

# Chemistry Major

## Major Area of Emphasis

Students must complete requirements in one of the following areas of emphasis:

- ACS Certified Chemistry
- Biochemistry
- Environmental Chemistry
- Food Chemistry
- General Chemistry

## American Chemical Society Certified Chemistry

Code	Title	Credits
<b>Supporting Courses</b>		<b>37</b>
CHEM 207	Laboratory Safety	
BIOLOGY 201 & BIOLOGY 202	Principles of Biology: Cellular and Molecular Processes and Principles of Biology Lab: Cellular and Molecular Processes	
CHEM 211 & CHEM 213	Principles of Chemistry I and Principles of Chemistry I Laboratory	
CHEM 212 & CHEM 214	Principles of Chemistry II and Principles of Chemistry II Laboratory	
MATH 202	Calculus and Analytic Geometry I	
MATH 260 or MATH 203	Introductory Statistics Calculus and Analytic Geometry II	
PHYSICS 103 or PHYSICS 201	Fundamentals of Physics I Principles of Physics I	
PHYSICS 203	Introductory Physics Lab I	
PHYSICS 104 or PHYSICS 202	Fundamentals of Physics II Principles of Physics II	
PHYSICS 204	Introductory Physics Lab II	
<b>Upper-Level Courses</b>		<b>35</b>
<b>Core Courses</b>		
CHEM 302 & CHEM 304	Organic Chemistry I and Organic Chemistry Laboratory I	
CHEM 303 & CHEM 305	Organic Chemistry II and Organic Chemistry Laboratory II	
CHEM 311	Analytical Chemistry	
CHEM 320 & CHEM 322	Thermodynamics and Kinetics and Thermodynamics and Kinetics Laboratory	
CHEM 321 & CHEM 323	Structure of Matter and Structure of Matter Laboratory	
CHEM 330 & CHEM 331	Biochemistry and Biochemistry Laboratory	
CHEM 410 & CHEM 411	Inorganic Chemistry and Inorganic Chemistry Laboratory	
CHEM 413	Instrumental Analysis	
CHEM 496	Project/Research Assistantship (3 credits of Research is required)	
<b>Total Credits</b>		<b>72</b>

## Biochemistry

Code	Title	Credits
<b>Supporting Courses</b>		<b>33</b>
BIOLOGY 201 & BIOLOGY 202	Principles of Biology: Cellular and Molecular Processes and Principles of Biology Lab: Cellular and Molecular Processes	
CHEM 207	Laboratory Safety	
CHEM 211 & CHEM 213	Principles of Chemistry I and Principles of Chemistry I Laboratory	
CHEM 212 & CHEM 214	Principles of Chemistry II and Principles of Chemistry II Laboratory	
MATH 202	Calculus and Analytic Geometry I	
MATH 260	Introductory Statistics	
PHYSICS 103 or PHYSICS 201	Fundamentals of Physics I Principles of Physics I	
PHYSICS 104 or PHYSICS 202	Fundamentals of Physics II Principles of Physics II	
PHYSICS 203	Introductory Physics Lab I	
PHYSICS 204	Introductory Physics Lab II	
<b>Upper-Level Courses</b>		<b>27</b>
<b>Core Courses</b>		
BIOLOGY 303	Genetics	
BIOLOGY 407 & BIOLOGY 408	Molecular Biology and Molecular Biology Laboratory	
CHEM 302 & CHEM 304	Organic Chemistry I and Organic Chemistry Laboratory I	
CHEM 303 & CHEM 305	Organic Chemistry II and Organic Chemistry Laboratory II	
CHEM 311	Analytical Chemistry	
CHEM 324 & CHEM 325	Biophysical Chemistry and Biophysical Chemistry Laboratory	
CHEM 330 & CHEM 331	Biochemistry and Biochemistry Laboratory	
<b>CHEM Electives: Choose any 4 credits <sup>1</sup></b>		<b>4</b>
CHEM 321 & CHEM 323	Structure of Matter and Structure of Matter Laboratory	
CHEM 402 & CHEM 403	Advanced Organic Chemistry and Advanced Organic Chemistry Laboratory	
CHEM 410 & CHEM 411	Inorganic Chemistry and Inorganic Chemistry Laboratory	
CHEM 413	Instrumental Analysis	
CHEM 420 & CHEM 423	Polymer Chemistry and Polymer Chemistry Laboratory	
<b>BIOLOGY or HUMAN BIOLOGY Elective: Choose any 3 credits <sup>2</sup></b>		<b>3</b>
BIOLOGY 307	Cell Biology	
BIOLOGY 323	Principles of Microbiology	
HUM BIOL 426	Cancer Biology	
HUM BIOL 444	Endocrinology	
<b>Total Credits</b>		<b>67</b>

<sup>1</sup> CHEM 495, 496, or 497 are encouraged but not counted toward the major requirements

<sup>2</sup> BIOLOGY 495, 496, or 497 are encouraged but not counted toward the major requirements

## American Chemical Society Certified in Environmental Chemistry

Code	Title	Credits
<b>Supporting Courses</b>		<b>48</b>
BIOLOGY 201 & BIOLOGY 202	Principles of Biology: Cellular and Molecular Processes and Principles of Biology Lab: Cellular and Molecular Processes	
CHEM 207	Laboratory Safety	
CHEM 211 & CHEM 213	Principles of Chemistry I and Principles of Chemistry I Laboratory	
CHEM 212 & CHEM 214	Principles of Chemistry II and Principles of Chemistry II Laboratory	
GEOSCI 202	Physical Geology	
MATH 202	Calculus and Analytic Geometry I	
MATH 260 or MATH 203	Introductory Statistics Calculus and Analytic Geometry II	
PHYSICS 103 or PHYSICS 201	Fundamentals of Physics I Principles of Physics I	
PHYSICS 104 or PHYSICS 202	Fundamentals of Physics II Principles of Physics II	
PHYSICS 203	Introductory Physics Lab I	
PHYSICS 204	Introductory Physics Lab II	
<b>Upper-Level Courses</b>		<b>39</b>
<b>Core Courses</b>		
CHEM 302 & CHEM 304	Organic Chemistry I and Organic Chemistry Laboratory I	
CHEM 303 & CHEM 305	Organic Chemistry II and Organic Chemistry Laboratory II	
CHEM 311	Analytical Chemistry	
CHEM 324 & CHEM 325	Biophysical Chemistry and Biophysical Chemistry Laboratory	
CHEM 413	Instrumental Analysis	
ENV SCI 305	Environmental Fate and Transport	
WATER 444	Aqueous Geochemistry	
<b>Electives, Choose 4 credits</b>		
BIOLOGY 322	Environmental Microbiology	
CHEM 321 & CHEM 323	Structure of Matter and Structure of Matter Laboratory	
CHEM 330 & CHEM 331	Biochemistry and Biochemistry Laboratory	
CHEM 402 & CHEM 403	Advanced Organic Chemistry and Advanced Organic Chemistry Laboratory	
CHEM 410 & CHEM 411	Inorganic Chemistry and Inorganic Chemistry Laboratory	
CHEM 420 & CHEM 423	Polymer Chemistry and Polymer Chemistry Laboratory	
ENV SCI 335	Water and Waste Water Treatment	
ENV SCI 424	Hazardous and Toxic Materials	
WATER 321	Stable Isotopes in the Environment	
<b>Total Credits</b>		<b>87</b>

## Food Chemistry

Code	Title	Credits
<b>Supporting Courses</b>		<b>37</b>
CHEM 207	Laboratory Safety	

BIOLOGY 201 & BIOLOGY 202	Principles of Biology: Cellular and Molecular Processes and Principles of Biology Lab: Cellular and Molecular Processes	
CHEM 211 & CHEM 213	Principles of Chemistry I and Principles of Chemistry I Laboratory	
CHEM 212 & CHEM 214	Principles of Chemistry II and Principles of Chemistry II Laboratory	
MATH 202	Calculus and Analytic Geometry I	
MATH 260 or MATH 203	Introductory Statistics Calculus and Analytic Geometry II	
NUT SCI 212	Science of Food Preparation	
PHYSICS 103 or PHYSICS 201	Fundamentals of Physics I Principles of Physics I	
PHYSICS 104 or PHYSICS 202	Fundamentals of Physics II Principles of Physics II	
PHYSICS 203	Introductory Physics Lab I	
PHYSICS 204	Introductory Physics Lab II	
<b>Upper-Level Courses</b>		<b>35</b>
BIOLOGY 323 & BIOLOGY 324	Principles of Microbiology and Principles of Microbiology Laboratory	
CHEM 302 & CHEM 304	Organic Chemistry I and Organic Chemistry Laboratory I	
CHEM 303 & CHEM 305	Organic Chemistry II and Organic Chemistry Laboratory II	
CHEM 311	Analytical Chemistry	
CHEM 324 & CHEM 325	Biophysical Chemistry and Biophysical Chemistry Laboratory	
CHEM 330 & CHEM 331	Biochemistry and Biochemistry Laboratory	
NUT SCI 300	Human Nutrition	
NUT SCI 312	Quantity Food Production and Service	
<b>Electives (choose 4 credits):</b>		
CHEM 321 & CHEM 323	Structure of Matter and Structure of Matter Laboratory	
CHEM 402 & CHEM 403	Advanced Organic Chemistry and Advanced Organic Chemistry Laboratory	
CHEM 410 & CHEM 411	Inorganic Chemistry and Inorganic Chemistry Laboratory	
CHEM 413	Instrumental Analysis	
CHEM 420 & CHEM 423	Polymer Chemistry and Polymer Chemistry Laboratory	
<b>Total Credits</b>		<b>72</b>

## General Chemistry

Code	Title	Credits
<b>Supporting Courses</b>		
CHEM 207	Laboratory Safety	
CHEM 211 & CHEM 213	Principles of Chemistry I and Principles of Chemistry I Laboratory	
CHEM 212 & CHEM 214	Principles of Chemistry II and Principles of Chemistry II Laboratory	
MATH 202	Calculus and Analytic Geometry I	
MATH 260 or MATH 203	Introductory Statistics Calculus and Analytic Geometry II	
PHYSICS 103	Fundamentals of Physics I	
		<b>29</b>

or PHYSICS 201	Principles of Physics I	
PHYSICS 104	Fundamentals of Physics II	
or PHYSICS 202	Principles of Physics II	
PHYSICS 203	Introductory Physics Lab I	
PHYSICS 204	Introductory Physics Lab II	
<b>Upper-Level Courses</b>		<b>28</b>
<b>Core Courses</b>		
CHEM 302 & CHEM 304	Organic Chemistry I and Organic Chemistry Laboratory I	
CHEM 303 & CHEM 305	Organic Chemistry II and Organic Chemistry Laboratory II	
CHEM 311	Analytical Chemistry	
CHEM 320 & CHEM 322	Thermodynamics and Kinetics and Thermodynamics and Kinetics Laboratory	
CHEM 321 & CHEM 323	Structure of Matter and Structure of Matter Laboratory	
CHEM 413	Instrumental Analysis	
<b>Electives (choose 4 credits):</b>		
CHEM 330 & CHEM 331	Biochemistry and Biochemistry Laboratory	
CHEM 402 & CHEM 403	Advanced Organic Chemistry and Advanced Organic Chemistry Laboratory	
CHEM 410 & CHEM 411	Inorganic Chemistry and Inorganic Chemistry Laboratory	
CHEM 420 & CHEM 423	Polymer Chemistry and Polymer Chemistry Laboratory	
<b>Total Credits</b>		<b>57</b>