

# CHEMISTRY, BACHELOR OF ARTS (BA)

## Program Learning Outcomes

- Students will demonstrate knowledge of the main disciplines of chemistry, namely *Organic, Analytical, Biological, Physical, and Inorganic* chemistry.
- Students will demonstrate development of technical skills for practical applications of chemistry.
- Students will present collected experimental data in written and oral reports.
- Students and faculty will participate in faculty-led research projects. Students are expected to be actively working in the laboratory under the supervision and guidance of a faculty mentor.

## Related Links

Chemistry, BA Program Page (<https://www.sru.edu/academics/majors-and-minors/chemistry-ba/>)

Professional Licensure/Certification Page (<https://www.sru.edu/students/student-consumer-information/professional-licensures/>)

## Curriculum Guide

### GPA Requirement

Major GPA: 2.0 or higher

Overall GPA: 2.0 or higher

### Summary\*

Code	Title	Hours
	Rock Studies 2 Requirements	45
	Modern Language Requirement	0-9
	Other Basic Requirements	0-3
	Major/Concentration Requirements	40
	Natural Science and Math College-Wide Requirements	12
	Electives	35

\* All undergraduate degree programs require a minimum of 120 credits. Some courses meet multiple requirements, but are only counted once toward the 120 credit total required to graduate.

### Rock Studies 2 Requirements

Code	Title	Hours
<b>The Rock</b>		
SUBJ 139	Foundations of Academic Discovery <sup>1</sup>	3
ENGL 102	Critical Writing	3
ENGL 104	Critical Reading	3
MATH 225	Calculus I <sup>2</sup>	4
Select one of the following:		3
COMM 200	Civil Discourse: Theory & Practice	
PHIL 110	Ethics and Civil Discourse	
POLS 235	Civil Discourse and Democracy	
Subtotal		16

### Integrated Inquiry

*Creative and Aesthetic Inquiry*

Select 3 Credits (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>) 3

#### Humanities Inquiry

Select 3 Credits (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>) 3

#### Social Science Inquiry

Select 3 Credits (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>) 3

#### Natural Sciences Inquiry

CHEM 107 General Chemistry I <sup>2</sup> 3

CHEM 111 General Chemistry I Lab 1

#### Physical Sciences Inquiry

PHYS 216 University Physics 1 with Lab 4

Subtotal 17

#### Thematic Thread

Select 12 Credits (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>) <sup>3</sup> 12

**Total Hours 45**

<sup>1</sup> Course offered in multiple subjects; cannot take in first major subject

<sup>2</sup> Course counts for 50% of Major requirements and Major GPA

<sup>3</sup> One course from each category; six credits must be 300-level or above; no more than 4 credits from one subject area; specific courses required in first major, regardless of prefix of course, cannot be used to satisfy thread requirements; any course with same prefix as first major cannot be used to satisfy thread requirements, even if it is not a course in the first major.

## BA Modern Language Requirement

BA degree requires language proficiency at the 103 class level. Exemption by placement or examination is possible.

Code	Title	Hours
Complete 0-9 credits		0-9
<b>Total Hours</b>		<b>0-9</b>

## Basic Math Requirement

Check with your adviser or a current degree audit report to see if you have been exempted from this course. The credit earned in this course will not be counted toward the 120 credit hour minimum needed to earn a degree.

Code	Title	Hours
Complete one of the following:		0-3
Meet required minimum SAT or ACT math score OR		
ESAP 110	Beginning Algebra	
<b>Total Hours</b>		<b>0-3</b>

## DIVERSITY, EQUITY, AND INCLUSION REQUIREMENT

Students must take and pass a course with the Diversity, Equity, and Inclusion (DEI) designation prior to graduation. Students can meet this requirement by taking any DEI - designated course in any program at any time during their undergraduate career.

## Major/Concentration Requirements

- 20 major credits must be taken at SRU or PASSHE
- 20 major credits must be taken at the 300 level or above

Code	Title	Hours
<b>Required Chemistry Courses</b>		
CHEM 108	General Chemistry II <sup>1</sup>	3
CHEM 112	General Chemistry II Lab <sup>1</sup>	1
CHEM 201	Organic Chemistry I <sup>1</sup>	3
CHEM 211	Organic Chemistry Laboratory I <sup>1</sup>	1
CHEM 202	Organic Chemistry II <sup>1</sup>	3
CHEM 212	Organic Chemistry Laboratory II <sup>1</sup>	1
CHEM 301	Physical Chemistry I <sup>1</sup>	3
CHEM 321	Physical Chemistry Laboratory I <sup>1</sup>	1
CHEM 335	Biochemistry I <sup>1</sup>	3
CHEM 336	Biochemistry Laboratory I <sup>1</sup>	1
CHEM 350	Analytical Chemistry <sup>1</sup>	3
CHEM 351	Analytical Chemistry Lab <sup>1</sup>	1
CHEM 442	Inorganic Chemistry <sup>1</sup>	3
CHEM 452	Physical Inorganic Chemistry Laboratory <sup>1</sup>	1
Subtotal		28
<b>Chemistry Elective</b>		
Select four credits (must include one lecture and one lab):		4
CHEM 337	Biochemistry II <sup>1</sup>	
CHEM 338	Biochemistry Laboratory II <sup>1</sup>	
CHEM 340	Air Quality Assessment <sup>1</sup>	
CHEM 370	Water Quality Assessment <sup>1</sup>	
CHEM 425	Instrumental Analysis <sup>1</sup>	
CHEM 426	Instrumental Analysis Laboratory <sup>1</sup>	
CHEM 460	Materials Chemistry <sup>1</sup>	
CHEM 475	Advanced Organic Synthesis <sup>1</sup>	
CHEM 490	Independent Study <sup>1</sup>	
Subtotal		4
<b>Required Math and Science Courses</b>		
MATH 230	Calculus II <sup>1</sup>	4
PHYS 217	University Physics 2 with Lab <sup>1</sup>	4
Subtotal		8
<b>Total Hours</b>		<b>40</b>

<sup>1</sup> Course counts for 50% of Major requirements and Major GPA

\* Some courses may require pre-requisites. Please see course descriptions to determine if there are any pre-requisites for that specific course.

## Natural Science and Math College-Wide Requirements

Code	Title	Hours
CHEM 107	General Chemistry I <sup>1</sup>	3
CHEM 111	General Chemistry I Lab <sup>1</sup>	1
PHYS 201	Elements of Physics I with Lab <sup>1</sup>	4
or PHYS 216	University Physics 1 with Lab	
MATH 125	Precalculus <sup>1</sup>	4
or MATH 225	Calculus I	

<sup>1</sup> Course counts for 50% of Major requirements and Major GPA

## Co-curricular and Experiential Learning

Students are encouraged to explore additional curricular and co-curricular opportunities. There is a strong correlation between long-term student success and participation in the following types of programs and activities:

1. High-Impact Practice (HIP) designated classes (e.g., Organic Chemistry II Lab)
2. Student-faculty research
3. Student leadership development (Chemistry Club)
4. Career education and development
5. Internships
6. Student teaching (serve as Lab Assistants and tutors)
7. Volunteering

## Important Curriculum Guide Notes

This Curriculum Guide is provided to help SRU students and prospective students better understand their intended major curriculum. Enrolled SRU students should note that the My Rock Audit may place already-earned and/or in progress courses in different, yet valid, curriculum categories. Enrolled SRU students should use the My Rock Audit Report and materials and information provided by their faculty advisers to ensure accurate progress towards degree completion. *The information on this guide is current as of the date listed. Students are responsible for curriculum requirements at the time of enrollment at the University.*

PASSHE - Pennsylvania State System of Higher Education Institutions

CHEMISTRY - BA (6 12)

This program is effective as of Fall 2021

Revised 07.29.2021

UCC 04.13.2021

## Recommended Four-Year Plan

Course	Title	Hours
<b>First Year</b>		
<b>Fall</b>		
CHEM 107 & CHEM 111	General Chemistry I and General Chemistry I Lab	4
BIOL 114	Biology II: Foundations of Molecules, Genes and Cells with Lab	4
ENGL 102	Critical Writing	3
ESAP 101	FIRST Seminar *	1
Select one of the following:		3-4
MATH 120	Intermediate Algebra (if necessary)	
MATH 125	Precalculus (if necessary)	
MATH 225	Calculus I (if necessary)	
MATH 230	Calculus II	
<b>Hours</b>		<b>15-16</b>
<b>Spring</b>		
CHEM 108 & CHEM 112	General Chemistry II and General Chemistry II Lab	4
Select one of the following:		4
MATH 125	Precalculus (if necessary)	
MATH 225	Calculus I (if necessary)	
MATH 230	Calculus II	

Inquiry/Thread/Elective ( <a href="https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/">https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/</a> )	3
SUBJ 139 Foundations of Academic Discovery	3

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**Hours 14**

**Second Year****Fall**

CHEM 201 Organic Chemistry I & CHEM 211 and Organic Chemistry Laboratory I	4
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Select one of the following: 4

MATH 225 Calculus I (if necessary)	
MATH 230 Calculus II	
PHYS 216 University Physics 1 with Lab	4
ENGL 104 Critical Reading	3

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**Hours 15**

**Spring**

CHEM 202 Organic Chemistry II & CHEM 212 and Organic Chemistry Laboratory II	4
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MATH 230 Calculus II	4
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PHYS 217 University Physics 2 with Lab	4
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Civil Discourse Requirement - select one 3

COMM 200 Civil Discourse: Theory & Practice	
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PHIL 110 Ethics and Civil Discourse	
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POLS 235 Civil Discourse and Democracy	
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Inquiry/Thread/Elective (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>) 3

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**Hours 18**

**Third Year****Fall**

Select one of the following based on even or odd year: 7-8

In even years, select:

CHEM 335 Biochemistry I & CHEM 336 and Biochemistry Laboratory I	
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CHEM 442 Inorganic Chemistry	
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In odd years, select:

CHEM 301 Physical Chemistry I & CHEM 321 and Physical Chemistry Laboratory I	
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CHEM 350 Analytical Chemistry & CHEM 351 and Analytical Chemistry Lab	
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Inquiry/Thread/Elective (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>) 3

Inquiry/Thread/Elective (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>) 3

Inquiry/Thread/Elective (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>) 3

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**Hours 16-17**

**Spring**

Select one of the following: 7

In odd numbered years, select:

CHEM 452 Physical Inorganic Chemistry Laboratory	
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Inquiry/Thread/Elective (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>)

Inquiry/Thread/Elective (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>)

In even years, select:

CHEM 302 Physical Chemistry II	
CHEM 425 Instrumental Analysis & CHEM 426 and Instrumental Analysis Laboratory	

Select one of the following In Depth Chemistry Electives (1 lecture and 1 lab): 4

CHEM 337 Biochemistry II & CHEM 338 and Biochemistry Laboratory II	
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CHEM 340 Air Quality Assessment	
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CHEM 370 Water Quality Assessment	
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CHEM 415 Forensic Analysis & CHEM 416 and Forensic Analysis Lab	
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CHEM 460 Materials Chemistry	
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CHEM 475 Advanced Organic Synthesis	
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CHEM 490 Independent Study	
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Inquiry/Thread/Elective (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>) 3

Inquiry/Thread/Elective (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>) 3

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**Hours 17**

**Fourth Year****Fall**

Select one of the following: 7-8

In even years, select:

CHEM 335 Biochemistry I & CHEM 336 and Biochemistry Laboratory I	
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CHEM 442 Inorganic Chemistry	
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In odd years, select:

CHEM 301 Physical Chemistry I & CHEM 321 and Physical Chemistry Laboratory I	
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CHEM 350 Analytical Chemistry & CHEM 351 and Analytical Chemistry Lab	
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Inquiry/Thread/Elective (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>) 3

Inquiry/Thread/Elective (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>) 3

Inquiry/Thread/Elective (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>) 3

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**Hours 16-17**

**Spring**

Select one of the following: 7

In odd numbered years, select:

CHEM 452 Physical Inorganic Chemistry Laboratory	
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Inquiry/Thread/Elective (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>)

Inquiry/Thread/Elective (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>)

In odd years, select:

CHEM 302 Physical Chemistry II	
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CHEM 425 Instrumental Analysis & CHEM 426 and Instrumental Analysis Laboratory	
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Select one of the following In Depth Chemistry Electives (1 lecture and 1 lab): 4

CHEM 337 Biochemistry II & CHEM 338 and Biochemistry Laboratory II	
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CHEM 340 Air Quality Assessment	
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CHEM 370	Water Quality Assessment	
CHEM 415 & CHEM 416	Forensic Analysis and Forensic Analysis Lab	
CHEM 460	Materials Chemistry	
CHEM 475	Advanced Organic Synthesis	
CHEM 490	Independent Study	
Inquiry/Thread/Elective ( <a href="https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/">https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/</a> )		3
Inquiry/Thread/Elective ( <a href="https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/">https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/</a> )		3
	<b>Hours</b>	<b>17</b>
	<b>Total Hours**</b>	<b>128-131</b>

<sup>1</sup> Course offered in multiple subjects; cannot take in first major subject

\* Students are encouraged to take ESAP 101 as a Free Elective.

*\*\* This document is meant to serve as a guide. Some planners may show more than 120 credits because faculty have created flexibility in choosing courses. However, only 120 credits are required to obtain a degree. Please consult with your academic adviser and refer to your curriculum guide prior to registering for courses. This plan should be reviewed, and verified, by you and your academic adviser at least once each academic year.*

Major Code: 6 12

Revised date: 08.03.2023