

**Cleveland State University**  
**College of Sciences and Health Professions**  
**Bachelor of Science in Pharmaceutical Sciences**  
 (Pharmaceutical Chemistry and Analysis Track)

**First Year**

<b>Fall Semester</b>	<b>Credits</b>	<b>Major</b>	<b>Gen Ed</b>	<b>Spring Semester</b>	<b>Credits</b>	<b>Major</b>	<b>Gen Ed</b>
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				
<b>Semester Total</b>	<b>16</b>			<b>Semester Total</b>	<b>15</b>		

**Second Year**

<b>Fall Semester</b>	<b>Credits</b>	<b>Major</b>	<b>Gen Ed</b>	<b>Spring Semester</b>	<b>Credits</b>	<b>Major</b>	<b>Gen Ed</b>
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
<b>Semester Total</b>	<b>16</b>			<b>Semester Total</b>	<b>16</b>		

**Third Year**

<b>Fall Semester</b>	<b>Credits</b>	<b>Major</b>	<b>Gen Ed</b>	<b>Spring Semester</b>	<b>Credits</b>	<b>Major</b>	<b>Gen Ed</b>
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 Quantitative Analysis/Lab	5	X		CHM 416 Instrumental Analysis Lab	3	X	WAC
CHM 411 Instrumental Analysis	3	X					
<b>Semester Total</b>	<b>17</b>			<b>Semester Total</b>	<b>12</b>		

**Fourth Year**

<b>Fall Semester</b>	<b>Credits</b>	<b>Major</b>	<b>Gen Ed</b>	<b>Spring Semester</b>	<b>Credits</b>	<b>Major</b>	<b>Gen Ed</b>
US Diversity Elective	3		DIV	Arts & Humanities Elective**	3		A&H
CHM 457 Pharmaceutical Analysis Lab	3	X	CAP	CHM 455 Biotechnology Techniques	3	X	
CHM Elective (300/400 level)	3	X		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
<b>Apply for Spring graduation prior to Sep 9th</b>							
<b>Semester Total</b>	<b>15</b>			<b>Semester Total</b>	<b>15</b>		
<b>Degree Total (as listed in above sample): 122 (120 hours minimum required to earn degree)</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.

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.

**University Notes:**

<b>Gen Ed Key:</b>	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
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)	** 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 Pharmaceutical Sciences**  
(Medicinal and Biological Chemistry Track)

**First Year**

<b>Fall Semester</b>	<b>Credits</b>	<b>Major</b>	<b>Gen Ed</b>	<b>Spring Semester</b>	<b>Credits</b>	<b>Major</b>	<b>Gen Ed</b>
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				
<b>Semester Total</b>	<b>16</b>			<b>Semester Total</b>	<b>15</b>		

**Second Year**

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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
<b>Semester Total</b>	<b>14</b>			<b>Semester Total</b>	<b>16</b>		

**Third Year**

<b>Fall Semester</b>	<b>Credits</b>	<b>Major</b>	<b>Gen Ed</b>	<b>Spring Semester</b>	<b>Credits</b>	<b>Major</b>	<b>Gen Ed</b>
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				
<b>Semester Total</b>	<b>16</b>			<b>Semester Total</b>	<b>16</b>		

**Fourth Year**

<b>Fall Semester</b>	<b>Credits</b>	<b>Major</b>	<b>Gen Ed</b>	<b>Spring Semester</b>	<b>Credits</b>	<b>Major</b>	<b>Gen Ed</b>
CHM Elective (300/400 level) - Writing Course	3	X	WAC	Writing Across the Curriculum Elective	3		WAC
CHM 457 Pharmaceutical Analysis Lab	3	X	CAP	CHM 455 Biotechnology Techniques	3	X	
CHM/BIO Elective (300/400 level)	3	X		Social Science Elective**	3		SS
Social Science Elective**	3		SS	Arts & Humanities Elective**	3		A&H
African American Experience Elective	3		DIV				
<b>Apply for Spring graduation prior to Sep 9th</b>							
<b>Semester Total</b>	<b>15</b>			<b>Semester Total</b>	<b>12</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

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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.

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