# CHEMISTRY COMPREHENSIVE, BACHELOR OF SCIENCE

Offered by Department of Chemistry (http://catalog.unk.edu/ undergraduate/departments-programs/chemistry/)

Code	Title	Credit Hours
General Studies		
Foundational Requ	iirements (LOPERs 1-4)	14
Including:		
LOPER 4: Math Reasoning	ematics, Statistics, and Quantitative	
MATH 115	Calculus I with Analytic Geometry <sup>1</sup>	
Broad Knowledge I	Requirements (LOPERs 5-8)	13
Including:		
LOPER 8: Natu	ral Sciences	
BIOL 106	Biology II	
Dispositional Requ	iirements (LOPERs 9-10) <sup>2</sup>	6
Wellness (LOPER 1	1) Optional	0
BS Science-relate	ed course requirements	3-10
Take ONE of the f	ollowing options:	
Take (for Profe	ssional Chemist Emphasis):	
MATH 202	Calculus II with Analytic Geometry	
PHYS 276	General Physics II (Calculus)	
PHYS 276L	General Physics II (Calculus) Laboratory	
OR take (for Bi	ochemistry Emphasis):	
MATH 202	Calculus II with Analytic Geometry	
PHYS 276 & 276L	General Physics II (Calculus) and General Physics II (Calculus) Laboratory	
or PHYS 206 & 206L	5 General Physics II and Physics Laboratory II	
OR take (for He	ealth Science or Pharmacy Emphasis):	
STAT 241	Elementary Statistics	
or BIOL 305	BioStatistics	
OR take (for Ge	eneral Emphasis)	
Take one cours		
MATH 202	Calculus II with Analytic Geometry	
STAT 241	Elementary Statistics	
or BIOL 305	BioStatistics	
Program Specific	Requirements	5
Take ONE of the f	ollowing options:	
Take (for Profe	ssional Chemist Emphasis):	
PHYS 275	General Physics I (Calculus)	
PHYS 275L	General Physics I (Calculus) Laboratory	
OR take (for Bi Pharmacy Emp	ochemistry, General, Health Science OR bhasis):	
PHYS 205 & 205L	General Physics I and Physics I Laboratory	

or PHYS 275 General Physics I (Calculus)

& 275L and General Physics I (Calculus) Laboratory

Major Option	
Complete all required courses	60-62
Unrestricted electives	
Needed to reach 120 credit hour minimum	19-12
Total Credit Hours	
Total Credit Hours	120

## **Major Option**

Code	Title	Credit Hours
Chemistry Compr	ehensive Foundation Requirements	
CHEM 160	General Chemistry	3
CHEM 160L	General Chemistry Laboratory	1
CHEM 161	General Chemistry	3
CHEM 161L	General Chemistry Laboratory	1
CHEM 169	Chemistry Foundations and Careers	1
CHEM 301	Analytical Chemistry	3
CHEM 301L	Analytical Chemistry Lab	1
CHEM 310	Safety in Chemistry	1
CHEM 351	Biochemistry I	4
CHEM 360	Organic Chemistry	4
CHEM 360L	Organic Chemistry Laboratory	1
CHEM 469	Advanced Seminar in Chemistry	1
Chemistry Empha	asis Requirements	
Select one of the	following:	36-38
Biochemistry Emphasis (p. 1)		
Health Sciences Emphasis (p. 2)		
Pharmacy Emphasis		
Professional Chemist Emphasis		
General Empha	asis	
Total Credit Hours	S	60-62

#### **Biochemistry Emphasis**

Code

Title

Credit
Hours

Biochemistry In-Depth Courses			
CHEM 352	Biochemistry II	2	
CHEM 352L	Advanced Biochemistry Lab	2	
CHEM 361	Organic Chemistry	4	
CHEM 361L	Organic Chemistry Laboratory	1	
CHEM 490L	Advanced Chemistry Laboratory	3	
CHEM 499L	Research in Chemistry	1	
CHEM 430A	Inorganic Reactions & Mechanisms	1	
CHEM 430B	Inorganic Structures & Properties	2	
Take 3 hours from	n	3	
CHEM 480A	Chemical Thermodynamics		
CHEM 480B	Chemical Kinetics		
CHEM 481A	Quantum Mechanics		
CHEM 481B	Spectroscopy		
Take 6 hours from	n	6	
CHEM 300	Environmental Chemistry		

CHEM 451	Advanced Biochemistry	
CHEM 499L	Research in Chemistry	
OR any 400-le	vel CHEM lecture(s)	
<b>Biochemistry Su</b>	pporting Course Requirements	
Select 11 credit l	hours of the following:	11
BIOL 105	Biology I	
BIOL 211	Human Microbiology	
BIOL 309	Cellular & Molecular Biology	
BIOL 360	Genetics	
BIOL 450	Advanced Molecular Biology	
BIOL 452	Techniques in Molecular Biology	
BIOL 485	Molecular Genetics	
Total Credit Hou	rs	36

### **Health Sciences Emphasis**

Code	Title	Credit Hours
Health Sciences	In-Depth Courses	

CHEM 352	Biochemistry II	2
CHEM 352L	Advanced Biochemistry Lab	2
CHEM 361	Organic Chemistry	4
CHEM 361L	Organic Chemistry Laboratory	1
CHEM 490L	Advanced Chemistry Laboratory	3
CHEM 499L	Research in Chemistry	1
or HSCI 475	Internship in Health Sciences	
Select 5 hours of	f the following:	5
CHEM 451	Advanced Biochemistry	
CHEM 430A	Inorganic Reactions & Mechanisms	
CHEM 430B	Inorganic Structures & Properties	
CHEM 480A	Chemical Thermodynamics	
CHEM 480B	Chemical Kinetics	
CHEM 481A	Quantum Mechanics	
CHEM 481B	Spectroscopy	
Health Sciences	Supporting Course Requirements	
BIOL 211	Human Microbiology	4
BIOL 225	Anatomy and Physiology	4
BIOL 226	Anatomy and Physiology	4
BIOL 309	Cellular & Molecular Biology	4
or BIOL 360	Genetics	
Health Sciences	Elective Requirements	
Select 4 credit h	ours of the following:	4
KSS 459	Special Topics Gross Anatomy	
KSS 460	Gross Anatomy of Movement	
BIOL 300-BIO	L 499	
CHEM 300-CH	1EM 499L	
PHYS 300-PH	YS 499L	
Total Credit Hou	rs	38

### Pharmacy Emphasis

Code	Title	Credit Hours	
Pharmacy In-D	epth Courses		
CHEM 361	Organic Chemistry	4	
CHEM 361L	Organic Chemistry Laboratory	1	
BIOL 225	Anatomy and Physiology	4	
BIOL 226	Anatomy and Physiology	4	
HSCI 475	Internship in Health Sciences	1	
or CHEM 499	9L Research in Chemistry		
hours at an app biology, bioche which would be level courses. U	successfully complete a minimum of 24 credit proved pharmacy school in areas related to mistry, chemistry (including pharmochemistry) e equivalent to upper division baccalaureate Jp to 5 additional hours may be counted as rd the UNK degree.	24	
Total Credit Ho	urs	38	
Profession	al Chemist Emphasis		
Code	Title	Credit Hours	
	hemist In-Depth Courses		
CHEM 352	Biochemistry II	2	
CHEM 352L	Advanced Biochemistry Lab	2	
CHEM 361	Organic Chemistry	4	
CHEM 361L	Organic Chemistry Laboratory	1	
CHEM 430A	Inorganic Reactions & Mechanisms	1	
CHEM 430B	Inorganic Structures & Properties	2	
CHEM 475A	Instrumental Analysis: Chromatography, NMR, & Mass Spectrometry	1	
CHEM 475B	Instrumental Analysis: Spectroscopic Techniques	1	
CHEM 475C	Instrumental Analysis: Electroanalytical Techniques	1	
CHEM 480A	Chemical Thermodynamics	2	
CHEM 480B	Chemical Kinetics	1	
CHEM 481A	Quantum Mechanics	2	
CHEM 481B	Spectroscopy	1	
CHEM 490L	Advanced Chemistry Laboratory	3	
CHEM 499L	Research in Chemistry	2	
Take 5 hours fr	om	5	
Any 300/400-le	evel CHEM, PHYS, MATH lecture(s)		
Professional C	hemist Supporting Course Requirements		
MATH 260	Calculus III	5	
Total Credit Ho	urs	36	
General Em	General Emphasis		
Code	Title	Credit	

Code	nue	Hours
General In-Depth	Courses	
CHEM 430A	Inorganic Reactions & Mechanisms	1
CHEM 430B	Inorganic Structures & Properties	2
Take 3 hours from	1	3

CHEM 480A	Chemical Thermodynamics	
CHEM 480B	Chemical Kinetics	
CHEM 481A	Quantum Mechanics	
CHEM 481B	Spectroscopy	
CHEM 490L	Advanced Chemistry Laboratory	3
CHEM 499L	Research in Chemistry	1
Select 6 credit ho	ours of the following:	6
Any 300/400 leve	l CHEM lecture	
Select 20 credit h	ours of the following:	20
BIOL 105	Biology I	
BIOL 200 - BIO	L 499	
CHEM 300-CH	EM 499L	
PHYS 200 - PH	IYS 499	
MGT 300 - MGT 499		
MKT 300 - MK	T 499	
ACCT 250 - AC	CT 499	
Total Credit Hours	S	36

<sup>1</sup> 

Students without sufficient preparation will also need to take the following, increasing the total credit hours needed:

• MATH 102

• MATH 103

#### 2

Designated courses with the appropriate content may be approved to satisfy one of the Broad Knowledge requirements plus LOPER 9 or Broad Knowledge plus LOPER 10. Courses may be approved to satisfy LOPER 9 or LOPER 10 alone. (*Courses satisfying LOPER 9 or LOPER 10 alone must be 3 credit hours.*) Students applying this option will need to take additional hours in other categories to meet the required GS hours.

Code	Title	Credit Hours
Semester 1		
CHEM 160 & 160L	General Chemistry and General Chemistry Laboratory	4
MATH 115	Calculus I with Analytic Geometry	5
LOPER 2: Writin	g Skills	3
LOPER 1: First-y	ear Seminar	3
Total Credit Hou	irs	15
Code	Title	Credit Hours

Semester 2		
CHEM 161	General Chemistry	4
&161L	and General Chemistry Laboratory	
BIOL 106	Biology II	4
MATH 202	Calculus II with Analytic Geometry	3-5

or STAT 241	Elementary Statistics	
or BIOL 305	BioStatistics	1
CHEM 169	Chemistry Foundations and Careers	1
LOPER 5: Visual o		3
Total Credit Hours	3	15-17
Code	Title	Credit Hours
Semester 3		
CHEM 360 & 360L	Organic Chemistry and Organic Chemistry Laboratory	5
LOPER 3: Oral Cor	mmunication Skills	3
Major Elective		3
Major Elective		3
Total Credit Hours	3	14
Code	Title	Credit Hours
Semester 4		
CHEM 310	Safety in Chemistry	1
Upper Division Ch	emistry Elective	3
Major Elective		3
LOPER 6: Humani	ties	3
LOPER 10: Respec	ct for Human Diversity	3
CHEM 430A	Inorganic Reactions & Mechanisms	1
Total Credit Hours	3	14
Code	Title	Credit Hours
Semester 5		Tiours
CHEM 351	Biochemistry I	4
PHYS 205	General Physics I	5
& 205L	and Physics I Laboratory	
CHEM 430B	Inorganic Structures & Properties	2
LOPER 7: Social S	cience	3
Total Credit Hours	3	14
Code	Title	Credit
		Hours
Semester 6		
CHEM 301 & 301L	Analytical Chemistry and Analytical Chemistry Lab	4
CHEM 499L	Research in Chemistry	1
LOPER 9: Civic Co	mpetency and Engagement	3
Major Elective		3
Major Elective		3
Total Credit Hours	3	14
Code	Title	Credit
		Hours
Semester 7		Hours
Semester 7 CHEM 469	Advanced Seminar in Chemistry	Hours
CHEM 469	Advanced Seminar in Chemistry	1
CHEM 469 CHEM 480	Advanced Seminar in Chemistry Physical Chemistry	1

Upper Division Chemistry Elective	3
Unrestricted Elective	3
Unrestricted Elective	3
Total Credit Hours	16
Code Title	Credit Hours
Semester 8	
Semester 8 Major Elective	5
	5
Major Elective	
Major Elective Unrestricted Elective	3

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**Total Credit Hours** 

Code	Title	Credit Hours
Semester 1		
CHEM 160 & 160L	General Chemistry and General Chemistry Laboratory	4
MATH 115	Calculus I with Analytic Geometry	5
ENG 101	Introduction to Academic Writing	3
LOPER 1: First-ye	ear Seminar	3
Total Credit Hour	ſS	15
Code	Title	Credit Hours
Semester 2		
CHEM 161 & 161L	General Chemistry and General Chemistry Laboratory	4
MATH 202	Calculus II with Analytic Geometry	5
BIOL 106	Biology II	4
CHEM 169	Chemistry Foundations and Careers	1
Total Credit Hour	ſS	14
Code	Title	Credit Hours
Semester 3		
CHEM 360 & 360L	Organic Chemistry and Organic Chemistry Laboratory	5
<b>BIOL Elective</b>		4
PHYS 205 & 205L	General Physics I and Physics I Laboratory	5
Total Credit Hour	'S	14

Code	Title	Credit Hours
Semester 4		
CHEM 361 & 361L	Organic Chemistry and Organic Chemistry Laboratory	5
BIOL Elective		4
PHYS 206 & 206L	General Physics II and Physics Laboratory II	5
CHEM 310	Safety in Chemistry	1
Total Credit Hours	S	15
Code	Title	Credit Hours
Semester 5		
CHEM 351	Biochemistry I	4
CHEM 430B	Inorganic Structures & Properties	2
CHEM 480B	Chemical Kinetics	1
Major Elective		3
SPCH 100	Fundamentals of Speech Communication	3
	or Performing Arts	3
Total Credit Hours	S	16
Code	Title	Credit Hours
Semester 6		
CHEM 352 & 352L	Biochemistry II and Advanced Biochemistry Lab	4
CHEM 499L	Research in Chemistry	1
CHEM 301	Analytical Chemistry	4
& 301L	and Analytical Chemistry Lab	
LOPER 6: Human	ities	3
Unrestricted Elec	tive	3
Total Credit Hours	S	15
Code	Title	Credit Hours
Semester 7		
CHEM 430A	Inorganic Reactions & Mechanisms	1
CHEM 480A	Chemical Thermodynamics	2
CHEM 490L	Advanced Chemistry Laboratory	3
CHEM 469	Advanced Seminar in Chemistry	1
LOPER 7: Social S		3
	ompetency and Engagement	3
Unrestricted Elec	tive	3
Total Credit Hours	S	16
Code	Title	Credit Hours
Semester 8		
BIOL Elective		3
Major Elective		3
	ct for Human Diversity	3
Unrestricted Elec	tive	3

Unrestricted Elective	3
Total Credit Hours	15

This document represents a sample 4-year plan for degree completion with this major. Actual course selection and sequence may vary and should be discussed individually with your academic advisor. Advisors can also help you plan other experiences to enrich your undergraduate education such as internships, education abroad, undergraduate research, learning communities, and service learning and communitybased learning.

Code	Title	Credit Hours
Semester 1		
CHEM 160	General Chemistry	4
& 160L	and General Chemistry Laboratory	
MATH 115	Calculus I with Analytic Geometry	5
ENG 101	Introduction to Academic Writing	3
LOPER 1: First-ye	ar Seminar	3
Total Credit Hour	S	15
Code	Title	Credit Hours
Semester 2		
CHEM 161	General Chemistry	4
& 161L	and General Chemistry Laboratory	
BIOL 106	Biology II	4
SPCH 100	Fundamentals of Speech Communication	3
CHEM 169	Chemistry Foundations and Careers	1
LOPER 5: Visual of	or Performing Arts	3
Total Credit Hour	S	15
Code	Title	Credit
		Hours
Semester 3		Hours
CHEM 360	Organic Chemistry	Hours 5
CHEM 360 & 360L	and Organic Chemistry Laboratory	5
CHEM 360 & 360L BIOL 225	and Organic Chemistry Laboratory Anatomy and Physiology	5
CHEM 360 & 360L BIOL 225 BIOL 211	and Organic Chemistry Laboratory Anatomy and Physiology Human Microbiology	5 4 4
CHEM 360 & 360L BIOL 225	and Organic Chemistry Laboratory Anatomy and Physiology Human Microbiology	5
CHEM 360 & 360L BIOL 225 BIOL 211	and Organic Chemistry Laboratory Anatomy and Physiology Human Microbiology ities	5 4 4
CHEM 360 & 360L BIOL 225 BIOL 211 LOPER 6: Human	and Organic Chemistry Laboratory Anatomy and Physiology Human Microbiology ities	5 4 4 3
CHEM 360 & 360L BIOL 225 BIOL 211 LOPER 6: Human Total Credit Hour	and Organic Chemistry Laboratory Anatomy and Physiology Human Microbiology ities s	5 4 4 3 16
CHEM 360 & 360L BIOL 225 BIOL 211 LOPER 6: Human Total Credit Hour	and Organic Chemistry Laboratory Anatomy and Physiology Human Microbiology ities s	5 4 4 3 16 <b>Credit</b>
CHEM 360 & 360L BIOL 225 BIOL 211 LOPER 6: Human Total Credit Hour Code Semester 4 CHEM 361	and Organic Chemistry Laboratory Anatomy and Physiology Human Microbiology ities s Title Organic Chemistry	5 4 4 3 16 <b>Credit</b>
CHEM 360 & 360L BIOL 225 BIOL 211 LOPER 6: Human Total Credit Hour Code Semester 4 CHEM 361 & 361L	and Organic Chemistry Laboratory Anatomy and Physiology Human Microbiology ities s Title Organic Chemistry and Organic Chemistry Laboratory	5 4 4 3 16 Credit Hours 5
CHEM 360 & 360L BIOL 225 BIOL 211 LOPER 6: Human Total Credit Hour Code Semester 4 CHEM 361 & 361L CHEM 310	and Organic Chemistry Laboratory Anatomy and Physiology Human Microbiology ities s Title Organic Chemistry and Organic Chemistry Laboratory Safety in Chemistry	5 4 4 3 16 Credit Hours 5 1
CHEM 360 & 360L BIOL 225 BIOL 211 LOPER 6: Human Total Credit Hour Code Semester 4 CHEM 361 & 361L CHEM 310 BIOL 226	and Organic Chemistry Laboratory Anatomy and Physiology Human Microbiology ities s Title Organic Chemistry and Organic Chemistry Laboratory Safety in Chemistry Anatomy and Physiology	5 4 4 3 16 <b>Credit</b> Hours 5 1 4
CHEM 360 & 360L BIOL 225 BIOL 211 LOPER 6: Human Total Credit Hour Code Semester 4 CHEM 361 & 361L CHEM 310 BIOL 226 STAT 241	and Organic Chemistry Laboratory Anatomy and Physiology Human Microbiology ities s Title Organic Chemistry and Organic Chemistry Laboratory Safety in Chemistry Anatomy and Physiology Elementary Statistics	5 4 4 3 16 Credit Hours 5 1
CHEM 360 & 360L BIOL 225 BIOL 211 LOPER 6: Human Total Credit Hour Code Semester 4 CHEM 361 & 361L CHEM 310 BIOL 226 STAT 241 or BIOL 305	and Organic Chemistry Laboratory Anatomy and Physiology Human Microbiology ities s Title Organic Chemistry and Organic Chemistry Laboratory Safety in Chemistry Anatomy and Physiology Elementary Statistics BioStatistics	5 4 4 3 16 <b>Credit</b> Hours 5 1 4
CHEM 360 & 360L BIOL 225 BIOL 211 LOPER 6: Human Total Credit Hour Code Semester 4 CHEM 361 & 361L CHEM 310 BIOL 226 STAT 241	and Organic Chemistry Laboratory Anatomy and Physiology Human Microbiology ities s Title Organic Chemistry and Organic Chemistry Laboratory Safety in Chemistry Anatomy and Physiology Elementary Statistics BioStatistics	5 4 4 3 16 <b>Credit</b> Hours 5 1 4

Code	Title	Credit Hours
Semester 5		
CHEM 351	Biochemistry I	4
CHEM 499L	Research in Chemistry	1-5
or HSCI 475	Internship in Health Sciences	
BIOL 309	Cellular & Molecular Biology	4
or BIOL 360	Genetics	
PHYS 205	General Physics I	5
& 205L	and Physics I Laboratory	
Total Credit Hours	3	14-18
Code	Title	Credit Hours
Semester 6		Tiours
CHEM 352	Biochemistry II	4
& 352L	and Advanced Biochemistry Lab	4
CHEM 301	Analytical Chemistry	4
& 301L	and Analytical Chemistry Lab	
CHEM 451	Advanced Biochemistry	3
LOPER 9: Civic Co	empetency and Engagement	3
Total Credit Hours	3	14
Code	Title	Credit Hours
Code Semester 7	Title	
	Title Physical Chemistry	
Semester 7		Hours
Semester 7 CHEM 480	Physical Chemistry	Hours
Semester 7 CHEM 480 or CHEM 430 CHEM 490L CHEM 469	Physical Chemistry Inorganic Chemistry Advanced Chemistry Laboratory Advanced Seminar in Chemistry	Hours 3
Semester 7 CHEM 480 or CHEM 430 CHEM 490L CHEM 469 LOPER 10: Respe	Physical Chemistry Inorganic Chemistry Advanced Chemistry Laboratory Advanced Seminar in Chemistry ct for Human Diversity	Hours 3 3
Semester 7 CHEM 480 or CHEM 430 CHEM 490L CHEM 469	Physical Chemistry Inorganic Chemistry Advanced Chemistry Laboratory Advanced Seminar in Chemistry ct for Human Diversity	Hours 3 3 1
Semester 7 CHEM 480 or CHEM 430 CHEM 490L CHEM 469 LOPER 10: Respe	Physical Chemistry Inorganic Chemistry Advanced Chemistry Laboratory Advanced Seminar in Chemistry ct for Human Diversity tive	Hours 3 3 1 3
Semester 7 CHEM 480 or CHEM 430 CHEM 490L CHEM 469 LOPER 10: Respe Unrestricted Elect	Physical Chemistry Inorganic Chemistry Advanced Chemistry Laboratory Advanced Seminar in Chemistry ct for Human Diversity tive	Hours 3 3 1 3 3 3 3 3
Semester 7 CHEM 480 or CHEM 430 CHEM 490L CHEM 469 LOPER 10: Respe Unrestricted Elect Unrestricted Elect	Physical Chemistry Inorganic Chemistry Advanced Chemistry Laboratory Advanced Seminar in Chemistry ct for Human Diversity tive	Hours Hours 3 3 1 3 3 3 3 16 Credit
Semester 7 CHEM 480 or CHEM 430 CHEM 490L CHEM 469 LOPER 10: Respe Unrestricted Elect Unrestricted Elect Total Credit Hours	Physical Chemistry Inorganic Chemistry Advanced Chemistry Laboratory Advanced Seminar in Chemistry ct for Human Diversity tive	Hours Hours 3 3 1 3 3 3 3 16
Semester 7 CHEM 480 or CHEM 430 CHEM 490L CHEM 469 LOPER 10: Respe Unrestricted Elect Unrestricted Elect Unrestricted Elect Total Credit Hours Code	Physical Chemistry Inorganic Chemistry Advanced Chemistry Laboratory Advanced Seminar in Chemistry ct for Human Diversity tive	Hours Hours 3 3 1 3 3 3 3 16 Credit
Semester 7 CHEM 480 or CHEM 430 CHEM 490L CHEM 469 LOPER 10: Respe Unrestricted Elect Unrestricted Elect Unrestricted Elect Total Credit Hours Code Semester 8	Physical Chemistry Inorganic Chemistry Advanced Chemistry Laboratory Advanced Seminar in Chemistry ct for Human Diversity tive tive Title	Hours Hours 3 3 1 3 3 3 3 16 Credit Hours
Semester 7 CHEM 480 or CHEM 430 CHEM 490L CHEM 469 LOPER 10: Respe Unrestricted Elect Unrestricted Elect Unrestricted Elect Total Credit Hours Code Semester 8 Major Elective	Physical Chemistry Inorganic Chemistry Advanced Chemistry Laboratory Advanced Seminar in Chemistry ct for Human Diversity tive tive Title	Hours Hours 3 3 3 1 3 3 3 16 Credit Hours 4
Semester 7 CHEM 480 or CHEM 430 CHEM 490L CHEM 469 LOPER 10: Respe Unrestricted Elect Unrestricted Elect Total Credit Hours Code Semester 8 Major Elective Unrestricted Elect	Physical Chemistry Inorganic Chemistry Advanced Chemistry Laboratory Advanced Seminar in Chemistry ct for Human Diversity tive tive Title	Hours Hours 3 3 1 3 3 3 3 3 16 Credit Hours 4 3
Semester 7 CHEM 480 or CHEM 430 CHEM 490L CHEM 469 LOPER 10: Respe Unrestricted Elect Unrestricted Elect Total Credit Hours Code Semester 8 Major Elective Unrestricted Elect Unrestricted Elect	Physical Chemistry Inorganic Chemistry Advanced Chemistry Laboratory Advanced Seminar in Chemistry ct for Human Diversity tive tive tive tive	Hours Hours 3 3 1 3 3 3 3 16 Credit Hours 4 3 3 3

Code	Title	Credit Hours
Semester 1		
CHEM 160 & 160L	General Chemistry and General Chemistry Laboratory	4
MATH 115	Calculus I with Analytic Geometry	5
ENG 101	Introduction to Academic Writing	3
LOPER 1: First-ye	ear Seminar	3
Total Credit Hour	S	15
Code	Title	Credit Hours
Semester 2		
CHEM 161 & 161L	General Chemistry and General Chemistry Laboratory	4
MATH 202	Calculus II with Analytic Geometry	5
BIOL 106	Biology II	4
CHEM 169	Chemistry Foundations and Careers	1
Total Credit Hour	S	14
Code	Title	Credit Hours
Semester 3		
CHEM 360	Organic Chemistry	5
& 360L MATH 260	and Organic Chemistry Laboratory Calculus III	5
SPCH 100	Fundamentals of Speech Communication	3
	or Performing Arts	3
Total Credit Hour	5	16
Total Cledit Hour	3	10
Code	Title	Credit Hours
Semester 4		
CHEM 361 & 361L	Organic Chemistry and Organic Chemistry Laboratory	5
CHEM 301	Analytical Chemistry	4
& 301L	and Analytical Chemistry Lab	
PHYS 275 & 275L	General Physics I (Calculus) and General Physics I (Calculus) Laboratory	5
CHEM 310	Safety in Chemistry	1
Total Credit Hour	S	15
Code	Title	Credit Hours
Semester 5		
CHEM 351	Biochemistry I	4
CHEM 430B	Inorganic Structures & Properties	2
CHEM 480B	Chemical Kinetics	1
PHYS 276 & 276L	General Physics II (Calculus) and General Physics II (Calculus) Laboratory	5
LOPER 6: Human	•	3
Total Credit Hour	S	15

Code	Title	Credit Hours
Semester 6		
CHEM 352 & 352L	Biochemistry II and Advanced Biochemistry Lab	4
CHEM 475A & CHEM 475B & CHEM 475C	Instrumental Analysis: Chromatography, NMR, & Mass Spectrometry and Instrumental Analysis: Spectroscopic Techniques and Instrumental Analysis: Electroanalytical Techniques	3
CHEM 499L	Research in Chemistry	2
LOPER 7: Social	Science	3
Unrestricted Elec	tive	3
Total Credit Hour	S	15
Code	Title	Credit Hours
Semester 7		
CHEM 430A	Inorganic Reactions & Mechanisms	1
CHEM 480A	Chemical Thermodynamics	2
CHEM 490L	Advanced Chemistry Laboratory	3
CHEM 469	Advanced Seminar in Chemistry	1
	ompetency and Engagement	3
Unrestricted Elec		3
Unrestricted Elec	tive	3
Total Credit Hour	S	16
Code	Title	Credit Hours
Semester 8		
CHEM 481 & 481B	Physical Chemistry II and Spectroscopy	4
Major Elective		5
LOPER 10: Respe	ect for Human Diversity	3
Unrestricted Elec		3
Total Credit Hour	s	15

Code	Title	Credit Hours
Semester 1		
CHEM 160 & 160L	General Chemistry and General Chemistry Laboratory	4
MATH 115	Calculus I with Analytic Geometry	5
ENG 101	Introduction to Academic Writing	3
LOPER 1: First-ye	ear Seminar	3
Total Credit Hour	S	15

Code	Title	Credit
Semester 2		Hours
CHEM 161	General Chemistry	4
& 161L	and General Chemistry Laboratory	
BIOL 106	Biology II	4
SPCH 100	Fundamentals of Speech Communication	3
CHEM 169	Chemistry Foundations and Careers	1
LOPER 5: Visual	or Performing Arts	3
Total Credit Hou	rs	15
Code	Title	Credit
		Hours
Semester 3		
CHEM 360	Organic Chemistry	5
& 360L	and Organic Chemistry Laboratory	
BIOL 225	Anatomy and Physiology	4
LOPER 6: Humar	nities	3
Unrestricted Elec	ctive	3
Unrestricted Elec	ctive	3
Total Credit Hou	rs	18
Code	Title	Credit
		Hours
Semester 4		
CHEM 361	Organic Chemistry	5
& 361L	and Organic Chemistry Laboratory	
CHEM 310	Safety in Chemistry	1
BIOL 226	Anatomy and Physiology	4
STAT 241	Elementary Statistics	3
or BIOL 305	BioStatistics	
LOPER 7: Social	Science	3
Total Credit Hou	rs	16
Code	Title	Credit
		Hours
Semester 5		
CHEM 351	Biochemistry I	4
CHEM 469	Advanced Seminar in Chemistry	1
CHEM 499L	Research in Chemistry	1-5
or HSCI 475	Internship in Health Sciences	
PHYS 205	General Physics I	5
& 205L	and Physics I Laboratory	
LOPER 9: Civic C	competency and Engagement	3
Unrestricted Elec	ctive	3
Total Credit Hou	rs	17-21
Code	Title	Credit
		Hours
Semester 6		
CHEM 301	Analytical Chemistry	4
& 301L	and Analytical Chemistry Lab	
	aat far Lluman Divaraity	2

LOPER 10: Respect for Human Diversity

**Unrestricted Elective** 

3

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Unrestricted Elective Total Credit Hours		4
		15
Code	Title	Credit Hours
Semester 7	7	
Pharmacy Electives		12
Total Credit Hours		12
Code	Title	Credit Hours
Semester 8	3	
Pharmacy Electives		12
Total Credit Hours		12