

The
CHEMISTRY
MAJOR
at
BOISE STATE
UNIVERSITY



ADVISING HANDOUT

Revised 10/09

*Reflects requirements consistent with those of the registrar's office
for the 2009-10 academic year**

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Welcome to BSU and the Chemistry Department!

While an advisor's signature is not required for registration, the department **strongly encourages each major to seek early and regular advising**. Meeting with your advisor once each semester provides an opportunity for your advisor to

- **Review scheduling**, prerequisites and changes to the curriculum, so that all requirements can be completed in a timely manner (*Advisors often offer helpful strategies for getting into classes which are closed and can act as your advocate*).
- Discuss your developing **career plans**
- **Get to know you**, so he or she can serve as a reference if you need one later for job or graduate school applications.

Faculty who serve as advisors are noted on page 4. To be connected with an advisor, we encourage you to contact Jenny Weaver, the department advising coordinator (SN 340, 426-4491, jennypatrick@boisestate.edu).

This packet is designed to help you get started and stay on track.*

- Statement of **requirements** for the chemistry major and its emphases
- A **flow chart** of lower division courses to help you anticipate the prerequisites for each course
- Suggested **schedules for completion** of each program of study

* Every effort has been made to ensure this document is error free. However, the requirements on record in the BSU catalog and in the registrar's office are the final arbiter of graduation requirements.

CHEMISTRY DEPARTMENT CHOICES OF EMPHASIS

The chemistry department offers a variety of emphasis choices for students to choose the one that suits his or her interests and career goals.

The **professional emphasis** is certified by the American Chemical Society and offers a comprehensive preparation in all sub disciplines of chemistry.

The **biochemistry emphasis** prepares students for careers and further study at the interface of chemistry and biology. One of the biochemistry options is certified by the American Chemical Society.

The **forensics emphasis** combines a set of foundational chemistry classes with courses in other areas to prepare students for work in the specialized field of forensics.

The **geochemistry emphasis** combines a set of foundational chemistry classes with courses in other areas to prepare students for work in the specialized field of geochemistry.

The **pre-med emphasis** provides a foundation in chemistry while requiring the completion of standard courses required for application to medical school.

The **business emphasis** combines a set of foundational chemistry classes with courses in other areas to prepare students for work in business, particularly businesses with a science/chemistry related focus.

The **secondary education emphasis** prepares and certifies students to teach the next generation of scientists at the high school level.

Chemistry Faculty and Staff

<http://chemistry.boisestate.edu>

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	Vogler, Laura Laboratory Manager	SN 312 426-3028	lauravogler@boisestate.edu
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✓	Weaver, Jenny Advising Coordinator Administrative Assistant II	SN 340 426-4491	jennypatrick@boisestate.edu

Checklist of Chemistry Major Core Classes

Chemistry students in each emphasis must complete these courses

✓	Course #	Course Name	Credits	Pre-requisites	Co-requisites
General Core Requirements					
	E101	English Composition	3		
	E102	English Composition	3		
	Area I	Core Course in one field	3		
	Area I	Core Course in a second field	3		
	Area I	Core Course in a third field	3		
	Area I	Core Course in any field	3		
	Area II	Core Course in one field	3		
	Area II	Core Course in a second field	3		
	Area II	Core Course in a third field	3		
	Area II	Core Course in any field	3		
	<i>Sub-total</i>		30		
Physics and Mathematics					
	MATH 170	Calculus I	4	MATH 144 or 147*	
	MATH 175	Calculus II	4	MATH 170	
	MATH 275	Multivariable & Vector Calculus	4	MATH 175	
	PHYS 211/211L	Physics I and Laboratory	5	MATH 170	MATH 175
	PHYS 212/212L	Physics II and Laboratory	5	PHYS 211 MATH 175	
	<i>Sub-total</i>		22		
Chemistry Courses					
	CHEM 111	General Chemistry I	3	MATH 143 or 147*	CHEM 111L
	CHEM 111L	General Chemistry I Lab**	1	MATH 143 or 147*	CHEM 111
	CHEM 112	General Chemistry II	3	CHEM 111/111L	CHEM 112L
	CHEM 112L	General Chemistry II Lab	1	CHEM 111/111L	CHEM 112
	CHEM 211	Analytical Chemistry I	3	CHEM 112/112L MATH 144 or 147	
	CHEM 212	Analytical Lab I	2	CHEM 211	CHEM 211
	CHEM 307	Organic Chemistry I	3	CHEM 112/112L	CHEM 308
	CHEM 308	Organic Lab I	2		CHEM 307
	CHEM 309	Organic Chemistry II	3	CHEM 307 and 308	CHEM 310
	CHEM 310	Organic Lab II	2	CHEM 308	CHEM 309
	CHEM 321	Physical Chemistry I	3	CHEM 307, MATH 275 PHYS 212/212L	
	CHEM 322	Physical Chemistry II	3	CHEM 321	
	CHEM 323	Advanced Lab I	2	CHEM 212, 310	CHEM 321
	<i>Sub-total</i>		31	18 are upper division	

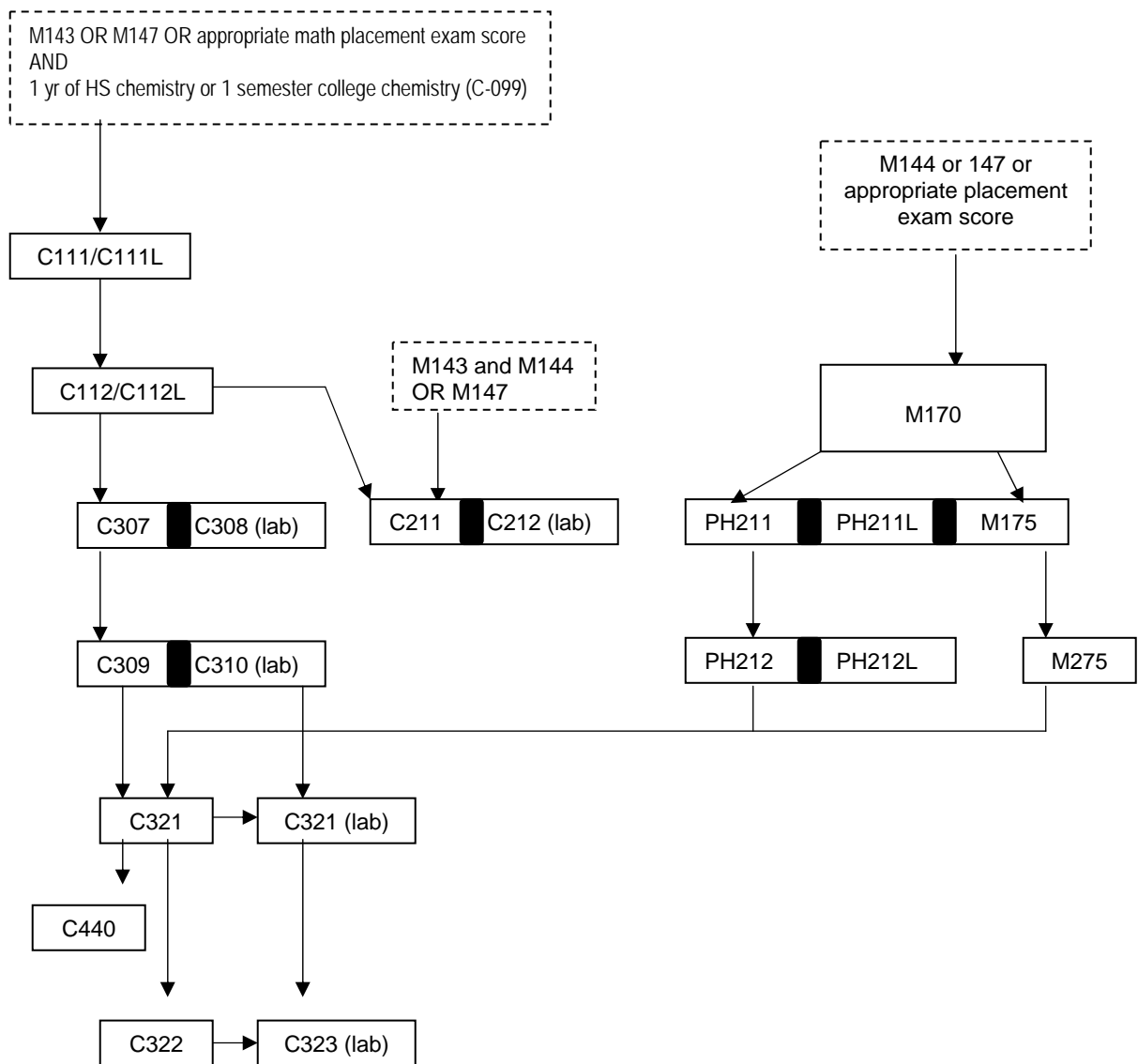
Total credits for Chemistry Major Core = 83

* A satisfactory Math Placement Test (COMPASS) score can also be used to enroll in this course.

** One year of high school chemistry or CHEM 099 is recommended before taking CHEM 111.

The COMPASS math placement exam is administered in the College of Applied Technology Assessment Center: TS-115. Call 426-2762 for Center hours.

Flowchart for Core Chem Courses



Courses outlined in solid lines are requirements for the chemistry major. Arrows show prerequisites and give the order in which courses should be taken.

Chemistry Major, ACS Certified Professional Emphasis Degree requirements checklist

✓	Course #	Course Name	Credits	Pre-requisites	Co-requisites
Chemistry Courses					
	Chemistry core	(see page 5)	83		
	CHEM 324	Advanced Lab II	2	CHEM 323	CHEM 322
	CHEM 412	Advanced Lab III	2	CHEM 324, 401, 411	
	CHEM 401	Advanced Inorganic Chemistry	3	CHEM 322	
	CHEM 411	Analytical Chemistry II	3	CHEM 212, 322	
	CHEM 431	Biochemistry I	3	CHEM 301 or 309	
	CHEM 440 or 422*	Spec-ID or Adv. Topics	3	CHEM 309, 321	
	CHEM 495	Senior Research	1	CHEM 309	CHEM 322
	CHEM 495	Senior Research	1	CHEM 309	CHEM 322
	CHEM 498	Senior Seminar	2	CHEM 495, Sr. Standing	
Electives			25	3 of these credits must be upper division	
TOTAL			128		

* 3 credits of CHEM 422 must be completed; separate CHEM 422 courses may be taken more than once for credit.

Suggested Schedule for Completion in Four Years

⇒ The following is a *suggested* schedule and is only one of several ways to combine the degree requirements. See your advisor in the Chemistry Department to craft a specific plan for you.

Fall Semester Year 1	Course	credits	Spring Semester Year 1	Course	credits
C111/C111 L	College Chemistry Lab	4	C112/C112 L	College Chemistry/Lab	4
E101	English Composition	3	E102	English Composition	3
M170	Calculus I	4	M175	Calculus II	4
	Elective or Core Course	6		Elective or Core Course	5
total credits		17	total credits		16

Fall Semester Year 2	Course	credits	Spring Semester Year 2	Course	credits
C307/C308	Organic Chemistry/Lab	5	C309/C310	Organic Chemistry/Lab	5
C211/C212	Analytical Chemistry II	5	Math 275	Multi Variable/ Vector Calc	4
PH211/211L	Physics/Lab	5	PH212/212L	Physics/Lab	5
				Elective or Core Course	3
total credits		15	total credits		17

Fall Semester Year 3	Course	credits	Spring Semester Year 3	Course	credits
C321	Physical Chemistry	3	C322	Physical Chemistry	3
C323	Adv. Chemistry Lab. I	2	C324	Adv. Chemistry Lab II	2
C431	Biochemistry I	3	C495	Senior Research	1
	Elective or Core Course	9		Elective or Core Course	9
total credits		17	total credits		15

Fall Semester Year 4	Course	credits	Spring Semester Year 4	Course	credits
C401	Advanced Inorg. Chem.	3	C412	Adv. Chemistry Lab. III	2
C411	Analytical Chemistry II	3	C498	Senior Seminar	2
C495	Senior Research	1	C440 or C422	Spec ID or Adv. Topics	3
	Elective or Core Course	9		Elective or Core Course	8
total credits		16	total credits		15

Chemistry Major, ACS certified Biochemistry Emphasis Degree requirements checklist

✓	Course #	Course Name	Credits	Pre-requisites	Co-requisites
Biology Courses					
	BIOL 191	General Biology I + Lab	4	MATH 108	
	BIOL 301	Cell Biology	3	BIOL 191 & CHEM 307	
	BIOL 343	Genetics	3	BIOL 301	
Chemistry Courses					
	Chemistry core	(see page 5)	83		
	CHEM 401	Advanced Inorganic Chemistry	3	CHEM 322	
	CHEM 431	Biochemistry I	3	CHEM 301 & 309	
	CHEM 433	Biochemistry II	3	CHEM 431	
	CHEM 324	Advanced Lab II	2	CHEM 323	CHEM 322
	CHEM 411	Analytical Chemistry II	3	CHEM 212, 322	
	CHEM 432	Biochemistry Lab	2	CHEM 431	
	CHEM 495	Senior Research	1	CHEM 309	CHEM 322
	CHEM 495	Senior Research	1	CHEM 309	CHEM 322
	CHEM 498	Senior Seminar	2	CHEM 495, Sr. Standing	
Electives			15		
			128		

* 3 credits of CHEM 422 must be completed; separate CHEM 422 courses may be taken more than once for credit.

Suggested Schedule for Completion in Four Years

⇒ The following is a *suggested* schedule for completion of the Chemistry Major, Professional Emphasis and is only one of several ways to combine the degree requirements. See your advisor in the Chemistry Department to craft a specific plan for you.

Fall Semester Year 1	Course	Credits	Spring Semester Year 1	Course	credits
	C111/C111 L	4		C112/C112 L	4
	E101	3		E102	3
	M170	4		M175	4
	Elective or Core Course	6		B191	4
		total credits		total credits	15

Fall Semester Year 2	Course	Credits	Spring Semester Year 2	Course	credits
	C307/C308	5		C309/C310	5
	C211/C212	5		PH212/212L	5
	PH211/211L	5		Math 275	4
				Elective or Core Course	3
		total credits		total credits	17

Fall Semester Year 3	Course	Credits	Spring Semester Year 3	Course	credits
	C321	3		C322	3
	C431	3		C433	3
	C323	2		C324	2
	Elective or Core Course	9		B301	3
				C495	1
				Elective or Core Course	4
		total credits		total credits	16

Fall Semester Year 4	Course	Credits	Spring Semester Year 4	Course	credits
	C495	1		C432	2
	B343	3		C498	2
	C401	3		Elective or Core Course	11
	C411	3			
		6			
		total credits		total credits	15

Chemistry Major, Biochemistry Emphasis Degree requirements checklist

✓	Course #	Course Name	Credits	Pre-requisites	Co-requisites
Biology Courses					
	BIOL 191	General Biology I + Lab	4	MATH 108	
	BIOL 301	Cell Biology	3	BIOL 191 & CHEM 307	
	BIOL 343	Genetics	3	BIOL 301	
Chemistry Courses					
	Chemistry core	(see page 5)	83		
	CHEM 431	Biochemistry I	3	CHEM 301 & 309	
	CHEM 433	Biochemistry II	3	CHEM 431	
	CHEM 324	Advanced Lab II	2	CHEM 323	CHEM 322
	CHEM 432	Biochemistry Lab	2	CHEM 431	
	CHEM 440 or C422*	Spec-ID or Adv. Topics	3	CHEM 309, 321	
	CHEM 495	Senior Research	1	CHEM 309	CHEM 322
	CHEM 495	Senior Research	1	CHEM 309	CHEM 322
	CHEM 498	Senior Seminar	2	CHEM 495, Sr. Standing	
Electives			18		
TOTAL			128		

* 3 credits of CHEM 422 must be completed; separate CHEM 422 courses may be taken more than once for credit.

Suggested Schedule for Completion in Four Years

➤ The following is a *suggested* schedule for completion of the Chemistry Major, Professional Emphasis and is only one of several ways to combine the degree requirements. See your advisor in the Chemistry Department to craft a specific plan for you.

Fall Semester Year 1	Course	Credits	Spring Semester Year 1	Course	credits
	C111/C111 L	4		C112/C112 L	4
	E101	3		E102	3
	M170	4		M175	4
	Elective or Core Course	6		B191	4
total credits		17		total credits	
				15	

Fall Semester Year 2	Course	Credits	Spring Semester Year 2	Course	credits
	C307/C308	5		C309/C310	5
	C211/C212	5		PH212/212L	5
	PH211/211L	5		Math 275	4
				Elective or Core Course	3
total credits		15		total credits	
				17	

Fall Semester Year 3	Course	Credits	Spring Semester Year 3	Course	credits
	C321	3		C322	3
	C431	3		C433	3
	C323	2		C324	2
	Elective or Core Course	8		B301	3
				C495	1
				Elective or Core Course	4
total credits		16		total credits	
				16	

Fall Semester Year 4	Course	Credits	Spring Semester Year 4	Course	credits
	C495	1		C432	2
	B343	3		C498	2
	Elective or Core Course	12		C440 or C422	3
				Elective or Core Course	9
total credits		16		total credits	
				16	

Chemistry Major, General Emphasis

Degree requirements checklist

✓	Course #	Course Name	Credits	Pre-requisites	Co-requisites
Chemistry Courses					
	Chemistry core	(see page 5)	83		
	CHEM 324	Advanced Lab II	2	CHEM 323	CHEM 322
	CHEM 412	Advanced Lab III	2	CHEM 324, 401, 411	
	CHEM 401	Advanced Inorganic Chemistry	3	CHEM 322	
	CHEM 411	Analytical Chemistry II	3	CHEM 212, 322	
	CHEM 440 or C422*	Spec-ID or Adv. Topics	3	CHEM 309, 321	
	CHEM 495	Senior Research	1	CHEM 309	CHEM 322
	CHEM 495	Senior Research	1	CHEM 309	CHEM 322
	CHEM 498	Senior Seminar	2	CHEM 495, Sr. Standing	
	Electives		28	6 of these credits must be upper division	
	TOTAL		128		

* 3 credits of CHEM 422 must be completed; separate CHEM 422 courses may be taken more than once for credit.

Suggested Schedule for Completion in Four Years

↗ The following is a *suggested* schedule and is only one of several ways to combine the degree requirements. See your advisor in the Chemistry Department to craft a specific plan for you.

Fall Semester Year 1	Course	credits	Spring Semester Year 1	Course	credits
C111/C111 L	College Chemistry/Lab	4	C112/C112 L	College Chemistry/Lab	4
E101	English Composition	3	E102	English Composition	3
M170	Calculus I	4	M175	Calculus II	4
	Elective or Core Course	6		Elective or Core Course	4
total credits		17	total credits		15

Fall Semester Year 2	Course	credits	Spring Semester Year 2	Course	credits
C307/C308	Organic Chemistry/Lab	5	C309/C310	Organic Chemistry/Lab	5
C211/C212	Analytical Chemistry/ Lab	5	PH212/212L	Physics	5
PH211/211L	Physics	5	Math 275	Multi Variable/ Vector Calc	4
				Elective or Core Course	1
total credits		15	total credits		15

Fall Semester Year 3	Course	credits	Spring Semester Year 3	Course	credits
C321	Physical Chemistry	3	C322	Physical Chemistry	3
C323	Adv. Chemistry Lab. I	2	C324	Adv. Chemistry Lab II	2
	Elective or Core Course	12	C495	Senior Research	1
				Elective or Core Course	11
total credits		17	total credits		17

Fall Semester Year 4	Course	credits	Spring Semester Year 4	Course	credits
C401	Advanced Inorg. Chem.	3	C412	Adv. Chemistry Lab. III	2
C411	Analytical Chemistry II	3	C440 or C422	Spec ID or Adv. Topics	3
C495	Senior Research	1	C498	Senior Seminar	2
	Elective or Core Course	9		Elective or Core Course	9
total credits		16	total credits		16

Chemistry Major, Forensics Emphasis

Degree requirements checklist

✓	Course #	Course Name	Credits	Pre-requisites	Co-requisites
Biology and Criminal Justice Courses					
	BIOL 191	General Biology I + Lab	4	MATH 108	
	BIOL 301	Cell Biology	3	BIOL 191 & CHEM 307	
	BIOL 343	Genetics	3	BIOL 301	
	BIOL 347	Forensic Biology	3		
	CJ 103	Intro to Law and Justice	3	(Can be an Area II credit)	
	CJ 375	Law of Criminal Evidence	3	CJ 103	
Chemistry Courses					
	Chemistry core	(see page 5)	83 (80)		
	CHEM 431	Biochemistry I	3	CHEM 301 & 309	
	CHEM 433	Biochemistry II	3	CHEM 431	
	CHEM 324	Advanced Lab II	2	CHEM 323	CHEM 322
	CHEM 432	Biochemistry Lab	2	CHEM 431	
	CHEM 440 or C422*	Spec-ID or Adv. Topics	3	CHEM 309, 321	
	CHEM 495	Senior Research	1	CHEM 309	CHEM 322
	CHEM 495	Senior Research	1	CHEM 309	CHEM 322
	CHEM 498	Senior Seminar	2	CHEM 495, Sr. Standing	
Electives			9 (12)	(13 credits needed if CJ 103 used for Area II)	
TOTAL			128		

* 3 credits of CHEM 422 must be completed; separate CHEM 422 courses may be taken more than once for credit.

Suggested Schedule for Completion in Four Years

✦ The following is a *suggested* schedule and is only one of several ways to combine the degree requirements. See your advisor in the Chemistry Department to craft a specific plan for you.

Fall Semester Year 1	Course	Credits	Spring Semester Year 1	Course	credits
C111/C111 L	College Chemistry/Lab	4	C112/C112 L	College Chemistry/Lab	4
E101	English Composition	3	E102	English Composition	3
M170	Calculus I	4	M175	Calculus II	4
	Elective or Core Course	5	B191	Biology/Lab	4
total credits		16	total credits		15

Fall Semester Year 2	Course	Credits	Spring Semester Year 2	Course	credits
C307/C308	Organic Chemistry/Lab	5	C309/C310	Organic Chemistry/Lab	5
C211/C212	Analytical Chemistry I/Lab	5	Math 275	Multivariable/Vector Calc	4
PH211/211L	Physics	5	PH212/212L	Physics	5
CJ 103	Intro to Law and Justice	3			
total credits		18	total credits		14

Fall Semester Year 3	Course	Credits	Spring Semester Year 3	Course	credits
C321	Physical Chemistry	3	C322	Physical Chemistry	3
C431	Biochemistry I	3	C433	Biochemistry II	3
C323	Adv. Chemistry Lab. I	2	C324	Adv. Chemistry Lab II	2
B347	Forensic Biology	3	B301	Cell Biology	3
	Elective or Core Course	6	C495	Senior Research	1
total credits		17	total credits		16

Fall Semester Year 4	Course	Credits	Spring Semester Year 4	Course	credits
C495	Senior Research	1	C432	Biochemistry Lab	2
B343	Genetics	3	C498	Senior Seminar	2
CJ 375	Law of Criminal Evidence	3	C440 or C422	Spec ID or Adv. Topics	3
	Elective or Core Course	9		Elective or Core Course	9
total credits		16	total credits		16

Chemistry Major, Geochemistry Emphasis Degree requirements checklist

✓	Course #	Course Name	Credits	Pre-requisites	Co-requisites
Geology Courses					
	GEOS 100	Fundamentals of Geology	3		
	GEOS 200	Evolution of Western North America	3	GEOS 100	
	GEOS 300	Earth Materials	4	GEOL 200	
	GEOS 425	Geochemistry	3	GEOL 221 and CHEM 112	
	GEOS	Two additional upper division	6		
Chemistry Courses					
	Chemistry core	(see page 5)	83		
	CHEM 401	Advanced Inorganic Chemistry	3	CHEM 322	
	CHEM 324	Advanced Lab II	2	CHEM 323	CHEM 322
	CHEM 411	Analytical Chemistry II	3	CHEM 212, 322	
	CHEM 495	Senior Research	1	CHEM 309	CHEM 322
	CHEM 495	Senior Research	1	CHEM 309	CHEM 322
	CHEM 498	Senior Seminar	2	CHEM 495, Sr. Standing	
Electives			14	2 of these credits must be upper division	
TOTAL			128		

Suggested Schedule for Completion in Four Years

↗ The following is a *suggested* schedule for completion of the Chemistry Major, Professional Emphasis and is only one of several ways to combine the degree requirements. See your advisor in the Chemistry Department to craft a specific plan for you.

Fall Semester Year 1	Course	Credits	Spring Semester Year 1	Course	credits
C111/C111 L	College Chemistry/Lab	4	C112/C112 L	College Chemistry/Lab	4
E101	English Composition	3	E102	English Composition	3
M170	Calculus I	4	M175	Calculus II	4
	Elective or Core Course	3	G100	Fundamentals of Geology	3
				Elective or Core Course	3
total credits		14	total credits		17

Fall Semester Year 2	Course	Credits	Spring Semester Year 2	Course	credits
C307/C308	Organic Chemistry/Lab	5	C309/C310	Organic Chemistry/Lab	5
C211/C212	Analytical Chemistry/Lab	5	Math 275	Multivariable/ Vector Calc.	4
GeoS 200	Evolution W. North America	3	PH212/212L	Physics	5
PH211/211L	Physics	5		Elective or Core Course	3
total credits		18	total credits		17

Fall Semester Year 3	Course	Credits	Spring Semester Year 3	Course	credits
C321	Physical Chemistry	3	C322	Physical Chemistry	3
C323	Adv. Chemistry Lab. I	2	C324	Adv. Chemistry Lab II	2
G300	Earth Materials	4	G425	Geochemistry	3
	Elective or Core Course	8	C495	Senior Research	1
				Elective or Core Course	6
total credits		17	total credits		15

Fall Semester Year 4	Course	Credits	Spring Semester Year 4	Course	credits
C495	Senior Research	1	C498	Senior Seminar	2
Gxxx	upper div geology	3	Gxxx	Upper Div Geology	3
C401	Adv. Inorganic Chemistry	3		Elective or Core Course	9
C411	Analytical Chemistry II	3			
	Elective or Core Course	6			

total credits

16

total credits

14

Chemistry Major, Pre-Medical Emphasis

Degree requirements checklist

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✓	Course #	Course Name	Credits	Pre-requisites	Co-requisites
Biology Courses					
	BIOL 191	General Biology I + Lab	4	MATH 108	
	BIOL 192	General Biology II + Lab	4	BIOL 191	
	BIOL 301	Cell Biology	3	BIOL 191 & CHEM 307	
	BIOL 343	Genetics	3	BIOL 301	
Chemistry Courses					
	Chemistry core	(see page 5)	83		
	CHEM 431	Biochemistry I	3	CHEM 301 & 309	
	CHEM 433	Biochemistry II	3	CHEM 431	
	CHEM 324	Advanced Lab II	2	CHEM 323	CHEM 322
	CHEM 432	Biochemistry Lab	2	CHEM 431	
	CHEM 440 or C422*	Spec-ID or Adv. Topics	3	CHEM 309, 321	
	CHEM 495	Senior Research	1	CHEM 309	CHEM 322
	CHEM 495	Senior Research	1	CHEM 309	CHEM 322
	CHEM 498	Senior Seminar	2	CHEM 495, Sr. Standing	
Electives			14		
TOTAL			128		

* 3 credits of CHEM 422 must be completed; separate CHEM 422 courses may be taken more than once for credit.

Suggested Schedule for Completion in Four Years

☞ The following is a *suggested* schedule for completion of the Chemistry Major, Professional Emphasis and is only one of several ways to combine the degree requirements. See your advisor in the Chemistry Department to craft a specific plan for you.

Fall Semester Year 1	Course	Credits	Spring Semester Year 1	Course	credits
C111/C111 L	College Chemistry/Lab	4	C112/C112 L	College Chemistry/Lab	4
E101	English Composition	3	E102	English Composition	3
M170	Calculus I	4	M175	Calculus II	4
B191	Biology/Lab	4	B192	Biology/Lab	4
	Elective or Core Course	1		Elective or Core Course	3
total credits		16	total credits		18

Fall Semester Year 2	Course	Credits	Spring Semester Year 2	Course	credits
C307/C308	Organic Chemistry/Lab	5	C309/C310	Organic Chemistry/Lab	5
C211/C212	Analytical Chemistry/ Lab	5	PH212/212L	Physics	5
PH211/211L	Physics	5	Math 275	Multi Variable/ Vector Calc	4
				Elective or Core Course	3
total credits		15	total credits		17

Fall Semester Year 3	Course	Credits	Spring Semester Year 3	Course	credits
C321	Physical Chemistry	3	C322	Physical Chemistry	3
C431	Biochemistry I	3	C433	Biochemistry II	3
C323	Adv. Chemistry Lab. I	2	C324	Adv. Chemistry Lab II	2
	Elective or Core Course	7	B301	Cell Biology	3
			C495	Senior Research	1
				Elective or Core Course	3
total credits		15	total credits		15

Fall Semester Year 4	Course	Credits	Spring Semester Year 4	Course	credits
C495	Senior Research	1	C432	Biochemistry Lab	2
B343	Genetics	3	C498	Senior Seminar	2
	Elective or Core Course	12	C440 or C422	Spec ID or Adv. Topics	3
				Elective or Core Course	9

total credits

16

Chemistry Major, Business Emphasis

total credits

16

Degree requirements checklist

✓	Course #	Course Name	Credits	Pre-requisites	Co-requisites
Accounting / Economics / Business					
	ACCT 205	Intro to Financial Accounting	3		
	ACCT 206	Intro to Managerial Accounting	3	ACCT 205	
	ECON 201	Principles of Macroeconomics	3	(Can be an Area II credit)	
	ECON 202	Principles of Microeconomics	3	(Can be an Area II credit)	
	BUSSTAT 207 (or MATH 254)	Statistical Techniques or (Applied Statistics)	3 (3)	MATH 143	
	GENBUS 202	Legal Environment of Business	3	At least sophomore standing	
	ECON/ACCT	12 add'l upper division credits	12	Courses must span 2 disciplines	
Chemistry Courses					
	Chemistry core	(see page 5)	83 (77)		
	CHEM 324	Advanced Lab II	2	CHEM 323	CHEM 322
	CHEM 495*	Senior Research	1	CHEM 309	CHEM 322
	CHEM 495*	Senior Research	1	CHEM 309	CHEM 322
	CHEM 498	Senior Seminar	2	CHEM 495, Sr. Standing	
Electives			9 (15)	5 of these credits must be upper div. (16 credits needed if ECON 201 & 202 used for Area II)	
TOTAL			128		

*With *prior* departmental approval, the student may satisfy their core CHEM 495 research requirement with an appropriate business internship.

See next page for suggested schedule.

Chemistry Major, Business Emphasis

Suggested Schedule for Completion in Four Years

↗ The following is a *suggested* schedule and is only one of several ways to combine the degree requirements. See your advisor in the Chemistry Department to craft a specific plan for you.

Fall Semester Year 1	Course	Credits	Spring Semester Year 1	Course	credits
C111/C111 L	College Chemistry/Lab	4	C112/C112 L	College Chemistry/Lab	4
E101	English Composition	3	E102	English Composition	3
M170	Calculus I	4	M175	Calculus II	4
E201	Principles of Macroeconomics	3	ECON202	Principles of Microeconomics	3
	Elective or Core course	3		Elective or Core course	1
total credits		17	total credits		15

Fall Semester Year 2	Course	Credits	Spring Semester Year 2	Course	credits
C307/C308	Organic Chemistry/Lab	5	C309/C310	Organic Chemistry/Lab	5
C211/C212	Analytical Chemistry/ Lab	5	PH212/212L	Physics	5
PH211/211L	Physics	5	Math 275	Multi Variable/ Vector Calc	4
			Upper Division	Econ or Acct.	3
total credits		17	total credits		17

Fall Semester Year 3	Course	Credits	Spring Semester Year 3	Course	credits
C321	Physical Chemistry	3	C322	Physical Chemistry	3
C431	Biochemistry I	3	C433	Biochemistry II	3
C323	Adv. Chemistry Lab. I	2	C324	Adv. Chemistry Lab II	2
	Upper Div Econ or Acct	3	B301	Cell Biology	3
	Elective or Core Course	4	C495	Senior Research	1
				Upper div Econ or Acct	3
total credits		15	total credits		15

Fall Semester Year 4	Course	Credits	Spring Semester Year 4	Course	credits
C495	Senior Research	1	C432	Biochemistry Lab	2
B343	Genetics	3	C498	Senior Seminar	2
ACCT205	Intro to Financial Accounting	3	C440 or C422	Spec ID or Adv. Topics	3
BUSTAT207	Statistical Techniques	3	ACCT206	Intro to Managerial Accounting	3
	Upper div Econ or Acctg	3	GENEBUS202	Legal Environment of Bus	3
	Elective or Core Course	3		Elective or Core Course	3
total credits		16	total credits		16

Chemistry Major, Secondary Education Emphasis*

Degree requirements checklist

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✓	Course #	Course Name	Credits	Pre-requisites	Co-requisites**
Biology Courses					
	BIOL 191	General Biology I + Lab	4	MATH 108	
	BIOL 192	General Biology II + Lab	4	BIOL 191	
Chemistry Courses					
	Chemistry core	(see page 5)	83	(ED-CIFS 201 used as Area II Core)	
	CHEM 431	Biochemistry I	3	CHEM 301 & 309	
Education Courses					
	EDTECH 202	Education Technology	3		
	ED-CIFS 301	Teaching Experience	1	***	BLOCK 1
	ED-CIFS 302	Learning and Instructions	4	***	BLOCK 1
	ED-SPED 350	Teaching Students with Exceptional Needs at the Secondary Level	3	***	BLOCK 1
	ED-CIFS 401	Professional Year Teaching Experience II	2	Block 1	BLOCK 2
	ED-LTCY 444	Content Literacy for Secondary Students	3	Block 1	BLOCK 2
	ED-CIFS 404	Teaching Secondary Science	3	Block 1	BLOCK 2
	ED-CIFS 485	Professional Year – Senior High Teaching Experience	16	Block 2	BLOCK 3
TOTAL			129		

* Because the total number of credits required for graduation with this emphasis is 129, there are no electives in this major.

** Courses listed together as a Block, must be taken as co-requisites.

*** One must be admitted to the Secondary Education program in order to enroll in Block 1 courses. ED-CIFS 201 and ED-TECH 202 must be completed before application to the Secondary Education program.

See next page for suggested schedule for completion.

Chemistry Major, Secondary Education Emphasis

Suggested Schedule for Completion in Four Years

✎ The following is a *suggested* schedule and is only one of several ways to combine the degree requirements. See your advisor in the Chemistry Department to craft a specific plan for you.

Fall Semester Year 1	Course	credits	Spring Semester Year 1	Course	credits
C111/C111 L	College Chemistry/Lab	4	C112/C112 L	College Chemistry/Lab	4
E101	English Composition	3	E102	English Composition	3
M170	Calculus I	4	M175	Calculus II	4
BIOL 191	Biology I/Lab	4	ED-CIFS 201	Foundations of Education	3
Total credits		15	Total credits		14

Fall Semester Year 2	Course	credits	Spring Semester Year 2	Course	credits
C307/C308	Organic Chemistry/Lab	5	C309/C310	Organic Chemistry/Lab	5
C211/C212	Analytical Chemistry/Lab	5	M275	Multivariable/Vector Calc.	4
PH211/211L	Physics/Lab	5	PH212/212L	Physics/Lab	5
EDTECH202	Educational Technology	3		Core Course	3
Total credits		18	Total credits		17

Apply for Admission to Secondary Education

Fall Semester Year 3	Course	credits	Spring Semester Year 3	Course	credits
C321	Physical Chemistry	3	C322	Physical Chemistry	3
C323	Adv. Chemistry Lab I	2	EDUC301	Teaching Experience	1
C431	Biochemistry I	3	EDUC302	Learning and Instruction	4
BIOL 192	Biology II/Lab	4	EDUC350	Teaching Students with Exceptional Needs	3
	Core Courses	3		Core Courses	6
Total credits		15	Total credits		17

Take PRAXIS I exam in early fall of Yr3: results back in 6 weeks

Take PRAXIS II (chemistry content) exam after the Yr3 spring semester is complete

Fall Semester Year 4	Course	credits	Spring Semester Year 4	Course	credits
EDUC401	Teaching Experience II	2	EDUC485	Sr High School Student	16
Ed-LTCY 444	Content Literacy for Secondary Students	3		Teaching Experience	
EDUC404	Teaching Secondary Science	3			
	Core Course	9			
Total credits		17	Total credits		16