

# B.S. IN CHEMISTRY

<http://www.as.miami.edu/chemistry/>

## Overview

The B.S. degree requires 47 credit hours of chemistry. This major meets the minimum entrance requirements of many graduate programs in chemistry. Variations within the program may be recommended by the Department. Transfer students must complete a minimum of half of the required major credit hours in residence in the Department. Students should make certain that math and physics prerequisites are fulfilled in a timely manner.

## Curriculum Requirements

Code	Title	Credit Hours
<b>Core Courses</b>		
CHM 121	Principles of Chemistry	4
CHM 113	Chemistry Laboratory I	1
CHM 221	Introduction to Structure and Dynamics	4
CHM 205	Chemical Dynamics Laboratory	1
CHM 222	Organic Reactions and Synthesis	4
CHM 206	Organic Reactions and Synthesis Laboratory	2
CHM 214	Quantitative Analytical Chemistry	3
Choose One of the Following:		8
MTH 161 & MTH 162	Calculus I and Calculus II	
MTH 171 & MTH 172	Calculus I and Calculus II	
Choose One of the Following:		10-11
PHY 101 & PHY 102 & PHY 106 & PHY 108	College Physics I and College Physics II and College Physics Laboratory I and College Physics Laboratory II	
PHY 201 & PHY 202 & PHY 106 & PHY 108	University Physics I for the Sciences and University Physics II for the Sciences and College Physics Laboratory I and College Physics Laboratory II	
PHY 221 & PHY 222 & PHY 223 & PHY 224 & PHY 225	University Physics I and University Physics II and University Physics III and University Physics II Lab and University Physics III Lab	
PHY 221 & PHY 230 & PHY 224 & PHY 225	University Physics I and Honors University Physics II-III and University Physics II Lab and University Physics III Lab	
<b>Advanced Courses</b>		
CHM 320	Instrumental Methods in Chemistry and Biochemistry	2
CHM 360	Physical Chemistry I (Lecture)	3
CHM 364	Physical Chemistry (Laboratory I)	1
CHM 365	Physical Chemistry II (Lecture)	3
CHM 441	Inorganic Chemistry (Lecture)	3
BMB 401	Biochemistry for the Biomedical Sciences	4
<b>Electives</b>		<b>12</b>
CHM 317	The Chemistry of Food and Taste.	
CHM 401	Environmental Chemistry	
Any 500-level CHM course		
<b>General Education Requirements</b>		

Written Communication Skills:		
WRS 105	First-Year Writing I	3
WRS 106 or ENG 106	First-Year Writing II Writing About Literature and Culture	3
Quantitative Skills:		
MTH 161 or MTH 171	Calculus I (fulfilled through the major) Calculus I	
Areas of Knowledge:		
Arts and Humanities Cognate		9
People and Society Cognate		9
STEM Cognate (9 credits) (fulfilled through the major)		
<b>Additional Required Courses</b>		
Language Courses		3-9
Minor		15
Electives		13-7
<b>Total Credit Hours</b>		<b>120-121</b>

## Suggested Plan of Study

This is a guide and is not meant to take the place of the advice of your major advisor; you should consult with them before making any changes.

Year One		
Fall		Credit Hours
CHM 121	Principles of Chemistry	4
CHM 113	Chemistry Laboratory I	1
MTH 161	Calculus I	4
WRS 105	First-Year Writing I	3
Arts and Humanities Cognate		3
<b>Credit Hours</b>		<b>15</b>
Spring		
CHM 221	Introduction to Structure and Dynamics	4
CHM 205	Chemical Dynamics Laboratory	1
MTH 162	Calculus II	4
WRS 106 or ENG 106	First-Year Writing II or Writing About Literature and Culture	3
Arts and Humanities Cognate		3
<b>Credit Hours</b>		<b>15</b>
Year Two		
Fall		
CHM 222	Organic Reactions and Synthesis	4
CHM 206	Organic Reactions and Synthesis Laboratory	2
PHY 201	University Physics I for the Sciences	4
PHY 106	College Physics Laboratory I	1
Language Course		3
<b>Credit Hours</b>		<b>14</b>
Spring		
CHM 214	Quantitative Analytical Chemistry	3
BMB 401	Biochemistry for the Biomedical Sciences	4
PHY 202	University Physics II for the Sciences	4
PHY 108	College Physics Laboratory II	1
Language Course		3
<b>Credit Hours</b>		<b>15</b>

<b>Year Three</b>		
<b>Fall</b>		
CHM 360	Physical Chemistry I (Lecture)	3
CHM 364	Physical Chemistry (Laboratory I)	1
CHM Elective		3
Language Course		3
People and Society Cognate		3
Arts and Humanities Cognate		3
<b>Credit Hours</b>		<b>16</b>
<b>Spring</b>		
CHM 365	Physical Chemistry II (Lecture)	3
CHM Elective		3
People and Society Cognate		3
Minor		3
Minor		3
<b>Credit Hours</b>		<b>15</b>
<b>Year Four</b>		
<b>Fall</b>		
CHM 441	Inorganic Chemistry (Lecture)	3
CHM Elective		3
Minor		3
Minor		3
Elective		3
<b>Credit Hours</b>		<b>15</b>
<b>Spring</b>		
CHM 320	Instrumental Methods in Chemistry and Biochemistry	2
CHM Elective		3
Elective		4
Minor		3
People and Society Cognate		3
<b>Credit Hours</b>		<b>15</b>
<b>Total Credit Hours</b>		<b>120</b>

## Student Learning Outcomes

- Graduates will be able to demonstrate a broad understanding of fundamental chemical principles in all areas of the field.
- Graduates will be adept in a broad variety of chemical instrumentation and analytical techniques.
- Graduates will display effective and strong written communication skills pertaining to chemical research.