Cover Sheet: Request 13408

Bachelor of Science in Chemical Engineering

Info

Process	Major Curriculum|Modify|Ugrad/Pro
Status	Pending at PV - University Curriculum Committee (UCC)
Submitter	Cynthia Sain csain@che.ufl.edu
Created	12/12/2018 1:36:11 PM
Updated	2/15/2019 7:58:34 AM
Description of request	Reduction of BSChE credits from 134 to 131.

Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	ENG - Chemical Engineering 011903000	Carlos Rinaldi		12/12/2018
No document changes					
College	Approved	ENG - College of Engineering	Heidi Dublin	Approved by the HWCOE Curriculum Committee and Faculty Council.	1/29/2019
F19 BSChE Model Plan.docx OVERVIEW OF PROPOSED CHANGES IN THE CHEMICAL ENGINEERING UNDERGRADUATE PROGRAM.docx Proposed131_CurrPlan_v3.doc Notification of BSCHE Curriculum Change.docx					12/13/2018 12/13/2018 12/13/2018 12/13/2018
Associate Provost for Undergraduate Affairs	Approved	PV - APUG Review	Casey Griffith		2/15/2019
No document changes					
University Curriculum Committee	Pending	PV - University Curriculum Committee (UCC)			2/15/2019
No document changes					
Office of the Registrar					
No document changes					
Student Academic Support System					
No document changes					
Catalog					
No document changes					
Academic Assessment Committee Notified					
No document changes					
College Notified					
No document changes					

Major|Modify_Curriculum for request 13408

Info

Request: Bachelor of Science in Chemical Engineering
Description of request: Reduction of BSChE credits from 134 to 131.
Submitter: Casey Griffith cgriffith@aa.ufl.edu
Created: 3/13/2019 11:13:41 AM
Form version: 2

Responses

Major Name Chemical Engineering
Major Code ChE
Degree Program Name Bachelor of Science in Chemical Engineering
Undergraduate Innovation Academy Program Yes
Effective Term Fall
Effective Year 2019
Current Curriculum for Major BSChE Model Semester Plan 2018 – 2019 Catalog
134 Credits

Semester One Credits
ABE 2062
or BSC 2010
Biology for Engineers
or Integrated Principles of Biology 1 3
Select one: 3
CHM 2045
General Chemistry 1 (Critical Tracking; State Core Gen Ed Physical Sciences)

CHM 2095
Chemistry for Engineers 1 (Critical Tracking; State Core Gen Ed Physical Sciences)

CHM 2045L
General Chemistry 1 Laboratory (Gen Ed Physical Sciences) 1
IUF 1000
What is the Good Life (Gen Ed Humanities) 3
MAC 2311
Analytic Geometry and Calculus 1 (Critical Tracking; State Core Gen Ed Mathematics)
4
Credits 14
Semester Two
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 Physical Sciences) 1
ENC 1101
Expository and Argumentative Writing (State Core Gen Ed Composition)
3
MAC 2312
Analytic Geometry and Calculus 2 (Critical Tracking; Gen Ed Mathematics) 4
PHY 2048

Physics with Calculus 1 (Critical Tracking; Gen Ed Physical Sciences) 3
PHY 2048L
Laboratory for Physics with Calculus 1 (Gen Ed Physical Sciences) 1
Credits 15
Semester Three
ECH 3023
Material and Energy Balances 1 4
MAC 2313
Analytic Geometry and Calculus 3 (Critical Tracking) 4
MAP 2302
Elementary Differential Equations (Critical Tracking) 3
PHY 2049
Physics with Calculus 2 (Critical Tracking; Gen Ed Physical Sciences) 3
PHY 2049L
Laboratory for Physics with Calculus 2 (Gen Ed Physical Sciences) 1
Credits 15
Semester Four
CHM 4411
or PHY 3513
Physical Chemistry: Thermodynamics and Kinetics 5
or Thermal Physics 1 3-4
COT 3502
Computer Model Formulation 1 4
ECH 3264
Elementary Transport Phenomena 1 3
ECH 4934
Professional Seminar 1
STA 3032
Engineering Statistics 3
Credits 14-15
Semester Five
CHM 2210
Organic Chemistry 1 3
ENC 3246
Professional Communication for Engineers (Gen Ed Composition) 3
State Core Gen Ed Humanities 2
3
State Core Gen Ed Social and Behavioral Sciences 2
3
Credits 12
Semester Six
CHM 2211
& 2211L
Organic Chemistry 2
and Organic Chemistry Laboratory 5
ECH 3101
Process Thermodynamics 1 3
ECH 3203
Fluid and Solid Operations 1 3
ECH 3223
Energy Transfer Operations 1 3
Credits 14
Semester Seven
ECH 4123
Phase and Chemical Equilibria 3
ECH 4224L
Fluid and Energy Transfer Operations Laboratory 3 2
ECH 4403
Separation and Mass Transfer Operations 3
ECH 4714
Chemical Process Safety 3
Gen Ed Social and Behavioral Sciences 2 3

Technical elective 3
Credits 17
Semester Eight
CGN 3710
or EEL 3003
Experimentation and Instrumentation in Civil Engineering
or Elements of Electrical Engineering 3
ECH 4404L
Separation and Mass Transfer Operations Laboratory 2
ECH 4504
Chemical Kinetics and Reactor Design 4
ECH 4604
Process Economics and Optimization 3
ECH 4824
Materials of Chemical Engineering 2
Technical elective 3
Credits 17
Semester Nine
CHM 3120
Introduction to Analytical Chemistry 3
ECH 4323
& 4323L
Process Control Theory
and Chemical Engineering Laboratory 5 4
ECH 4644
Process Design 4 3
Chemical engineering technical elective 3
Technical elective 3
Credits 16
Total Credits 134

1 Minimum grade of C required.

2 Students are also expected to complete the general education international (GE-N) and diversity (GE-D) requirements. This is often done concurrently with another general education requirement (typically, GE-C, H or S).

3 Register for ECH 4224L immediately following completion of ECH 3101, ECH 3203 and ECH 3223.

4 The Integrated Product and Process Design program (ECH 4912 and ECH 4913) requires six credits of coursework and is offered as a sequence of two three-credit courses during fall and spring of the senior year. These two courses are pre-approved substitutes for three credits of technical electives and for ECH 4644.

5 If the Physical Chemistry Topics 3 credit requirement is satisfied by a 4 credit class, the additional credit satisfies 1 credit of the Technical elective requirement.
Most students will have credit for research or industry experiential education during the previous summer.

Proposed Curriculum Changes - Reduction to 8 semesters.
- CHM 3120 deleted from model semester plan.
- Credits reduced to 131.

1. Remove CHM 3120 Analytical Chemistry, 3 credits, from the BSChE curriculum
The removal of Analytical Chemistry makes possible the switch to an eight semester program.
a. An evaluation of our top 10 peer institutions revealed no other Chemical Engineering program requires Analytical Chemistry.
b. Removal of 3 credits will reduce the BSChE curriculum to 131 credits total.
2. Reduce the undergraduate BSChE Model Semester Plan to 8 semesters
The Chemical Engineering faculty voted to reduce the undergraduate Bachelor of Science degree from a nine semester program to eight semesters.
a. The summer semester was removed.

b. Remaining credits fit into eight semesters with only one 18 credit term

Pedagogical Rationale/Justification Removal of 3 credits from the Curriculum:
1) The Chemical Engineering faculty asked for curriculum to fit into 8 semesters.
2) The curriculum for ten peer institutions was reviewed, none included Analytical Chemistry. The faculty voted to remove CHM 3120 from the UF BSChE curriculum.
3) Reduction of 3 credits allowed an 8 semester curriculum.

*An evaluation of AP credits revealed that 82% of student that graduated from the Chemical Engineering major in spring 2018 had at least one AP Humanities credit applied toward the degree. Removing the CHM 3120 Analytical Chemistry, 3 credits, from the BSChE curriculum reduces the total required credits to 131 and the number of required semesters to eight.

Impact on Enrollment, Retention, Graduation Currently enrolled students will have to change their catalog year to be considered for the reduced credit BSChE degree. These students will have to meet all of the requirements for the new catalog years.
Assessment Data Review No changes.
Academic Learning Compact and Academic Assessment Plan No impact.

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.

Plan of Study Grid

	Semester One	**Credits**
ABE 2062 or BSC 2010	Biology for Engineers or Integrated Principles of Biology 1	3
Select one:		3
CHM 2045	General Chemistry 1 (**Critical Tracking**; State Core Gen Ed Physical Sciences) or	
CHM 2095	Chemistry for Engineers 1 (**Critical Tracking**; State Core Gen Ed Physical Sciences)	
CHM 2045L	General Chemistry 1 Laboratory (Gen Ed Physical Sciences)	1
IUF 1000	What is the Good Life (Gen Ed Humanities)	3
MAC 2311	Analytic Geometry and Calculus 1 (**Critical Tracking**; State Core Gen Ed Mathematics)	4
	State Core Gen Ed Humanities [2]	3
	Credits	174
	Semester Two	
Select one:		3
CHM 2046	General Chemistry 2 (**Critical Tracking**; State Core Gen Ed Biological and Physical Sciences) or	
CHM 2096	Chemistry for Engineers 2 (**Critical Tracking**; State Core Gen Ed Biological and Physical Sciences)	
CHM 2046L	General Chemistry 2 Laboratory (Gen Ed Physical Sciences)	1
ENC 1101	Expository and Argumentative Writing (State Core Gen Ed Composition)	3
MAC 2312	Analytic Geometry and Calculus 2 (**Critical Tracking**; Gen Ed Mathematics)	4
PHY 2048	Physics with Calculus 1 (**Critical Tracking**; Gen Ed Physical Sciences)	3
PHY 2048L	Laboratory for Physics with Calculus 1 (Gen Ed Physical Sciences)	1
	State Core Gen Ed Social and Behavioral Sciences [2]	3
	Credits	185
	Semester Three	
ECH 3023	Material and Energy Balances [1]	4
MAC 2313	Analytic Geometry and Calculus 3 (**Critical Tracking**)	4
MAP 2302	Elementary Differential Equations (**Critical Tracking**)	3

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PHY 2049	Physics with Calculus 2 (**Critical Tracking**; Gen Ed Physical Sciences)	3
PHY 2049L	Laboratory for Physics with Calculus 2 (Gen Ed Physical Sciences)	1
ECH 4934	Professional Seminar	1
	Credits	16~~5~~

Semester Four

CHM 4411 or PHY 3513	Physical Chemistry: Thermodynamics and Kinetics [5] or Thermal Physics 1	3-4
COT 3502	Computer Model Formulation [1]	4
ECH 3264	Elementary Transport Phenomena [1]	3
~~ECH 4934~~	~~Professional Seminar~~	~~1~~
STA 3032	Engineering Statistics	3
	Technical elective	3
	Credits	16~~4 15~~

Semester Five

CHM 2210	Organic Chemistry 1	3
ENC 3246	Professional Communication for Engineers (Gen Ed Composition)	3
ECH 3101	Process Thermodynamics [1]	3
ECH 3203	Fluid and Solid Operations [1]	3
ECH 3223	Energy Transfer Operations [1]	3
~~State Core Gen Ed Humanities [2]~~		~~3~~
~~State Core Gen Ed Social and Behavioral Sciences [2]~~		~~3~~
	Credits	15~~2~~

Semester Six

CHM 2211 & 2211L	Organic Chemistry 2 and Organic Chemistry Laboratory	5
ECH 4123	Phase and Chemical Equilibria	3
ECH 4224L	Fluid and Energy Transfer Operations Laboratory [3]	2
ECH 4403	Separation and Mass Transfer Operations	3
ECH 4714	Chemical Process Safety	3
~~ECH 3101~~	~~Process Thermodynamics [1]~~	~~3~~
~~ECH 3203~~	~~Fluid and Solid Operations [1]~~	~~3~~
~~ECH 3223~~	~~Energy Transfer Operations [1]~~	~~3~~
	Credits	16~~4~~

Semester Seven

~~Gen Ed Social and Behavioral Sciences [2]~~	~~3~~
~~Technical elective~~	~~3~~
~~Credits~~	~~17~~

Semester ~~Eight~~Seven

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CGN 3710 or EEL 3003	Experimentation and Instrumentation in Civil Engineering or Elements of Electrical Engineering	3
ECH 4404L	Separation and Mass Transfer Operations Laboratory	2
ECH 4504	Chemical Kinetics and Reactor Design	4
ECH 4604	Process Economics and Optimization	3
ECH 4824	Materials of Chemical Engineering	2
Technical elective		3
	Credits	17
	Semester ~~Nine~~Eight	
~~CHM 3120~~	~~Introduction to Analytical Chemistry~~	~~3~~
ECH 4323 & 4323L	Process Control Theory and Chemical Engineering Laboratory 5	4
ECH 4644	Process Design [4]	3
Chemical engineering technical elective		3
Technical elective		3
Gen Ed Social and Behavioral Sciences [2]		3
	Credits	16
	Total Credits	13~~14~~

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[1] Minimum grade of C required.

[2] Students are also expected to complete the general education international (GE-N) and diversity (GE-D) requirements. This is often done concurrently with another general education requirement (typically, GE-C, H or S).

[3] Register for ECH 4224L immediately following completion of ECH 3101, ECH 3203 and ECH 3223.

[4] The Integrated Product and Process Design program (ECH 4912 and ECH 4913) requires six credits of coursework and is offered as a sequence of two three-credit courses during fall and spring of the senior year. These two courses are pre-approved substitutes for three credits of technical electives and for ECH 4644.

[5] If the Physical Chemistry Topics 3 credit requirement is satisfied by a 4 credit class, the additional credit satisfies 1 credit of the Technical elective requirement.

Most students will have credit for research or industry experiential education during the previous summer.

Notification of BSCHE Curriculum Change

Date: 10/29/18

To: Dr. Alex Angerhofer
Associate Chair, Chemistry

From: Cynthia Sain
Academic Advisor

Re: CHM 3120 Analytical Chemistry no longer a requirement

In a phone call on 10/29/18, Dr. Angerhofer was notified that BSChE students would no longer be required to take CHM 3120 Analytical Chemistry. The students retain the option to take CHM 3120 as a Technical Elective.

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OVERVIEW OF PROPOSED CHANGES IN THE CHEMICAL ENGINEERING UNDERGRADUATE PROGRAM

There are two interconnected proposed changes:

1. Remove CHM 3120 Analytical Chemistry, 3 credits, from the BSChE curriculum

The removal of Analytical Chemistry makes possible the switch to an eight semester program.

   a. An evaluation of our top 10 peer institutions revealed no other Chemical Engineering program requires Analytical Chemistry.
   b. Removal of 3 credits will reduce the BSChE curriculum to 131 credits total.

2. Reduce the undergraduate BSChE Model Semester Plan to 8 semesters

The Chemical Engineering faculty voted to reduce the undergraduate Bachelor of Science degree from a nine semester program to eight semesters.

   a. The summer semester was removed.
   b. Remaining credits fit into eight semesters with only one 18 credit term
      a. An evaluation of AP credits revealed that 82% of student that graduated from the Chemical Engineering major in spring 2018 had at least one AP Humanities credit applied toward the degree.

Removing the CHM 3120 Analytical Chemistry, 3 credits, from the BSChE curriculum reduces the total required credits to 131 and the number of required semesters to eight.

Name: **UF ID:** **Date:**

Email Address:

Bachelor of Science in Chemical Engineering Curriculum Plan (FTIC: F15 or Later, State Core)

More course information is available at http://registrar.ufl.edu/catalog

	Course	Cr	Course Title	Term to be taken	Comments
Suggested Semester 1					
	MAC2311	*4*	*Analytic Geometry and Calculus 1, State Core GE-M**		
	CHM2045 or CHM2095	*3*	General Chemistry 1 *or* Chemistry for Engineers 1, *State Core GE-P***		
	CHM2045L	1	General Chemistry Laboratory *GE-P*		
	ABE2062	3	ABE 2062 Biology for Engineers, F *(BSC 2010 equivalent)*		Pre-health substitute BSC 2010/L & 2011/L
	IUF1000	3	What is the Good Life? *GE-H†*		*Swap with writing or other GE course (sem 2)*
	GenEd-HS	3	Humanities *State Core GE-H†*		
Term Credits		*17*			
Suggested Semester 2					
	MAC2312	*4*	*Analytic Geometry and Calculus 2 GE-M**		
	CHM2046 or CHM2096	*3*	*General Chemistry and Qualitative Analysis or* Chemistry for Engineers 1, *State Core GE-B/P***		
	CHM2046L	1	General Chemistry & Qualitative Analysis Lab *GE-P*		
	PHY2048	*3*	*Physics with Calculus 1 GE-P***		
	PHY2048L	1	Laboratory for PHY2048 *GE-P*		
	ENC1101	3	Expository and Argumentative Writing *State Core GE-C**		*6K words or GE-H or S&B*
	GenEd-HS	3	Social & Behavioral Sciences *State Core GE-S†*		
Term Credits		*18*			
Suggested Semester 3					
1	***ECH3023***	***4***	***Material and Energy Balances - F, S †***		*pre-req for ECH 3264/COT 3502*
	MAC2313	*4*	*Analytic Geometry and Calculus 3**		*pre-req for ECH 3264/COT 3502*
	MAP 2302	*3*	*Elementary Differential Equations***		*pre-req for ECH 3264/COT 3502*
	PHY2049	*3*	*Physics with Calculus 2 GE-P***		*pre-req for ECH 3264/COT 3502*
	PHY2049L	1	Laboratory for PHY2049		*pre-req for ECH 3264/COT 3502*
	ECH4934	1	Chemical Engineering Professional Seminar- *F, S*		
Term Credits		*16*			
Suggested Semester 4					
2	***COT3502***	***4***	***Computer Model Formulation - F, S†***		*pre-req for critical path 3*
2	***ECH3264***	***3***	***Elementary Transport Phenomena- F, S†***		*pre-req for critical path 3*
	STA3032	3	Engineering Statistics***		*pre-req for ECH 4714L*
	CHM4411/PHY3311	4 or 3	Physical Chemistry or Thermal Physics		*pre-req for ECH 3101 by _____*
	TechEl	2 or 3	Technical Elective		
Term Credits		*16*			

** Pre-professional Critical Tracking course, minimum overall gpa 2.5 required (note: a C+ = 2.33), all attempts calculated; individual class minimum grade: C.*

*** Pre-professional Critical Tracking course, minimum overall gpa 2.5 required (note: a C+ = 2.33); individual class minimum grade: C.*

**** Previous dual enrollment STA course, or AP exam score of 4 or 5, may substitute by petition.*

† A minimum grade of "C" is required to pass this class.

	Course	Cr	Course Title	Term To Be Taken	Comments
Suggested Semester 5					
3	***ECH3101***	***3***	***Process Thermodynamics - F, S†***		*pre-req for critical path 4 & ECH 4224L*
3	***ECH3203***	***3***	***Fluid and Solid Operations - F, S†***		*pre-req for critical path 4 & ECH 4224L*
3	***ECH3223***	***3***	***Energy Transfer Operations - F , S†***		*pre-req for critical path 4 & ECH 4224L*
	CHM2210	3	Organic Chemistry 1		
	ENC 3246	3	Professional Communication for Engineers *GE-C†*		
Term Credits		*15*			
Suggested Semester 6					
4	**ECH4123**	**3**	**Phase and Chemical Equilibria - *S, SS – C***		*Pre-req for critical path 5*
4 or 5	**ECH4403**	**3**	**Separation and Mass Transfer Operations – *F, S***		*Pre-req or Co-req for cp 5 & Pre-req for ECH 4404L*
	ECH4224L	2	Fluid and Energy Transfer Operations Lab – *F, S♦*		*6K words†*
	ECH4714	3	Chemical Process Safety – *F, S†*		*Co-req or pre-req for ECH 4224L*
	CHM2211	3	Organic Chemistry 2		
	CHM2211L	2	Organic Chemistry 2 Lab		
Term Credits		*16*			
Summer internship					
Suggested Semester 7					
5	***ECH4504***	***4***	***Chemical Kinetics and Reactor Design – F***		*pre-req for critical path 6*
5	***ECH4604***	***3***	***Process Costing and Economic Analysis – F***		*pre-req for critical path 6*
5	***ECH4824***	***2***	***Materials of Chemical Engineering – F***		*pre-req for critical path 6*
	ECH4404L	2	Separation and Mass Transfer Operations Lab – *F, S♦*		*6K words†*
	TechEl	3	Technical Elective		
	EEL 3003	3	Intro to Electrical Engineering – *F, S, SS-C* (or CGN 3710 Experiment & Instrumentation in Civil Engineering – *F, S, SS-C*)		
Term Credits		*17*			
Suggested Semester 8					
	ECH4323	*3*	*Process Control Theory – S,* SS-C		
	ECH4323L	*1*	*Process Control Laboratory – S,* SS-C		
6	***ECH4644***	***3***	***Process Design – S***		
	ChETechEl	3	Chemical Engineering Technical Elective		
	TechEl	3	Technical Elective		
	GenEd-HS	3	Social & Behavioral Sciences *GE-S†*		
			FE Exam		
Term Credits		*16*			
BSCHE Credits		*131*			

† A minimum grade of "C" is required.

♦ A minimum grade of "C" is required to earn General Education Writing credit.

**** Petition to substitute a chemistry based course in Chemical Engineering, Chemistry, or Biochemistry.

Take *Critical Path* courses 1-6 in sequence (1-3 minimum grade C within 2 attempts, a drop or withdrawal is an attempt). No exceptions.

Technical Electives (TechEl): 3000+ level courses in science, mathematics, or engineering with significant *technical* content.

Chemical Engineering Technical Elective (ChETechEl): At least 3 cr. of ECH 3XXX+ course, includes BME courses offered through CHE and ECH graduate courses. May include up to 3 credits of ChE non-course work (ECH 4905, ECH 4948, ECH 4949, EGN 4912). Courses must be offered through the ChE Department.

Pre-Health Students: Find specialized advising and workshop information at www.advising.ufl.edu