

# BA: Chemistry — Biotechnology Option (122 S.H. required to complete the degree)

Name: \_\_\_\_\_ Adviser: \_\_\_\_\_



## General Education Requirements (44 S.H.)

<b>COMMUNICATION SKILLS (3 S.H.)</b> Choose one of the following: COM 160 Public Speaking, COM 161 Decision Making in Groups, COM 162 Interpersonal Communication <b>or</b> COM 163 Introduction to Communication Skills		
COM:	3	
<b>WRITING INTENSIVE (W)</b> All students must complete at least one writing intensive course. W courses can be found in several disciplines. The credits will be counted in the discipline associated with the course. <i>NOTE: WRT101 does not satisfy the writing intensive requirement.</i>		
Course:	Y/N	
<b>FOREIGN LANGUAGE</b> All chemistry majors must complete a foreign language requirement. This may be done by completing a language at an elementary II level or above. Students who have completed three years of language in high school with at least a C average have satisfied this requirement. (For more info, click the link above.)		
Foreign Language Requirement Met?	Y / N	
<b>HUMANITIES (15 S.H.)</b> Humanities courses can be found in Art, Communication, English, Foreign Languages, History, Humanistic Studies, Music, Philosophy, Theatre and Writing. Students may only use one studio course to satisfy this requirement. You must complete courses in at least 3 areas. <i>NOTE: You must complete the foreign language requirement (Elementary II or higher) before counting Elementary I foreign language courses as Humanities credit.</i>		
Elective:	3	
Elective:	3	
Elective:	3	
Elective:	3	
Elective:	3	
<b>SOCIAL AND BEHAVIORAL SCIENCES (12 S.H.)</b> Courses that satisfy this requirement can be found in Social Sciences (Anthropology, Economics, Political Science, Social Sciences, and Sociology), Non-Western Cultures, and Psychology. <i>You must select courses from at least 2 of the 3 main areas: Social Sciences, Psychology and Non-Western Cultures.</i>		
Elective:	3	
Elective:	3	
Elective:	3	
Elective:	3	
<b>NATURAL SCIENCES, MATHEMATICS &amp; COMPUTER SCIENCE (12 S.H.)*</b> Students must complete the courses specified in this category.		
CHE 110 General Chemistry I	4	
CHE 111 General Chemistry II	4	
MAT 181 Calculus I (MAT 170 and 171 sequence will also satisfy this requirement)	4	
<b>HEALTH PROMOTION AND EXERCISE SCIENCES (2 S.H.)</b>		
HPX 177 Fitness for Life — Lecture	1	
HPX 177 Fitness for Life — Activity	1	

\*Chemistry majors are required to take the math and Science courses specified above for the general education requirements. This means that your general education semester hour total is 44 instead of the average 42.

## Major Requirements (71.5 — 75.5 S.H.)

BIO 001 Intro to Biotechnology	0	
BIO103 General Biology I	4	
BIO104 General Biology II	4	
BIO 211 Genetics	4	
BIO 216 General Microbiology	4	
BIO 220 Immunology	4	
BIO 300 Cell Biology	4	
BIO 305 Biotechnology Seminar	.5	
BIO 411 Methods/Cell, Tissue, Organ & Embryo Culture	2	
BIO/CHE 440 Molecular Biology	3	
CHE/ENV 205 Analytic Chemistry Lecture	3	
CHE/ENV 206 Analytic Chemistry Lab	2	
CHE 210 Organic Chemistry I	4	
CHE 211 Organic Chemistry II	4	
CHE 305 Biophysical Chemistry	3	
CHE 400 Instrumental Analysis: Lecture	3	
CHE 401 Instrumental Analysis: Lab	2	
CHE 421 Biochemistry Lecture I	3	
CHE431 Biochemistry Lab	2	
MAT182 Calculus II	4	
PHY110 General Physics I	4	
PHY111 General Physics II	4	
<b>BIO/CHE ELECTIVES</b> (chosen with department approval, 3 — 8 S.H.)		
Approved Elective:	3 — 4	
Approved Elective:	3 — 4	
<b>FREE ELECTIVES (2.5—6.5 S.H.)</b>		
Elective:		
Elective:		
Elective:		

**Free electives offer an opportunity to complete a minor, study a second language, study abroad, or participate in an internship. Make a plan.**

### NOTES

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## Four-Year Plan This is a sample sequence of courses. Other combinations are possible.



Pre-requisites are in parentheses; see catalog for details.

Class standing by credit: Freshman: 0-29 credits; Sophomore: 30-59 credits; Junior: 60-89 credits; Senior: 90+ credits

FIRST YEAR (30 S.H.)	SEMESTER 1 (15 S.H.)			SEMESTER 2 (15 S.H.)		
	BIO 001 Intro to Biotechnology	0		CHE111 General Chemistry II (CHE 110)	4	
	CHE 110 General Chemistry I (Placement test or $\geq$ C in CHE 100)	4		BIO104 General Biology II ( $\geq$ C in BIO 103)	4	
	BIO 103 General Biology I (MAT and WRT 098, or placement test)	4		MAT182 Calculus 182 (MAT181)	4	
	MAT 181 Calculus I (MAT133 or appropriate placement)	4		Writing Intensive: Humanities	3	
	WRT 101 Composition I: Habit of Writing or Writing Intensive	3				

SECOND YEAR (33 S.H.)	SEMESTER 3 (16 S.H.)			SEMESTER 4 (17 S.H.)		
	CHEM 210 Organic Chemistry (CHE 110 & 111)	4		CHEM 211 Organic Chemistry (CHE 210)	4	
	BIO 312 Genetics (BIO 103 & 104)	4		BIO 216 Microbiology (BIO 104, CHE 111 or permission of instructor)	4	
	CHE 205 Analytical Chemistry Lecture (CHE 111)	3		Gen Ed: Social & Behavioral Sciences	3	
	CHE 206 Analytical Chemistry Lab (CHE 111)	2		Gen Ed: Social & Behavioral Sciences	3	
	Gen Ed: Communication Skills	3		Gen Ed: Humanities	3	

THIRD YEAR (32 S.H.)	SEMESTER 5 (16 S.H.)			SEMESTER 6 (16 S.H.)		
	PHY 110 General Physics I (MAT 182, PHY 103 with a grade of "C" or better or placement exam)	4		PHY 111 General Physics II (PHY 110)	4	
	CHE 421 Biochemistry Lecture I (CHE 211)	3		CHE 422 Biochemistry Lecture II (CHE 421)	3	
	BIO 321 Immunology (BIO 103, 104 and 1 year of college Chemistry, junior standing)	3		CHE 431 Biochemistry Lab (CHE 205, 206, 211 and 421)	2	
	Gen Ed: Social & Behavioral Sciences	3		BIO/CHE 440 Molecular Biology (junior standing or permission of instructor)	4	
	Gen Ed: Humanities (Foreign Language)	3		Gen Ed: Humanities (Foreign Language)	3	
Complete a degree audit and plan for application for graduation						

FOURTH YEAR (27.5-28.5 S.H.)	SEMESTER 7 (14.5 S.H.)			SEMESTER 8 (13-14 S.H.)		
	BIO 305 Biophysical Chemistry	4		CHE 400 Instrumental Analysis Lecture (CHE 205, 206, 211, 300 and PHY 111)	3	
	BTE Seminar (see adviser)	XXX		CHE 401 Instrumental Analysis Lab (CHE 205, 206, 211, 300 and PHY 111)	2	
	BIO/CHE Elective	3 - 4		BIO 411 Cell Culture Methods	2	
	Gen Ed: Social & Behavioral Sciences	3		BIO/CHE Elective	3 - 4	
	HPX 177 Fitness for Life (Lecture & Activity)	2		Gen Ed: Humanities	3	

The number of Free Electives available will vary based on your initial math, writing, and chemistry and physics placement tests. MAT 100, WRT 101, CHEM 100 and PHY 103, if required, count as elective credit.

Because you have variable options (3 or 4 credit courses) it is important to keep track of your total semester hours to be sure you reach 122 by the end of your 4th year.