

CHEMICAL ENGINEERING - PHARM TRACK (FIEP) - 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 w/ Analytical Geo (A1, B3)	4	
PHY 203	Elementary Physics I (A1)	3	
PHY 273	Elementary Physics Lab I (A1)	1	
FRN XXX		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	
FRN XXX		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	
CMB 211	Intro Microbiology	4	
FRN XXX		3	
		<b>19</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	
FRN 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	
BPS 301	Dosage Forms I	2	
BPS 303	Dosage Forms II	2	
BPS 305	Dosage Forms III	2	
CHE 314	Chemical Engineering Thermodynamics II	3	
CHE 347	Transfer Operations I	3	
FRN XXX		3	
		<b>18</b>	

**Junior Year Spring Semester**

Course Code	Description	Cr	
BPS 425	Current Good Manufacturing Processes	3	
CHE 348	Transfer Operations II	3	
CHE 364	Chemical Kinetics and Reactor Design	3	
PHY 204	Elementary Physics II (A1)	3	
PHY 274	Elementary Physics Lab II (A1)	1	
	General Education Outcome(s)*	3	
FRN XXX		3	
		<b>19</b>	

**Semester Abroad**

Course Code	Description	Cr	
	Engineering Professional Elective	3	
	Engineering Course	3	
	General Education Outcome(s)*	3	
	General Education Outcome(s)*	3	
FRN 3XX/4XX		3	
		<b>15</b>	

**International Internship Semester**

Course Code	Description	Cr	
FRN 315-316	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	
FRN 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 Professional Elective**	3	
	Approved Track Elective***	3-4	
	General Education Outcome(s)*	3	
FRN 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 349	3			
	CHE 364 (464)	3			
	CHE 425	3			
	CHE 428 (328)	1			
	CHE 451 (351) [capstone]	3			
	CHE 452 (352) [capstone]	3			
		41			

**Professional Elective					
Sem	Course	Cr	Grade	QP	Note
		3			
		3			
		6			

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

Pharmacy					
Sem	Course	Cr	Grade	QP	Note
	BPS 301	2			
	BPS 303	2			
	BPS 305	2			
	BPS 425	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.

\*\***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

\*\*\***Track Elective:** CHE 466, 548, 550, 574; BPS 503, 542; PHY 430, 545 . *All professional and track electives require prior approval by CHE advisor.*

French Language Requirements				
Sem	Course	Cr	Gr	QP
	FRN ____	3		
	FRN ____	3		
	FRN ____	3		
	FRN ____	3		
	FRN ____	3		
	FRN ____	3		
	FRN ____	3		
	FRN 412, 473, or 474	3		
	FRN 4__	3		
FRN 101, 102, 391, 392, 393 will not count toward the major.				

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	FRN 1XX/2XX (suggested)	3
A4. Arts & Design	EGR 105 & 106	3
<b>Competences</b>		
B1. Write Effectively		
B2. Communicate Effectively		
computational strategies	MTH (see above)	11
B4. Information literacy		
<b>Responsibilities</b>		
C1. Civic knowledge & responsibilities		
C2. Global responsibilities	FRN 1XX/2XX (suggested)	3
C3. Diversity and Inclusion		
<b>Inegrate &amp; Apply</b>		
D1. Ability to synthesize	CHE 452	3
<b>Grand Challenge</b>		
of your 40 credits is an approved		
Total General Education Outcome Credits		40