

Cleveland State University
College of Arts and Sciences
Bachelor of Science in Pharmaceutical Sciences
(Medicinal and Biological Chemistry Track)

First Year

Fall Semester				Spring Semester			
	Credits	Major	Gen Ed		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 182 Calculus II	4	X	M/QL
MTH 181 Calculus I	4	X	M/QL				
Semester Total	16			Semester Total	15		

Second Year

Fall Semester				Spring Semester			
	Credits	Major	Gen Ed		Credits	Major	Gen Ed
CHM 331/336 Organic Chemistry I/Lab	4	X		CHM 332/337 Organic Chemistry II/Lab	4	X	
BIO 266/267 Anatomy & Physiology I/Lab	4	X	NS	Arts & Humanities Elective**	3		A&H
PHY 221 College Physics I	5	X	NS	PHY 222 College Physics II	5	X	NS
General Elective*	1			BIO 268/269 Anatomy & Physiology II/Lab	4	X	NS
Semester Total	14			Semester Total	16		

Third Year

Fall Semester				Spring Semester			
	Credits	Major	Gen Ed		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 402 Biochemistry I	3	X		BIO 310/311 Genetics and Recitation	4	X	
CHM 310 Survey of Analytical Chemistry	2	X		CHM 403 Biochemistry II	3	X	
CHM 315 Survey of Analytical Chemistry Lab	2	X		Writing Across the Curriculum Elective	3		WAC
US Diversity Elective	3		DIV				
Semester Total	16			Semester Total	16		

Fourth Year

Fall Semester				Spring Semester			
	Credits	Major	Gen Ed		Credits	Major	Gen Ed
CHM Elective (300/400 level) - Writing Course	3	X	WAC	Writing Across the Curriculum Elective	3		WAC
CHM 455 Biotechnology Techniques	3	X		CHM/BIO Elective (300/400 level)	3	X	
CHM 457 Pharmaceutical Analysis Lab	3	X	CAP	Social Science Elective**	3		SS
Social Science Elective**	3		SS	Arts & Humanities Elective**	3		A&H
African American Experience Elective	3		DIV				
Apply for Spring graduation by the middle of this term							
Semester Total	15			Semester Total	12		
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) 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 Pharmaceutical Sciences
(Pharmaceutical Chemistry and Analysis Track)

First Year

Fall Semester				Spring Semester			
	Credits	Major	Gen Ed		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 182 Calculus II	4	X	M/QL
MTH 181 Calculus I	4	X	M/QL				
Semester Total	16			Semester Total	15		

Second Year

Fall Semester				Spring Semester			
	Credits	Major	Gen Ed		Credits	Major	Gen Ed
CHM 331/336 Organic Chemistry I/Lab	4	X		CHM 332/337 Organic Chemistry II/Lab	4	X	
PHY 221 College Physics I	5	X	NS	PHY 222 College Physics II	5	X	NS
Social Science Elective**	3		SS	Arts & Humanities Elective**	3		A&H
BIO 266/267 Anatomy & Physiology I/Lab	4	X	NS	BIO 268/269 Anatomy & Physiology II/Lab	4	X	NS
Semester Total	16			Semester Total	16		

Third Year

Fall Semester				Spring Semester			
	Credits	Major	Gen Ed		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 402 Biochemistry I	3	X		CHM 412 Advanced Instrumental Analysis	3	X	
CHM 311/316 Analytical Chemistry/Lab	5	X		CHM 416 Instrumental Analysis Lab	3	X	WAC
CHM 411 Instrumental Analysis	3	X					
Semester Total	17			Semester Total	12		

Fourth Year

Fall Semester				Spring Semester			
	Credits	Major	Gen Ed		Credits	Major	Gen Ed
US Diversity Elective	3		DIV	Arts & Humanities Elective**	3		A&H
CHM 455 Biotechnology Techniques	3	X		CHM Elective (300/400 level)	3	X	
CHM 457 Pharmaceutical Analysis Lab	3	X	CAP	African American Experience Elective	3		DIV
Social Science Elective**	3		SS	CHM 403 Biochemistry II	3	X	
Writing Across the Curriculum Elective	3		WAC	Writing Across the Curriculum Elective	3		WAC
Apply for Spring graduation by the middle of this term							
Semester Total	15			Semester Total	15		
Degree Total (as listed in above sample): 122 (120 hours minimum required to earn degree)							

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

College/ Program Notes:

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Students must accumulate 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 need additional electives.

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<p>** of the four total SS and A&H courses, one must be focused on Africa, Latin America, Asia or the Middle East (ALAAME)</p>	

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