMESTER FIVE~~SIX~~		
ABE 3612C	Heat and Mass Transfer in Biological Systems	4
Select one:		3-4
CGN 3421	Computer Methods in Civil Engineering	
ENV 3040C	Computational Methods in Environmental Engineering	
~~ESI 3327C~~ COP2271 & lab	~~Matrix and Numerical Methods in Systems Engineering~~ Computer Programming for Engineers	
EGM 3400	Elements of Dynamics	2

EGM 3520	Mechanics of Materials (**Critical Tracking**)	3
CGN 3710 or EEL 3003	Experimentation and Instrumentation in Civil Engineering or Elements of Electrical Engineering	3
~~ENC 3246~~	~~Professional Communication for Engineers (**Critical Tracking**; Gen Ed Composition)~~	~~3~~
~~Technical elective~~		~~3~~
	Credits	**15-16**
SEMESTER SIX~~EVEN~~		
ABE 3000C	Applications in Biological Engineering (**Critical Tracking**)	3
CHM 2200 or BCH 3023	Fundamentals of Organic Chemistry or Elementary Organic and Biological Chemistry	3
ABE 3652C or CGN 3501C	Physical and Rheological Properties of Biological Materials or Civil Engineering Materials	3-4
~~ABE 4931~~	~~Professional Issues in Agricultural and Biological Engineering~~	~~1~~
EGN 3353C or CWR 3201	Fluid Mechanics or Hydrodynamics	3-4
~~Departmental~~ Engineering E~~e~~lective		3
	Credits	15-17~~13-15~~
SEMESTER SEVEN~~EIGHT~~		
ABE 4042C	Biological Engineering Design 1 (**Critical Tracking**)	2
ABE 4171	Power and Machines for Biological Systems	3

ABE 4662	Quantification of Biological Processes	3
ENC 3246	Professional Communication for Engineers (**Critical Tracking**; Gen Ed Composition)	3
~~Engineering~~ Department E~~e~~lective~~s~~		5~~6~~
	Credits	**16~~4~~**
SEMESTER EIGHT~~NINE~~		
ABE 3212C	Land and Water Resources Engineering	4
ABE 4043C	Biological Engineering Design 2 (**Critical Tracking**)	2
EGS4034, EML2920 or ECH4934	Engineering Professionalism & Ethics course	1
Departmental E~~e~~lective~~s~~		~~6 7~~3
~~Engineering elective~~		~~1~~
Technical E~~e~~lective		3~~6~~
	Credits	**16~~ 17~~**
	Total Credits	**128**

LAND AND WATER RESOURCES ENGINEERING

Code	Title	Credits
Required Courses		
ABE 4231C	Irrigation and Drainage Engineering	4
ABE 3212C	Land and Water Resources Engineering	4
CEG 4011	Soil Mechanics	4
CWR 4202	Hydraulics	3
SUR 3103C	Geomatics	3
Electives		
Department Eelectives (minimum)		3
Engineering and/or Technical Eelectives (minimum)		24
~~Technical Elective~~		~~3~~
Total Credits		234

Model Semester Plan:

SEMESTER ONE	CREDITS
Select one:	3
CHM 2045 General Chemistry 1 (**Critical Tracking**; Gen Ed Biological Sciences and Physical Sciences)	

CHM 2095	Chemistry for Engineers 1 (**Critical Tracking**; Gen Ed Biological Sciences and Physical Sciences)	
CHM 2045L	General Chemistry 1 Laboratory (Gen Ed Biological or Physical Sciences)	1
MAC 2311	Analytic Geometry and Calculus 1 (**Critical Tracking**; State Core Gen Ed Mathematics)	4
State Core Gen Ed Humanities (with Diversity or International and Words as needed)		3
State Core Gen Ed Social and Behavioral Sciences (with Diversity or International and Words as needed)		3
Quest 1 (with Words as needed)		3
	Credits	**174**
SEMESTER TWO		
Select one:		3
ABE 2062	Biology for Engineers (Gen Ed Biological and Physical Sciences)	
BSC 2010	Integrated Principles of Biology 1 (Gen Ed Biological and Physical Sciences)	
Select one:		3
CHM 2046	General Chemistry 2 (**Critical Tracking**; State Core Gen Ed Biological and Physical Sciences)	
CHM 2096	Chemistry for Engineers 2 (**Critical Tracking**; State Core Gen Ed Biological and Physical Sciences)	
CHM 2046L	General Chemistry 2 Laboratory (Gen Ed Biological and Physical Sciences)	1
MAC 2312	Analytic Geometry and Calculus 2 (**Critical Tracking**; Gen Ed Mathematics)	4
~~Quest 1 (Gen Ed Humanities)~~		~~3~~
Gen Ed Social and Behavioral Sciences (with Diversity or International and Words as needed)		3

Quest 2 (with Words as needed)		3
	Credits	**174**
SEMESTER THREE		
ABE 2012C	Introduction to Biological Engineering (Writing requirement: 2,000 words)	3
MAC 2313	Analytic Geometry and Calculus 3 (**Critical Tracking**; Gen Ed Mathematics)	4
PHY 2048	Physics with Calculus 1 (**Critical Tracking**; Gen Ed Biological Sciences and Physical Sciences)	3
PHY 2048L	Laboratory for Physics with Calculus 1 (Gen Ed Biological and Physical Sciences)	1
Select one:		3
ENC 1101	Expository and Argumentative Writing (State Core Gen Ed Composition, Writing requirement: 6,000 words)	
ENC 1102	Argument and Persuasion (State Core Gen Ed Composition, Writing requirement: 6,000 words)	
CGN 2328 or EML 2023	Technical Drawing and Visualization or Computer Aided Graphics and Design	3
	Credits	**174**
SEMESTER FOUR		
EGM 2511	Engineering Mechanics: Statics	3
EML 3007	Elements of Thermodynamics and Heat Transfer	3
MAP 2302	Elementary Differential Equations (**Critical Tracking**; Gen Ed Mathematics)	3
PHY 2049	Physics with Calculus 2 (**Critical Tracking**; Gen Ed Biological and Physical Sciences)	3

PHY 2049L	Laboratory for Physics with Calculus 2 (Gen Ed Biological and Physical Sciences)	1
EGN 2020C	Engineering Design and Society	2
~~Gen Ed Social and Behavioral Sciences with Diversity or International~~		~~3~~
	Credits	**15~~6~~**
~~SEMESTER FIVE~~		
~~CGN 2328~~ ~~or EML 2023~~	~~Technical Drawing and Visualization~~ ~~or Computer Aided Graphics and Design~~	~~3~~
~~CGN 3710~~ ~~or EEL 3003~~	~~Experimentation and Instrumentation in Civil Engineering~~ ~~or Elements of Electrical Engineering~~	~~3~~
~~CHM 2200~~ ~~or BCH 3023~~	~~Fundamentals of Organic Chemistry~~ ~~or Elementary Organic and Biological Chemistry~~	~~3~~
~~EGM 3520~~	~~Mechanics of Materials (**Critical Tracking**)~~	~~3~~
	Credits	**12**
SEMESTER FIVE~~SIX~~		
~~ABE 3612C~~	~~Heat and Mass Transfer in Biological Systems~~	~~4~~
CGN 3710 or EEL 3003	Experimentation and Instrumentation in Civil Engineering or Elements of Electrical Engineering	3
EGM 3400	Elements of Dynamics	2
EGM 3520	Mechanics of Materials (**Critical Tracking**)	3
~~ENC 3246~~	~~Professional Communication for Engineers (**Critical Tracking**; Gen Ed Composition)~~	~~3~~
ENV 3040C	Computational Methods in Environmental Engineering	3

SUR 3103C	Geomatics	3
EGS4034, EML2920 or ECH4934	Engineering Professionalism & Ethics course	1
	Credits	**15**
SEMESTER SIX~~EVEN~~		
ABE 3000C	Applications in Biological Engineering (**Critical Tracking**)	3
CHM 2200 or BCH 3023	Fundamentals of Organic Chemistry or Elementary Organic and Biological Chemistry	3
~~ABE 3212C~~	~~Land and Water Resources Engineering~~	~~4~~
ABE 3652C or CGN 3501C	Physical and Rheological Properties of Biological Materials or Civil Engineering Materials	3-4
~~ABE 4931~~	~~Professional Issues in Agricultural and Biological Engineering~~	~~1~~
CWR 3201	Hydrodynamics	4
ENC 3246	Professional Communication for Engineers (**Critical Tracking**; Gen Ed Composition)	3
	Credits	**~~15~~-16-17**
SEMESTER SEVEN~~EIGHT~~		
ABE 4042C	Biological Engineering Design 1 (**Critical Tracking**)	2
ABE 3612C	Heat and Mass Transfer in Biological Systems	4
ABE 4171	Power and Machines for Biological Systems	3
ABE 4231C	Irrigation and Drainage Engineering	4

CWR 4202	Hydraulics	3
~~CEG 4011~~	~~Soil Mechanics~~	~~4~~
	Credits	**16**
SEMESTER EIGHT~~NINE~~		
ABE 4043C	Biological Engineering Design 2 (**Critical Tracking**)	2
ABE 3212C	Land and Water Resources Engineering	4
CEG 4011	Soil Mechanics	4
Department Ee~~l~~ective		3
Engineering and/or Technical Ee~~l~~ective		24
~~Technical elective~~		~~3~~
	Credits	**15~~2~~**
	Total Credits	**128**

PACKAGING ENGINEERING

Code	Title	Credits
Required Courses		
EMA 3010	Materials	3
EMA 3066	Introduction to Organic Materials	3
PKG 3001	Principles of Packaging	3
PKG 3103	Food Packaging	3
PKG 4008	Distribution and Transport Packaging	3
PKG 4101C	Computer Tools for Packaging	3
PKG 4011	Packaging Production and Processing	3
Technical Electives (minimum)		**3**
Engineering Electives (minimum)		**3**
Total Credits		**274**

Model Semester Plan:

SEMESTER ONE	CREDITS

Select one:		3
CHM 2045	General Chemistry 1 (**Critical Tracking**; Gen Ed Biological Sciences and Physical Sciences)	
CHM 2095	Chemistry for Engineers 1 (**Critical Tracking**; Gen Ed Biological Sciences and Physical Sciences)	
CHM 2045L	General Chemistry 1 Laboratory (Gen Ed Biological and Physical Sciences)	1
MAC 2311	Analytic Geometry and Calculus 1 (**Critical Tracking**; State Core Gen Ed Mathematics)	4
State Core Gen Ed Humanities (with Diversity or International and Words as needed)		3
State Core Gen Ed Social and Behavioral Sciences (with Diversity or International and Words as needed)		3
Quest 1 (with Words as needed)		3
	Credits	**174**
SEMESTER TWO		
ABE 2062 or BSC 2010	Biology for Engineers or Integrated Principles of Biology 1	3
Select one:		3
CHM 2046	General Chemistry 2 (**Critical Tracking**; State Core Gen Ed Biological and Physical Sciences)	
CHM 2096	Chemistry for Engineers 2 (**Critical Tracking**; State Core Gen Ed Biological and Physical Sciences)	
CHM 2046L	General Chemistry 2 Laboratory (Gen Ed Biological and Physical Sciences)	1
MAC 2312	Analytic Geometry and Calculus 2 (**Critical Tracking**; Gen Ed Mathematics)	4
~~Quest 1 (Gen Ed Humanities)~~		~~3~~

Gen Ed Social and Behavioral Sciences (with Diversity or International and Words as needed)		3
Quest 2 (with Words as needed)		3
	Credits	**174**
SEMESTER THREE		
ABE 2012C	Introduction to Biological Engineering (Writing Requirement, 2,000 words)	3
Select one:		3
ENC 1101	Expository and Argumentative Writing (State Core Gen Ed Composition, Writing Requirement: 6,000 words))	
ENC 1102	Argument and Persuasion (State Core Gen Ed Composition, Writing Requirement: 6,000 words)	
MAC 2313	Analytic Geometry and Calculus 3 (**Critical Tracking**; Gen Ed Mathematics)	4
PHY 2048	Physics with Calculus 1 (**Critical Tracking**; Gen Ed Biological and Physical Sciences)	3
PHY 2048L	Laboratory for Physics with Calculus 1 (Gen Ed Biological and Physical Sciences)	1
ENC 3246	Professional Communication for Engineers (**Critical Tracking**; Gen Ed Composition)	3
	Credits	**174**
SEMESTER FOUR		
EGM 2511	Engineering Mechanics: Statics	3
EML 3007	Elements of Thermodynamics and Heat Transfer	3
MAP 2302	Elementary Differential Equations (**Critical Tracking**; Gen Ed Mathematics)	3
PHY 2049	Physics with Calculus 2 (**Critical Tracking**; Gen Ed Biological and Physical Sciences)	3

PHY 2049L	Laboratory for Physics with Calculus 2 (Gen Ed Biological and Physical Sciences)	1
EGN 2020C	Engineering Design and Society	2
~~Gen Ed Social and Behavioral Sciences with Diversity or International~~		~~3~~
	Credits	**15~~6~~**
~~SUMMER AFTER SEMESTER FOUR~~		
~~CGN 3710 or EEL 3003~~	~~Experimentation and Instrumentation in Civil Engineering or Elements of Electrical Engineering~~	~~3~~
~~CHM 2200 or BCH 3023~~	~~Fundamentals of Organic Chemistry or Elementary Organic and Biological Chemistry~~	~~3~~
~~EGM 3520~~	~~Mechanics of Materials (**Critical Tracking**)~~	~~3~~
~~Approved Technical elective~~		~~3~~
~~-~~	~~**Credits**~~	~~**12**~~
SEMESTER FIVE~~SIX~~		
ABE 3612C	Heat and Mass Transfer in Biological Systems	4
Select one:		3-4
CGN 3421	Computer Methods in Civil Engineering	
ENV 3040C	Computational Methods in Environmental Engineering	
~~ESI 3327C~~ COP 2271 & lab	~~Matrix and Numerical Methods in Systems Engineering~~ Computer Programming for Engineers	
EGM 3400	Elements of Dynamics	2

EGM 3520	Mechanics of Materials (**Critical Tracking**)	3
~~ENC 3246~~	~~Professional Communication for Engineers (**Critical Tracking**; Gen Ed Composition)~~	~~3~~
PKG 3001	Principles of Packaging	3
	Credits	**15-16**
SEMESTER SIX~~EVEN~~		
ABE 3000C	Applications in Biological Engineering (**Critical Tracking**)	3
~~ABE 4033 or ABE 4413C~~	~~Fundamentals and Applications of Biosensors or Post-Harvest Operations Engineering~~	~~3~~
CGN 3710 or EEL 3003	Experimentation and Instrumentation in Civil Engineering or Elements of Electrical Engineering	3
EMA 3010	Materials	3
PKG 4101C	Computer Tools for Packaging	3
PKG 4011 or ABE4812	Packaging Production and Processing or Food Bioprocess Unit Operations (4)	3-4
	Credits	**15-16**
SEMESTER SEVEN~~EIGHT~~		
ABE 4042C	Biological Engineering Design 1 (**Critical Tracking**)	2
ABE 4171	Power and Machines for Biological Systems	3
EGN 3353C or CWR 3201	Fluid Mechanics or Hydrodynamics	3-4
EMA 3066	~~Introduction to Organic Materials~~Polymer Science and Engineering	3

PKG 3103	Food Packaging	3
~~Elective~~		~~1~~
EGS4034, EML2920 or ECH4934	Engineering Professionalism & Ethics course	1
	Credits	**15-16**
SEMESTER EIGHT~~NINE~~		
ABE 4043C	Biological Engineering Design 2 (**Critical Tracking**)	2
~~ABE 4931~~	~~Professional Issues in Agricultural and Biological Engineering~~	~~1~~
ABE 4033 or ABE 4413C	Fundamentals and Applications of Biosensors or Post-Harvest Operations Engineering	3
CHM 2200 or BCH 3023	Fundamentals of Organic Chemistry or Elementary Organic and Biological Chemistry	3
PKG 4008	Distribution and Transport Packaging	3
~~Approved~~ Engineering E~~e~~lective		3
~~Approved~~ Technical E~~e~~lective~~s~~		3~~4~~
	Credits	**17~~13~~**
	Total Credits	**128**

Herbert Wertheim College of Engineering
Department of Engineering Education

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November 30, 2020

Herbert Wertheim College of Engineering Curriculum Committee,

This letter is to express our Engineering Education Department's support and capacity for the Agriculture and Biological Engineering Department's request to add EGN2020C Engineering Design & Society into their curriculum.

We have capacity to serve all Agriculture and Biological Engineering students in the course, and we offer the course regularly three times a year: fall, spring, and summer B, to allow students flexibility of which semester to take the course.

Please feel free to contact me if you have any questions about this letter of support or our willingness to accept all Agricultural and Biological Engineering students in our EGN2020C course.

Best Wishes,

Pamela Dickrell, Ph.D.
Associate Chair for Academics
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University of Florida
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