CHEMICAL ENGINEERING: BIOMOLECULAR

2022 – 2023 Curriculum

***Fall Only** ****Spring Only**

Student: _____
Date: _____
CUID: _____
Advisor: _____

FRESHMAN YEAR							
Term Info		**Cr**	**Course**	**Term Info**		**Cr**	**Course**
		4	CH 1010 & 1011 General Chemistry[1]			4	CH 1020 & 1021 General Chemistry
		3	ENGL 1030 & 1031 Composition and Rhetoric[1]			3	CHE 1300 Intro to Chemical Engineering[1]
		3	ENGR 1020 & 1021 Engineering Disciplines and Skills[1,2]			4	MATH 1080 Calculus of One Variable II[1]
		4	MATH 1060 Calculus of One Variable I[1,3]			3	PHYS 1220 Physics with Calculus I[1]
		3	Arts & Humanities *OR* Social Science Req[4]			3	General Education Req[4]
		17				**17**	
SOPHOMORE YEAR							
Term Info		**Cr**	**Course**	**Term Info**		**Cr**	**Course**
		4	BIOL 1100 & 1101 Principles of Biology I[5]			3	CH 2240 Organic Chemistry
		3	CH 2230 Organic Chemistry			1	CH 2290 Organic Chemistry Lab.[6]
		4	CHE 2110 & 2111 Mass and Energy Balances			3	CHE 2200 Chemical Engineering Thermodynamics I
		4	MATH 2060 Calculus of Several Variables			4	CHE 2300 & 2301 Fluids/Heat Transfer
		3	General Education Req[4]			4	MATH 2080 Int. to Ordinary Differential Eqn.
		18				**15**	
JUNIOR YEAR							
Term Info		**Cr**	**Course**	**Term Info**		**Cr**	**Course**
		3	BMOL 4250 Biomolecular Engineering			3	BIOE 3020 & 3021 Biomaterials
		3	CHE 3210 Chemical Engineering Thermodynamics II			3	MICR 4130 Industrial Microbiology
		4	CHE 3300 & 3301 Mass Transfer and Separation Pro.			3	CHE 3070 & 3071 Unit Operations Lab I
		3	PHYS 2210 Physics with Calculus II			3	CHE 3190 Engineering Materials
		3	STAT 4110 Statistical Methods for Process Dev. & Con.			3	General Education Requirement[4]
		3	Biochemistry Requirement[7]				
		19				**15**	
SENIOR YEAR							
Term Info		**Cr**	**Course**	**Term Info**		**Cr**	**Course**
		3	BCHM 4310 Physical Approach to Biochemistry			3	BMOL 4290 Bioprocess Engineering
		3	CHE 4070 & 4071 Unit Operations Lab II			3	CHE 3530 Process Dynamics and Control
		3	CHE 4310 Chemical Process Design I			3	CHE 4330 & 4331 Process Design II
		3	CHE 4430 Safety, Environmental and Prof. Practice I			1	CHE 4440 Safety, Environmental and Prof. Practice II
		3	CHE 4500 Chemical Reaction Engineering			3	Arts & Humanities *OR* Social Science Requirement[4,8]
						3	Engineering Req[9]
		15				**15**	
							131 Total Semester Hours

GENERAL EDUCATION REQUIREMENTS					
Literature	**Non-Literature**	**Social Science** (SC REACH Act, if required)	**Social Science** (from a different department)	**Global Challenges** (ENGR 1020 at Clemson or another course)	**Global Challenges -3000 or 4000 level Or if already met with Tech Requirement, then need Dept Arts & Humanities/Social Sci Req**

CHANGE OF MAJOR REQUIREMENTS: C grade or higher in each class and a 2.0 Clemson cumulative GPA					
CH 1010	**ENGL 1030**	**ENGR 1020**	**CHE 1300**	**MATH 1060**	**PHYS 1220**

Students should always refer to the Academic Catalog for course descriptions and for course pre-requisites, corequisites, and concurrent enrollment requirements. Academic Catalog can be found here: https://www.clemson.edu/registrar/academic-catalogs/. Advisors will assist students in scheduling courses to fulfill the requirements of the degree program; nevertheless, it is the responsibility of the student to fulfill the relevant requirements of the degree.

Footnotes

[1] Must be passed with a grade of *C* or better.
[2] The combination of ENGR 1050 and ENGR 1060 or the combination of ENGR 1510 and ENGR 1520 may be substituted for ENGR 1020.
[3] Depending on a student's Clemson Mathematics Placement Test score, MATH 1040 and MATH 1070 may be substituted for MATH 1060; or the student may be required to take MATH 1050 before enrolling in MATH 1060.
[4] See General Education Requirements. Three General Education credits must also satisfy the South Carolina REACH Act R-equirement. See the South Carolina REACH Act Requirement in the Academic Regulations section.
[5] BIOL 1030, BIOL 1040, BIOL 1050, and BIOL 1060 may be substituted for BIOL 1100.
[6] CH 2270 and CH 2280 may be substituted for CH 2290.
[7] Select from BCHM 3010, BCHM 3050, BCHM 4230 or CH 3600.
[8] Select a three-credit 3000- or 4000-level course that satisfies the Global Challenges General Education Requirement or select any three-credit course that satisfies the Arts and Humanities or Social Science General Education Requirement. See Policy on Humanities and Social Sciences for Engineering Curricula.
[9] Select from BE 4280, BE 4350, BIOE 4400, BIOE 4490, BIOE 4760, BMOL 4030, BMOL 4270, or CHE 4010.

NOTES:

1. No student may exceed a maximum of two attempts, including a *W*, to complete successfully any BMOL or CHE course.
2. In addition to institutional requirements, candidates for a BS degree in Chemical Engineering are required to have a cumulative grade-point average of 2.00 or higher in all engineering courses taken at Clemson. Undergraduate and graduate courses taught in the following rubrics are used in the calculation of a student's engineering GPA (eGPA): AMFG, AUE, BE, BIOE, BMOL, CE, CES, CHE, CME, ECAS, ECE, EES, EG, EM, ENGR, ESED, IE, ME, and MSE. All attempts of these courses with grades of *A, B, C, D, F,* and *I* are included in the calculation. Grades of *CE, CR, FGD, FGF, NP, P, SCD, SCN, SCP, TR,* and *W* are NOT included in the calculation.
3. Depending on a student's math placement, they may be invited to take part in the General Engineering Learning Community where they complete the following courses: ENGR 1000, ENGR 1010, ENGR 1100, ENGR 1110, ENGR 1510, and ENGR 1520. The combination of ENGR 1510 and ENGR 1520 may be substituted for ENGR 1020.
4. A transfer course may not be used to satisfy the General Education Global Challenges Requirement. While a transfer course may fulfill other degree requirements, students must enroll in a Clemson course(s) on the Global Challenges list to fulfill the Global Challenges Requirement.