

# CHEMISTRY (B.S.) WITHOUT CERTIFICATION

## Major Requirements

Code	Title	Hours
CHEM 141 & CHEM 142	GENERAL CHEMISTRY I and GENERAL CHEMISTRY II	6
CHML 141 & CHML 142	GENERAL CHEMISTRY LAB and GENERAL CHEMISTRY II LAB	2
CHEM 241 & CHEM 242	ORGANIC CHEMISTRY I and ORGANIC CHEMISTRY II	6
CHML 241 & CHML 242	ORGANIC CHEMISTRY I LAB and ORGANIC CHEMISTRY II LAB	2
CHEM 310	INTRO TO SCIENTIFIC RESEARCH	2
CHEM 320 & CHML 320	ANALYTICAL CHEMISTRY and ANALYTICAL CHEMISTRY LAB	4
CHEM 340 & CHML 340	INORGANIC CHEMISTRY I and INORGANIC CHEMISTRY LAB	4
CHEM 341 & CHML 341	PHYSICAL CHEMISTRY I and PHYSICAL CHEMISTRY I LAB	4
CHEM 380	INDEPENDENT STUDY	2
CHEM 421 & CHML 421	CHEMICAL INSTRUMENTATION and CHEMICAL INSTRUMENTATION LAB	4
CHEM 429	Organic Structure Determination by Spectroscopy	3
CHEM 381	CHEMISTRY SEMINAR	0.5
CHEM 382	CHEMISTRY SEMINAR	0.5
CHEM 481	CHEMISTRY SEMINAR	0.5
CHEM 482	CHEMISTRY SEMINAR	0.5
CHEM _ Advance Chemistry Electives		6
MATH 242	CALCULUS II WITH LABORATORY	3
PHY 201 & PHYL 201	BASIC PHYSICS I and BASIC PHYSICS LAB I	4
PHY 202 & PHYL 202	BASIC PHYSICS II and BASIC PHYSICS LAB II	4
<b>Total Hours</b>		<b>58</b>

## Curriculum Map

Course	Title	Hours
<b>Freshman</b>		
<b>Fall</b>		
BIO 111 & BIOL 111	GENERAL BIOLOGY and GENERAL BIOLOGY LAB	4
CHEM 141 & CHML 141	GENERAL CHEMISTRY I and GENERAL CHEMISTRY LAB	4
ENG 104 or ENG 103 or ENG 111	COMPOSITION I or English Composition I with Co-requisite Support or COMPOSITION & LITERATURE FOR L	3
MATH 111	COLLEGE ALGEBRA	3
UNIV 100	UNIVERSITY SUCCESS	2
<b>Hours</b>		<b>16</b>
<b>Spring</b>		
CHEM 142 & CHML 142	GENERAL CHEMISTRY II and GENERAL CHEMISTRY II LAB	4
ENG 105 or ENG 112	COMPOSITION II or COMPOSITION	3
MATH 241	CALCULUS I WITH LABORATORY	3

Humanities & Fine Arts Option	3
Pathway Option	3

**Hours 16**

### Sophomore

<b>Fall</b>		
CHEM 241 & CHML 241	ORGANIC CHEMISTRY I and ORGANIC CHEMISTRY I LAB	4
MATH 242	CALCULUS II WITH LABORATORY	3
PHY 211 & PHYL 211	General Physics I and GENERAL PHYSICS LAB I	4
Humanities & Fine Arts Option		3
Pathway Option		3

**Hours 17**

<b>Spring</b>		
CHEM 242 & CHML 242	ORGANIC CHEMISTRY II and ORGANIC CHEMISTRY II LAB	4
CHEM 340 & CHML 340	INORGANIC CHEMISTRY I and INORGANIC CHEMISTRY LAB	4
PHY 212 & PHYL 212	General Physics II and GENERAL PHYSICS LAB II	4
UNIV 200	CIVIC ENGAGEMENT	1
Pathway Option		3

**Hours 16**

### Junior

<b>Fall</b>		
CHEM 320 & CHML 320	ANALYTICAL CHEMISTRY and ANALYTICAL CHEMISTRY LAB	4
CHEM 341 & CHML 341	PHYSICAL CHEMISTRY I and PHYSICAL CHEMISTRY I LAB	4
CHEM 381	CHEMISTRY SEMINAR	0.5
Social & Behavioral Science		3
Humanities & Fine Arts Option		3

**Hours 14.5**

<b>Spring</b>		
CHEM 310	INTRO TO SCIENTIFIC RESEARCH	2
CHEM 380	INDEPENDENT STUDY	1
CHEM 382	CHEMISTRY SEMINAR	0.5
Chemistry Math Option		3
Social & Behavioral Science Option		3
General Elective		3
General Elective		3

**Hours 15.5**

### Senior

<b>Fall</b>		
CHEM 481	CHEMISTRY SEMINAR	0.5
Chemistry Elective		3
General Elective		3
General Elective		3
General Elective		3

**Hours 12.5**

<b>Spring</b>		
CHEM 421 & CHML 421	CHEMICAL INSTRUMENTATION and CHEMICAL INSTRUMENTATION LAB	4
CHEM 429	Organic Structure Determination by Spectroscopy	3
CHEM 482	CHEMISTRY SEMINAR	0.5
Chemistry Elective		3
General Elective		3

**Hours 13.5**

**Total Hours 121**

### Notes:

- Candidates that transfer 12 or more hours of college credit are exempt from UNIV 100 UNIVERSITY SUCCESS; however, the student must take 2 hours of general electives to replace the UNIV course.
- Standardized Tests (GRE, MCAT, MFT, PCAT, etc), the Chemistry Exit Exam, Research Report, and Research Presentation are required before graduation.
- Online Graduation Clearance (**to be completed during the graduating semester only**).

## Chemistry Option Courses

Code	Title	Hours
Select must choose six (6) hours from the following chemistry elective options:		3
CHEM 410	ENVIRONMENTAL CHEMISTRY	3
CHEM 342	PHYSICAL CHEMISTRY II	3
CHEM 436	PHYSICAL ORGANIC CHEMISTRY	3
CHEM 439	Introduction to Polymer Chemistry	3
CHEM 441	INORGANIC CHEMISTRY II	3
CHEM 452	ATOMIC & MOLECULAR STRUCTURE	3
CHEM 458	QUANTUM MECHANICS	3
CHEM 471	FORENSIC TOXICOLOGY	3

## Math Option Courses

Code	Title	Hours
Students must choose six (hours) of the following math options: <sup>1</sup>		6-8
MATH 111	COLLEGE ALGEBRA	
MATH 112	PLANE TRIGONOMETRY	
MATH 118	ALGEBRA II & TRIGONOMETRY	
MATH 243	CALCULUS III WITH LABORATORY	

<sup>1</sup> Comments: If taking MATH 118, there will be one less credit hour needed for the student to graduate. If a student is qualified to take MATH 241 in the freshman year, MATH 111, 112, or 118 are not required, rather, the student can take MATH 242, MATH 243, or other elective

## Student Learning Outcomes

JSU Chemistry graduates will:

- acquire comprehensive knowledge of the fundamentals and application of major scientific theories in chemistry;
- be able to carry out laboratory experiments in chemistry in a safe manner as well as accurately record, analyze, and interpret the results of such experiments.
- learn, develop, and be able to apply information literacy skills in chemistry.
- be able to clearly communicate chemistry knowledge in both oral and written formats.
- be able to participate and contribute to new scientific discoveries and/or technology development efforts using their chemistry knowledge.