

Cleveland State University  
College of Sciences and Health Professions  
Bachelor of Science in Chemistry  
(American Chemical Society Certified Track)

**First Year**

Fall Semester	Credits	Major	Gen Ed	Spring Semester	Credits	Major	Gen Ed
CHM 261/266 General Chemistry I/Lab	4	X	NS	CHM 262/267 General Chemistry II/Lab	4	X	NS
MTH 181 Calculus I	4	X	M/QL	MTH 182 Calculus II	4	X	M/QL
ENG 101 English I	3		W/C	ENG 102 English II	3		W/C
ASC 101 Introduction to University Life	1		INTRO	Arts & Humanities Elective**	3		A&H
Social Science Elective**	3		SS				
<i>Semester Total</i>	15			<i>Semester Total</i>	14		

**Second Year**

Fall Semester	Credits	Major	Gen Ed	Spring Semester	Credits	Major	Gen Ed
CHM 331/336 Organic Chemistry I/Lab	4	X		CHM 332/337 Organic Chemistry II/Lab	4	X	
MTH 281 Multivariable Calculus	4	X		PHY 242 University Physics II (or PHY 244)	5	X	NS
PHY 241 University Physics I (or PHY 243)	5	X	NS	CHM 301 Research Methods in Chemistry	2	X	WAC
General Elective*	3			US Diversity Elective	3		DIV
<i>Semester Total</i>	16			<i>Semester Total</i>	14		

**Third Year**

Fall Semester	Credits	Major	Gen Ed	Spring Semester	Credits	Major	Gen Ed
CHM 321 Physical Chemistry I	3	X		CHM 322 Physical Chemistry II	3	X	
CHM 311 Quantitative Analysis	3	X		CHM 412 Advanced Instrumental Analysis	3	X	
CHM 316 Quantitative Analysis Lab	2	X		CHM 416 Instrumental Analysis Lab	3	X	WAC
CHM 411 Instrumental Analysis	3	X		CHM 431 Advanced Organic Chemistry	2	X	
CHM 426 Physical Chemistry Lab I	3	X	WAC	CHM 427 Physical Chemistry Lab II	3	X	
				CHM Elective (300/400 level)	3	X	
<i>Semester Total</i>	14			<i>Semester Total</i>	17		

**Fourth Year**

Fall Semester	Credits	Major	Gen Ed	Spring Semester	Credits	Major	Gen Ed
CHM 402 Biochemistry I	3	X		CHM 403 Biochemistry II	3	X	
CHM 441 Inorganic Chemistry	3	X		CHM 446 Inorganic Chemistry Lab	2	X	
CHM 471 Faculty Colloquium	1	X		CHM 472 Student Colloquium	1	X	CAP
CHM Elective (300/400 level)	3	X		CHM 489 Senior Research	3	X	
General Elective*	2			African American Experience	3		DIV
Arts & Humanities Elective**	3		A&H	Social Science Elective**	3		SS
<b>Apply for Spring graduation by the middle of this term</b>							
<i>Semester Total</i>	15			<i>Semester Total</i>	15		
<b><i>Degree Total (as listed in above sample): 120 (120 hours minimum required to earn degree)</i></b>							

Assumptions: college-level readiness in MTH & ENG; no Foreign Language Deficiency

**College/ Program Notes:**

The plan above is a suggested guide to ensure that all General Education, College, University, and Major requirements are met within 4 years of study. Students may deviate from the suggested placement of Gen Ed courses, although the M/QL and W/C requirements should be completed during the first year of study.

\*Electives ensure that a student accumulates the minimum credit hour totals needed for graduation. Students must have a **minimum of 120 total credit hours**, of which a **minimum of 42 credit hours** must be upper division (300 or 400-level courses). Depending upon other elective choices made, students may not need as many general electives as indicated above, or may need additional electives.

**University Notes:**

Gen Ed Key:	
INTRO = Introduction to University Life (one course)	SS = Social Sciences (two courses from different departments)**
W/C = Writing/Composition (two courses; C or better required)	A&H = Arts & Humanities (two courses from different departments)**
M/QL = Mathematics/Quantitative Literacy (two courses)	DIV = Social Diversity (two courses; one US Diversity and one African American Experience)
NS = Natural Sciences (two courses, one of which must have a lab)	WAC/SPAC = Writing/Speaking Across the Curriculum (three courses, one in the major; C or better required)
	CAP = Capstone
	** of the four total SS and A&H courses, one must be focused on Africa, Latin America, Asia or the Middle East (ALAAME)

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Cleveland State University  
College of Sciences and Health Professions  
Bachelor of Science in Chemistry  
(Pre-Professional Track)

**First Year**

Fall Semester	Credits	Major	Gen Ed	Spring Semester	Credits	Major	Gen Ed
CHM 261/266 General Chemistry I/Lab	4	X	NS	CHM 262/267 General Chemistry II/Lab	4	X	NS
BIO 200/201 Introductory Biology I/Lab	4	X	NS	BIO 202/203 Introductory Biology II/Lab	4	X	NS
ENG 101 English I	3		W/C	ENG 102 English II	3		W/C
ASC 101 Introduction to University Life	1		INTRO	MTH 181 Calculus I	4	X	M/QL
STA 147 Statistics	3	X	M/QL				
<b>Semester Total</b>	<b>15</b>			<b>Semester Total</b>	<b>15</b>		

**Second Year**

Fall Semester	Credits	Major	Gen Ed	Spring Semester	Credits	Major	Gen Ed
CHM 331/336 Organic Chemistry I/Lab	4	X		CHM 332/337 Organic Chemistry II/Lab	4	X	
Arts & Humanities Elective**	3		A&H	Social Science Elective**	3		SS
PHY 221 College Physics I	5	X	NS	PHY 222 College Physics II	5	X	NS
General elective*	2			CHM 301 Research Methods in Chemistry	2	X	WAC
<b>Semester Total</b>	<b>14</b>			<b>Semester Total</b>	<b>14</b>		

**Third Year**

Fall Semester	Credits	Major	Gen Ed	Spring Semester	Credits	Major	Gen Ed
CHM 320 Survey of Physical Chemistry	3	X		Social Science Elective**	3		SS
CHM 310 Survey Analytical Chemistry	2	X		BIO 310/311 Genetics & Recitation	4	X	
CHM 315 Survey Analytical Chemistry Lab	2	X		CHM 403 Biochemistry II	3	X	
CHM 402 Biochemistry I	3	X		Arts & Humanities Elective**	3		A&H
BIO 308/309 Cell Biology/Lab	4	X		Writing Across the Curriculum Elective	3		WAC
<b>Semester Total</b>	<b>14</b>			<b>Semester Total</b>	<b>16</b>		

**Fourth Year**

Fall Semester	Credits	Major	Gen Ed	Spring Semester	Credits	Major	Gen Ed
CHM 471 Faculty Colloquium	1	X		CHM 472 Student Colloquium	1	X	CAP
BIO 416/417 Microbiology/Lab	5	X		CHM/BIO Elective (300/400 level)	3	X	
CHM/BIO Elective (300/400 level)	3	X		African American Experience Elective	3		DIV
BIO 302/303 Animal Biology/Lab	4	X		US Diversity Elective	3		DIV
CHM/BIO Elective (300/400 level)	3	X		Writing Across the Curriculum Elective	3		WAC
				CHM/BIO Elective (300/400 level)	3	X	
<b>Apply for Spring graduation by the middle of this term</b>							
<b>Semester Total</b>	<b>16</b>			<b>Semester Total</b>	<b>16</b>		
<b>Degree Total (as listed in above sample): 120 (120 hours minimum required to earn degree)</b>							

Assumptions: college-level readiness in MTH & ENG; no Foreign Language Deficiency

**College/ Program Notes:**

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\*Electives ensure that a student accumulates the minimum credit hour totals needed for graduation. Students must have a **minimum of 120 total credit hours**, of which a **minimum of 42 credit hours** must be upper division (300 or 400-level courses). Depending upon other elective choices made, students may not need as many general electives as indicated above, or may need additional electives.

**University Notes:**

Gen Ed Key:	
INTRO = Introduction to University Life (one course)	SS = Social Sciences (two courses from different departments**)
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M/QL = Mathematics/Quantitative Literacy (two courses)	DIV = Social Diversity (two courses; one US Diversity and one African American Experience)
NS = Natural Sciences (two courses, one of which must have a lab)	WAC/SPAC = Writing/Speaking Across the Curriculum (three courses, one in the major; C or better required)
	CAP = Capstone
	** of the four total SS and A&H courses, one must be focused on Africa, Latin America, Asia or the Middle East (ALAAME)

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Cleveland State University  
College of Sciences and Health Professions  
Bachelor of Science in Chemistry  
(Pre-Professional Track with Concentration in Pharmaceutical Science)

**First Year**

Fall Semester	Credits	Major	Gen Ed	Spring Semester	Credits	Major	Gen Ed
CHM 261/266 General Chemistry I/Lab	4	X	NS	CHM 262/267 General Chemistry II/Lab	4	X	NS
BIO 200/201 Introductory Biology I/Lab	4	X	NS	BIO 202/203 Introductory Biology II/Lab	4	X	NS
ENG 101 English I	3		W/C	ENG 102 English II	3		W/C
ASC 101 Introduction to University Life	1		INTRO	MTH 181 Calculus I	4	X	M/QL
STA 147 Statistics	3	X	M/QL				
<i>Semester Total</i>	15			<i>Semester Total</i>	15		

**Second Year**

Fall Semester	Credits	Major	Gen Ed	Spring Semester	Credits	Major	Gen Ed
CHM 331/336 Organic Chemistry I/Lab	4	X		CHM 332/337 Organic Chemistry II/Lab	4	X	
Social Science Elective**	3		SS	Arts & Humanities Elective**	3		A&H
PHY 221 College Physics I	5	X	NS	PHY 222 College Physics II	5	X	NS
US Diversity Elective	3		DIV	Writing Across the Curriculum Elective	3		WAC
<i>Semester Total</i>	15			<i>Semester Total</i>	15		

**Third Year**

Fall Semester	Credits	Major	Gen Ed	Spring Semester	Credits	Major	Gen Ed
CHM 341 Pharmacology I	3	X		CHM 342 Pharmacology II	3	X	
CHM 351 Medicinal Chemistry I	3	X		CHM 352 Medicinal Chemistry II	3	X	
CHM 310 Survey Analytical Chemistry	2	X		BIO 310/311 Genetics and Recitation	4	X	
CHM 315 Survey Analytical Chemistry Lab	2	X		CHM 403 Biochemistry II	3	X	
CHM 402 Biochemistry I	3	X					
Social Science Elective**	3		SS				
<i>Semester Total</i>	16			<i>Semester Total</i>	13		

**Fourth Year**

Fall Semester	Credits	Major	Gen Ed	Spring Semester	Credits	Major	Gen Ed
BIO 416/417 Microbiology/Lab	5	X		African American Experience Elective	3		DIV
CHM 455 Biotechnology Techniques	3	X		CHM 471 Faculty Colloquium	1	X	
CHM 457 Pharmaceutical Analysis Lab	3	X	CAP	CHM 472 Student Colloquium	1	X	CAP
CHM/BIO Elective (300/400 level)^	3	X		CHM/BIO Elective (300/400 level)^	3	X	
Writing Across the Curriculum Elective	3		WAC	CHM/BIO Elective (300/400 level)^	3	X	
				Arts & Humanities Elective**	3		A&H
<b>Apply for Spring graduation by the middle of this term</b>							
<i>Semester Total</i>	17			<i>Semester Total</i>	14		
<b><i>Degree Total (as listed in above sample): 120 (120 hours minimum required to earn degree)</i></b>							

Assumptions: college-level readiness in MTH & ENG; no Foreign Language Deficiency

**College/ Program Notes:**

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^One of the CHM/BIO 300/400 level electives MUST also be an approved WAC course in order to satisfy the WAC-in-major requirement.

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INTRO = Introduction to University Life (one course)	
W/C = Writing/Composition (two courses; C or better required)	
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**Cleveland State University**  
**College of Sciences and Health Professions**  
 Bachelor of Science in Chemistry  
*CSUteach* (license in Education)

<i>First Year</i>									
Fall Semester	Credits	Major	License	Gen Ed	Spring Semester	Credits	Major	License	Gen Ed
ASC 101: Intro to University Life	1			Intro					
ENG 101: College Writing I	3			W/C	ENG 102: College Writing II	3			W/C
CHM 261/266: General Chemistry I + Lab	4	x	x	NS	CHM 262/267: General Chemistry II + Lab	4	x	x	NS
PSY 221: Adolescent Psychology	3		x	SS	BIO 200/201: Introductory Biology I + Lab	4	x	x	NS
MTH 181: Calculus I	4	x	x	M/QL	MTH 182: Calculus II	4	x	x	M/QL
<i>Semester Total</i>	15				<i>Semester Total</i>	15			

<i>Second Year</i>									
Fall Semester	Credits	Major	License	Gen Ed	Spring Semester	Credits	Major	License	Gen Ed
EUT 201: Step 1: Inquiry Approaches to Teaching	1		x		EDB 242: Introduction to Education	3		x	DIV
CHM 331/336: Organic Chemistry I + Lab	4	x	x		CHM 332/337: Organic Chemistry II + Lab	4	x	x	
BIO 202/203: Introductory Biology II + Lab	4	x	x	NS	BIO 304/305: Population Biology & Ecology + Lab	4	x	x	
EVS 206: Intro to Environmental Science	3	x	x	NS	STA 147: Statistical Concepts & App	3	x	x	M/QL
Arts & Humanities Elective (**ALAAME)	3			A&H	EDC 200: Div in Edu Settings	3		x	DIV
African American Experience Elective	3			DIV					
<i>Semester Total</i>	18				<i>Semester Total</i>	17			

<i>Third Year</i>									
Fall Semester	Credits	Major	License	Gen Ed	Spring Semester	Credits	Major	License	Gen Ed
EDB 302: Psychological Foundations of Education	3		x	WAC	EUT 305: Classroom Interactions	3		x	
CHM 310/315: Survey of Analytical Chem + lab	4	x	x		PHY 201: Astronomy: Stars & Galaxies	3	x	x	NS
PHY 221: College Physics I	5	x	x	NS	PHY 222: College Physics II	5	x	x	NS
GEO 100/101: Intro to Geology + Lab	4	x	x	NS	ESE 400: Introduction to Education	3		x	WAC
CHM 320: Survey of Physical Chemistry	3	x	x		Social Science Elective (**ALAAME)	3	x	x	SS
<i>Semester Total</i>	19				<i>Semester Total</i>	17			

<i>Fourth Year</i>									
Fall Semester	Credits	Major	License	Gen Ed	Spring Semester	Credits	Major	License	Gen Ed
EUT 417: Project Based Instruction in Science	3		x		EST 499: <i>CSUteach</i> STEM Apprentice Teaching II	6		x	
EST 399: <i>CSUteach</i> STEM Apprentice Teaching I	1		x		EUT 210: Perspectives on Science & Math	3		x	A&H/WAC
SCI 311: Research Methods	3		x	WAC	CHM 404: Environmental Chemistry	3	x	x	
CHM 402: Biochemistry	3	x	x						
PHY 470: Environmental Physics	3	x	x						
EDL 305: Content Area Literacy	3		x						
CHM 472: Student Colloquium	1	x		CAP/WAC					
<b>Apply for Spring graduation prior to Sep 9th</b>									
<i>Semester Total</i>	17				<i>Semester Total</i>	12			
<i>Degree Total: 130</i>									

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