Cleveland State University College of Arts and Sciences

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	х	NS	CHM 262/267 General Chemistry II/Lab	4	х	NS				
MTH 181 Calculus I	4	х	M/QL	MTH 182 Calculus II	4	х	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								
Semester Total	15			Semester Total	14						

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

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

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

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

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:

INTRO = Introduction to University Life (one course) W/C = Writing/Composition (two courses; C or better required)

M/QL = Mathematics/Quantitative Literacy (two courses)

NS = Natural Sciences (two courses, one of which must have a lab)

SS = Social Sciences (two courses from different departments**)

A&H = Arts & Humanities (two courses from different departments**)

DIV = Social Diversity (two courses; one US Diversity and one African American Experience)

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 Arts and Sciences 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	х	NS	CHM 262/267 General Chemistry II/Lab	4	х	NS				
BIO 200/201 Introductory Biology I/Lab	4	х	NS	BIO 202/203 Introductory Biology II/Lab	4	х	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	Х	M/QL				
STA 147 Statistics	3	Х	M/QL								
Semester Total	15			Semester Total	15						

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

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

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

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**)

INTRO = Introduction to University Life (one course)
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)
WAC/SPAC = Writing/Speaking Across the Curriculum (three courses, one in the major; C or better required)

NS = Natural Sciences (two courses, one of which must have a lab)

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** 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 Arts and Sciences

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	х	NS	CHM 262/267 General Chemistry II/Lab	4	Х	NS				
BIO 200/201 Introductory Biology I/Lab	4	х	NS	BIO 202/203 Introductory Biology II/Lab	4	Х	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	Х	M/QL				
STA 147 Statistics	3	х	M/QL								
Semester Total	15			Semester Total	15						

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

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

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

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

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.

^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.

University Notes:

SS = Social Sciences (two courses from different departments**)

INTRO = Introduction to University Life (one course)

A&H = Arts & Humanities (two courses from different departments**)

W/C = Writing/Composition (two courses; C or better required) M/QL = Mathematics/Quantitative Literacy (two courses)

DIV = Social Diversity (two courses; one US Diversity and one African American Experience)

WAC/SPAC = Writing/Speaking Across the Curriculum (three courses, one in the major; C or better required) CAP = Capstone

NS = Natural Sciences (two courses, one of which must have a lab)

** 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 Arts and Sciences

Bachelor of Science in Chemistry CSUteach (license in Education)

First Year										
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	х		NS	CHM 262/267: General Chemistry II + Lab	4	х		NS	
PSY 221: Adolescent Psychology	3		х	SS	BIO 200/201: Introductory Biology I + Lab	4	х		NS	
MTH 181: Calculus I	4	х		M/QL	MTH 182: Calculus II	4	х		M/QL	
Semester Total	15				Semester Total	15				

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

Third Year										
Fall Semester	Credits	Major	License	Gen Ed	Spring Semester	Credits	Major	License	Gen Ed	
EDB 302: Psychological Foundations of Education	3		х	WAC	EUT 305: Classroom Interactions	3		х		
CHM 310/315: Survey of Analytical Chem + lab	4	х			PHY 201: Astronomy: Stars & Galaxies	3	х		NS	
PHY 221: College Physics I	5	х		NS	PHY 222: College Physics II	5	х		NS	
GEO 100/101: Intro to Geology + Lab	4	х		NS	ESE 400: Introduction to Education	3		х	WAC	
CHM 404: Environmental Chemistry	3	х			Social Science Elective (**ALAAME)	3	х		SS	
Semester Total	19				Semester Total	17				

Fourth Year										
Fall Semester	Credits	Major	License	Gen Ed	Spring Semester	Credits	Major	License	Gen Ed	
EUT 417: Project Based Instruction in Science	3		х		EST 499: CS <i>Uteach</i> STEM Apprentice Teaching II	6		х		
EST 399: CSUteach STEM Apprentice Teaching I	1		х		EUT 210: Perspectives on Science & Math	3		х	A&H/WAC	
EUT 311: Research Methods	3		х	WAC	EDL 305: Content Area Literacy	3		х		
CHM 402: Biochemistry	3	х								
PHY 470: Environmental Physics	3	х								
CHM 320: Survey of Physical Chemistry	3	х								
CHM 472: Student Colloquium	1	х		CAP/WAC						
Apply for Spring graduation by the middle of this term										
Semester Total	17				Semester Total	12		·		
Degree Total: 130										

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

College/ Program Notes:

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University Notes:

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