

# CHEMICAL ENGINEERING - BIOLOGY TRACK (SIEP TRACK A) - CLASS OF 2020

## Freshman Year Fall Semester

Course Code	Description	Cr	
CHM 101	General Chemistry Lec I (A1)	3	
CHM 102	General Chemistry I Lab	1	
EGR 105	Foundations of Engineering I (A4)	1	
MTH 141	Intro Calculus with Analytical Geometry (A1, B3)	4	
PHY 203	Elementary Physics I (A1)	3	
PHY 273	Elementary Physics Lab I (A1)	1	
SPA 205	Spanish Language & Style I	3	
		<b>16</b>	

## Freshman Year Spring Semester

Course Code	Description	Cr	
BIO 101	Principles of Biology I (A1)	3	
BIO 103	Principles of Biology I Lab (A1)	1	
CHM 112	General Chemistry II Lec	3	
CHM 114	General Chemistry II Lab	1	
EGR 106	Foundations of Engineering II (A4)	2	
MTH 142	Intermed Calc with Analytic Geom (B3)	4	
SPA 206	Spanish Language & Style II	3	
		<b>17</b>	

## Sophomore Year Fall Semester

Course Code	Description	Cr	
CHE 212	Chemical Process Calculations	3	
CHM227	Organic Chemistry Lec I	3	
ECN 201	Principles of Microeconomics (A2)	3	
MTH 243	Calculus for Funcs. of Sev. Vars. (A1, B3)	3	
	General Education Outcome(s)*	3	
SPA 325	Introduction to Literary Genres	3	
		<b>18</b>	

## Sophomore Year Spring Semester

Course Code	Description	Cr	
CMB 311 <i>or</i> BIO 341	Intro Biochemistry <i>or</i> Cell Biology	3	
CHE 232	Materials Science and Engineering	3	
CHE 272	Intro to Chemical Engineering Calculations	3	
CHE 313	Chemical Engineering Thermodynamics I	3	
MTH 244	Differential Equations	3	
SPA 3XX/4XX <i>or</i> POR XXX		3	
		<b>18</b>	

## Junior Year Fall Semester

Course Code	Description	Cr	
CMB 311 <i>or</i> BIO 341	Intro Biochemistry <i>or</i> Cell Biology	3	
CHE 314	Chemical Engineering Thermodynamics II	3	
CHE 347	Transfer Operations I	3	
PHY 204	Elementary Physics II (A1)	3	
PHY 274	Elementary Physics Lab II (A1)	1	
	General Education Outcome(s)*	3	
SPA 3XX/4XX <i>or</i> POR XXX		3	
		<b>19</b>	

## Junior Year Spring Semester

Course Code	Description	Cr	
CHE 348	Transfer Operations II	3	
CHE 364	Chemical Kinetics and Reactor Design	3	
CMB 211	Intro to Microbiology	4	
	Approved Track Elective	3	
	General Education Outcome(s)*	3	
SPA 321	Spanish for Business and Technology	3	
		<b>19</b>	

## Semester Abroad

Course Code	Description	Cr	
SPA/EGR 412	Technical Spanish/Professional Elective	3	
	Engineering Course	3	
	General Education Outcome(s)*	3	
	General Education Outcome(s)*	3	
SPA 3XX/4XX	(4XX if not covered before)	3	
		<b>15</b>	

## International Internship Semester

Course Code	Description	Cr	
SPA 316-317	Language Study Abroad	3-6	
		<b>3-6</b>	

## Senior Year Fall Semester

Course Code	Description	Cr	
CHE 345	Chemical Engineering Lab I	2	
CHE 425	Process Dynamics and Control	3	
CHE 428	Professional Experience	1	
CHE 449	Transfer Operations III	3	
CHE 451	Plant Design and Economics I	3	
	General Education Outcome(s)	3	
SPA 4XX		3	
		<b>18</b>	

## Senior Year Spring Semester

Course Code	Description	Cr	
CHE 346	Chemical Engineering Lab II	2	
CHE 452	Plant Design and Economics II	3	
	Approved Mathematics Elective****	3	
	Approved Professional Elective***	3	
	Approved Track Elective*	3-4	
SPA 4XX		3	
		<b>17-18</b>	

**Specified Math, Science, and Engineering Courses**

Introductory Engineering					
Sem	Course	Cr	Grade	QP	Note
	EGR 105 (A4)	1			
	EGR 106 (A4)	2			
		3			

Mathematics					
Sem	Course	Cr	Grade	QP	Note
	MTH 141 (A1 & B3)	4			
	MTH 142 (B3)	4			
	MTH 243 (A1 & B3)	3			
	MTH 244	3			
		14			

Natural Sciences					
Sem	Course	Cr	Grade	QP	Note
	BIO 101 (A1)	3			
	BIO 103 (A1)	1			
	BIO 341	3			
	CHM 101 (A1)	3			
	CHM 102	1			
	CHM 112	3			
	CHM 114	1			
	CHM 227	3			
	CMB 211	4			
	CMB 311	3			
	PHY 203 (A1)	3			
	PHY 273 (A1)	1			
	PHY 204 (A1)	3			
	PHY 274 (A1)	1			
		33			

Engineering Science and Design (Major)					
Sem	Course	Cr	Grade	QP	Note
	CHE 212	3			
	CHE 232 (332)	3			
	CHE 272	3			
	CHE 313	3			
	CHE 314	3			
	CHE 345 [capstone]	2			
	CHE 346 [capstone]	2			
	CHE 347	3			
	CHE 348	3			
	CHE 364 (464)	3			
	CHE 425	3			
	CHE 428 (328)	1			
	CHE 449 (349)	3			
	CHE 451 (351) [capstone]	3			
	CHE 452 (352) [capstone]	3			
		41			

**Track Elective					
Sem	Course	Cr	Grade	QP	Note
		3			
		3-4			

***Professional Elective					
Sem	Course	Cr	Grade	QP	Note
		3			
		3			

****Mathematics Elective					
Sem	Course	Cr	Grade	QP	Note
		3			

\* **General Education Outcomes:** at least 40 credits must be completed. (A1-D1) must be met by at least three credits. A single course may satisfy one or two outcomes, and at least one course must be a "Grand Challenge". No more than twelve credits can be from the same course code except HPR. General education courses may also be used to meet requirements of your major(s) or minor(s) when appropriate.

\*\***Track Elective:** CHE 466, 548, 550, 574; BPS 503, 542; PHY 545

\*\*\***Professional elective:** Half of the Professional Electives are to be 400-level or higher CHE courses taken at URI. In addition EGR 325 and EGR 326 are permissible approved professional electives. The remaining courses are to be 300-level or higher 400-level or higher in engineering (BME, CHE, CPE, CVE, ELE, ISE, MCE, OCE), or 400-level or higher in MTH. *All professional and track electives require prior approval by CHE advisor.*

\*\*\*\***Mathematics Elective:** MTH 215 or any 300-, 400-, or 500-level MTH course *except* MTH 381

Spanish Language Requirements (min. 30 credits)				
Sem	Course	Cr	Gr	QP
	SPA ____	3		
	SPA ____	3		
	SPA 316	3		
	SPA 317	3		
	SPA 321	3		
	SPA 325	3		
	SPA 412	3		
	SPA 4 ____	3		
	SPA 4 ____	3		
	SPA 4 ____	3		

SPA 101, 102, 391, 392, and 393 cannot be counted towards the Spanish major and SPA 321 may only count toward the major for students in the IEP or IBP.

SPA 412 and 421 will not fulfill any of the 9 credits required that are above the 400-level, but may count toward any of the remaining credits required for the major.

LIN 202 and 220 may be used towards major requirements

The IEP requires SPA 316, 317, 321, 325, 412 and (3) 400-level Spanish Literature courses. IEP students that are beginning Spanish at the 200-level may use up to 6 credits of Portuguese toward the major, as long as all other requirements are met.

Students may opt to take summer or Jterm classes to advance in their Spanish skills at a faster pace

General Education Outcome Audit		
	Course	Credit
<b>Knowledge</b>		
A1. STEM	CHM & PHY (see above)	11
A2. Social & Behavioral Sciences	ECN 201	3
A3. Humanities	SPA 205/206 (suggested)	3
A4. Arts & Design	EGR 105 & 106	3
<b>Competences</b>		
B1. Write Effectively		
B2. Communicate Effectively		
B3. Mathematical, statistical, or computational strategies	MTH (see above)	11
B4. Information literacy		
<b>Responsibilities</b>		
C1. Civic knowledge & responsibilities		
C2. Global responsibilities	SPA 205/206 (suggested)	3
C3. Diversity and Inclusion		
<b>Inegrate &amp; Apply</b>		
D1. Ability to synthesize	CHE 452	3
<b>Grand Challenge</b>		
G. Check that at least one course of your 40 credits is an approved		
Total General Education Outcome Credits		40