

<b>Course Requirements Checklist for Chemistry Major, Secondary Education Emphasis</b>						
<input checked="" type="checkbox"/>	<b>Course #</b>	<b>Course Name</b>	<b>Credits</b>	<b>Prerequisites</b>	<b>Co-requisites</b>	<b>Offered</b>
<b>Foundational Studies Requirements</b>						
	ENGL 101	Introduction to College Writing	3	Satisfactory placement score		F/S
	ENGL 102	Intro to College Writing & Research	3	ENGL 101 or satisfactory score		F/S
	UF 100	Intellectual Foundations	3			F/S
	UF 200	Civic and Ethical Foundations	3			F/S
	DLN	Natural and Physical Sciences	- #			
	DLV	Visual and Performing Arts	3			
	DLL	Literature and Humanities	3-4			
	DLS	Social Sciences	- #			
	DLM	Mathematics	- #			
<b>Subtotal from Foundational Requirements</b>			<b>21-22</b>	# Necessary DLN credits (7-8), DLM credits (3-5) and DLS credits (6) are satisfied with required courses below		
<b>Mathematics Course Requirements</b>						
	MATH 170	Calculus I (DLM)	4	MATH 143 and 144 or a satisfactory placement score		F/S
	MATH 175	Calculus II	4	MATH 170		F/S
	MATH 275	Multivariable and Vector Calculus	4	MATH 175		F/S
<b>Subtotal from Math Requirements</b>			<b>12</b>			
<b>Physics Course Requirements</b>						
	PHYS 211	Physics I with Calculus (DLN)	4	MATH 144	PHYS 211L, MATH 170	F/S
	PHYS 211L	Physics I with Calculus Laboratory (DLN)	1		PHYS 211	F/S
	PHYS 212	Physics II with Calculus	4	PHYS 211, MATH 170	PHYS 212 L, MATH 175	F/S
	PHYS 212L	Physics II with Calculus Laboratory	1		PHYS 212	F/S
<b>Subtotal from Physics Requirements</b>			<b>10</b>			
<b>Chemistry Course Requirements</b>						
	CHEM 111	General Chemistry I * (DLN)	3	MATH 143 or a satisfactory placement score	CHEM 111L	F/S
	CHEM 111L	General Chemistry I Laboratory (DLN)	1		CHEM 111	F/S
	CHEM 112	General Chemistry II	3	CHEM 111 & 111L	CHEM 112L	F/S
	CHEM 112L	General Chemistry II Laboratory	1		CHEM 112	F/S
	CHEM 211	Analytical Chemistry I	3	CHEM 112 & 112L, MATH 143 and 144		F/S
	CHEM 212	Analytical Chemistry I Laboratory	2		CHEM 211	F/S
	CHEM 307	Organic Chemistry I	3	CHEM 111, 112, 112L	CHEM 308	F/S
	CHEM 308	Organic Chemistry I Laboratory	2		CHEM 307	F/S
	CHEM 309	Organic Chemistry II	3	CHEM 307	CHEM 310	F/S
	CHEM 310	Organic Chemistry II Laboratory	2	CHEM 308	CHEM 309	F/S
	CHEM 321	Physical Chemistry I	3	CHEM 309, MATH 275, PHYS 212, 212L		Fall
	CHEM 322	Physical Chemistry II	3	CHEM 321		Spring
	CHEM 323	Advanced Synthesis Laboratory (CID)	3	CHEM 211, 212, CHEM 310, CHEM 321	CHEM 321 (pre/co-requisite)	F/S
	CHEM 324	Physical Chemistry Laboratory	2	CHEM 211, 212, CHEM 310	CHEM 322 (pre/co-requisite)	F/S
	CHEM 401	Advanced Inorganic Chemistry	3	CHEM 322		Fall
	CHEM 411	Analytical Chemistry II	3	CHEM 212, CHEM 322		Fall
	CHEM 412	Analytical Chemistry Laboratory II	2	CHEM 324, CHEM 411		Spring
	CHEM 431	Biochemistry I	3	CHEM 309 & MATH 170		Fall
	CHEM 495	Research in Chemistry (1 yr recommended)	min of 2	CHEM 309		F/S
	CHEM 498	Seminar (FF)	<u>2</u>	Senior Chemistry Major		F/S
<b>Subtotal from Chemistry Requirements</b>			<b>49</b>			
<b>STEM Education Course Requirements</b>						
	ED-CIFS 201	Foundations of Education (DLS)	3			F/S
	STEM-ED 101	Step 1: Inquiry Approaches to Teaching	1			F/S
	STEM-ED 102	Step 2: Inquiry-based Lesson Design	1	STEM-ED101		F/S
	STEM-ED 210	Knowing & Learning in Math & Science (DLS)	3	STEM-ED101	STEM-ED102	Fall
	STEM-ED 220	Perspectives on Science & Mathematics	3	STEM-ED 210		Fall
	STEM-ED 310	Classroom Interactions	3	STEM-ED 210		Spring
	STEM-ED 350	Research Methods	3	Permission of Instructor		Spring
	STEM-ED 410	Project-based Instruction	3	STEM-ED 310, Admission to Apprenticeship		Fall
	STEM-ED 480	Apprentice Teaching	<u>6</u>	STEM-ED 350, STEM-ED 410, Admission to Apprenticeship		Spring
<b>Subtotal from STEM Education Requirements</b>			<b>26</b>			
Electives to total 120 Credits			<b>1-2</b>			
<b>Total Credits</b>			<b>120</b>			

\* Either one year of high school chemistry or an introductory chemistry course is recommended before taking CHEM 111.

**Suggested Schedule of Courses for the *Secondary Education Emphasis* for Degree Completion in Four Years\*:**

**Fall Semester Year 1**

**Spring Semester Year 1**

Number	Course	credits	Number	Course	credits
CHEM 111/111L	General Chemistry I General Chemistry I Laboratory	3 1	CHEM 112/112L	General Chemistry II General Chemistry II Laboratory	3 1
ENGL 101	Intro to College Writing	3	MATH 175	Calculus II	4
MATH 170	Calculus I	4	STEM-ED 102	Step 2: Inquiry-based Lesson Design	1
UF 100	Intellectual Foundations	3	PHYS 211/211L	Physics I Physics I Laboratory	4 1
STEM-ED 101	Step 1: Inquiry Approaches to Teaching	1			
<b>Total credits</b>		<b>15</b>	<b>Total credits</b>		<b>14</b>

**Fall Semester Year 2**

**Spring Semester Year 2**

Number	Course	credits	Number	Course	credits
CHEM 307/308	Organic Chemistry I Organic Chemistry I Laboratory	3 2	CHEM 309/310	Organic Chemistry II Organic Chemistry II Laboratory	3 2
MATH 275	Multivariable & Vector Calculus	4	CHEM 211/212	Analytical Chemistry I Analytical Chemistry I Laboratory	3 2
PHYS 212/212L	Physics II Physics II Laboratory	4 1	STEM-ED 210	Knowing & Learning in Mathematics & Science	3
			ENGL 102	Intro to College Writing and Research	3
<b>Total credits</b>		<b>14</b>	<b>Total credits</b>		<b>16</b>

**Fall Semester Year 3**

**Spring Semester Year 3**

Number	Course	credits	Number	Course	credits
CHEM 321	Physical Chemistry I	3	CHEM 322	Physical Chemistry II	3
CHEM 323	Advanced Synthesis Laboratory	3	CHEM 324	Physical Chemistry Laboratory	2
CHEM 431	Biochemistry I	3	CHEM 495	Research	1
STEM-ED 220	Perspectives on Science & Mathematics	3	STEM-ED 310	Classroom Interactions	3
ED-CIFS 201	Foundations of Education	3	STEM-ED 350	Research Methods	3
			UF 200	Civic and Ethical Foundations	3
<b>Total credits</b>		<b>15</b>	<b>Total credits</b>		<b>15</b>

**Fall Semester Year 4**

**Spring Semester Year 4**

Number	Course	credits	Number	Course	credits
CHEM 401	Advanced Inorganic Chemistry	3	CHEM 412	Analytical Chemistry Laboratory II	2
CHEM 411	Analytical Chemistry II	3	CHEM 498	Seminar	2
CHEM 495	Research	1	STEM-ED 480	Apprentice Teaching	6
STEM-ED 410	Project-based Instruction	3		Foundations/Elective Courses	5
	Foundations/Elective Courses	6			
<b>Total credits</b>		<b>16</b>	<b>Total credits</b>		<b>15</b>

\*This suggested schedule is only a guideline, and assumes a math background sufficient to allow a student to enroll in CHEM 111 the Fall Semester of Year 1.

Note: An additional Teaching Endorsement in Physical Science can be earned with the addition of either PHYS 104 or PHYS 105 as an elective course.