

# CHEMISTRY (BS) - SECONDARY EDUCATION

## Overview

The Chemistry and Secondary Education degree track is offered in collaboration with the College of Education and Health Professions. This track is designed for students with an interest in teaching chemistry at the secondary level or pursuing graduate studies in chemical or science education. In addition to the general degree requirements, the track requires satisfactory completion of courses in chemistry, mathematics, physics, and education. The education components of the track are offered through an innovative teacher preparation program (UTeach Columbus (<http://uteach.columbusstate.edu/>)). A broad range of upper-level elective courses in chemistry exists to expose students to modern fields within the chemical sciences and to help students broaden their understanding of science education.

All educator preparation programs are approved by the Georgia Professional Standards Commission. In addition to the degree requirements, there are further requirements for teaching certification. Visit the Certification page (<https://cqtl.columbusstate.edu/certification.php>) on the CSU Center for Quality Teaching and Learning (CQTL) website for detailed information about certification requirements and the certification process.

## Program of Study

Code	Title	Credit Hours
<b>Core IMPACTS Area : Institutional Priorities <sup>1</sup></b>		<b>4-5</b>
Choose one of the following communication options		3
COMM 1110	Public Speaking	
Foreign Language Course Options		
AMSL, ARAB, CHIN, FREN, GERM, GREK, ITAL, JAPN, KREN, LATIN, PORT, SPAN - 1001, 1002, 2001, 2002; SWAH - 1001, 1002.		
Take one of the following courses		1-2
ITDS 1779	Scholarship Across the Disciplines	
LEAD 1705	Introduction to Servant Leadership	
PERS 1506	Perspectives 1-hour	
PERS 1507	Perspectives 2-hour	
<b>Core IMPACTS Area : Mathematics &amp; Quantitative Skills <sup>1</sup></b>		<b>3-7</b>
DATA 1501	Introduction to Data Science	3
MATH 1001	Quantitative Skills and Reasoning	3
MATH 1101	Introduction to Mathematical Modeling	3
MATH 1111	College Algebra	3
MATH 1113	Pre-Calculus	4
MATH 1125	Applied Calculus	3
MATH 1131	Calculus with Analytic Geometry I	4
MATH 1132	Calculus with Analytic Geometry II	4
MATH 1165	Computer-Assisted Problem Solving	3
MATH 1401	Introduction to Statistics	3
MATH 1501	Calculus I	4
MATH 2125	Introduction to Discrete Mathematics	3
STAT 1401	Elementary Statistics	3
<b>Core IMPACTS Area : Political Science and U.S. History</b>		<b>6</b>

HIST 2111	U. S. History to 1865	3
or HIST 2112	U. S. History since 1865	
POLS 1101	American Government	3
<b>Core IMPACTS Area : Arts, Humanities, and Ethics</b>		<b>6</b>
Select one Fine Arts course		3
ARTH 1100	Art Appreciation	
ARTH 2125	Introduction to the History of Art I– Prehistoric through Gothic	
ARTH 2126	Introduction to the History of Art II– Renaissance through Modern	
MUSC 1100	Music Appreciation	
THEA 1100	Theatre Appreciation	
ITDS 1145	Comparative Arts <sup>2</sup>	
Select one Humanities course		3
ENGL 2111	World Literature I	
ENGL 2112	World Literature II	
ITDS 1155	The Western Intellectual Tradition	
ITDS 1774	Introduction to Digital Humanities	
PHIL 2010	Introduction to Philosophy	
ITDS 1145	Comparative Arts <sup>2</sup>	
<b>Core IMPACTS Area : Communicating in Writing</b>		<b>6</b>
ENGL 1101	English Composition I	3
ENGL 1102	English Composition II	3
<b>Core IMPACTS Area : Technology, Mathematics, and Sciences <sup>1,3</sup></b>		<b>7-11</b>
ANTH 1145	Human Origins	3
ASTR 1105	Descriptive Astronomy: The Solar System	3
ASTR 1106	Descriptive Astronomy: Stars and Galaxies	3
ASTR 1305	Descriptive Astronomy Lab	1
ATSC 1112	Understanding the Weather	3
ATSC 1112L	Understanding the Weather Lab	1
BIOL 1125	Contemporary Issues in Biology Non-Lab	3
BIOL 1215K	Introductory Biology	4
BIOL 1225K	Contemporary Issues in Biology with Lab	4
CHEM 1151 & 1151L	Survey of Chemistry I and Survey of Chemistry I Lab	4
CHEM 1152 & 1152L	Survey of Chemistry II and Survey of Chemistry II Lab	4
CHEM 1211 & 1211L	Principles of Chemistry I and Principles of Chemistry I Lab	4
CHEM 1212 & 1212L	Principles of Chemistry II and Principles of Chemistry II Lab	4
CPSC 1105	Introduction to Computing Principles and Technology	3
CPSC 1301K	Computer Science I	4
ENVS 1105	Environmental Studies	3
ENVS 1105L	Environmental Studies Laboratory	1
ENVS 1205K	Sustainability and the Environment	4
GEOG 2215	Introduction to the Geographic Information Systems	3
GEOL 1110	Natural Disasters: Our Hazardous Environment	3
GEOL 1121	Introductory Geoscience I: Physical Geology	3
GEOL 1121L	Introductory Geoscience I: Physical Geology Lab	1
GEOL 1122	Introductory Geo-sciences II: Historical Geology	3

GEOL 1322	Introductory Geo-sciences II: Historical Geology Lab	1	Apply two hours of approved electives	2	
GEOL 2225	The Fossil Record	4	CHEM 1715	Introductory Chemistry Seminar	1
PHYS 1111 & PHYS 1311	Introductory Physics I and Introductory Physics I Lab	4	STAT 1401	Elementary Statistics	3
PHYS 1112 & PHYS 1312	Introductory Physics II and Introductory Physics II Lab	4	CHEM 2115	Quantitative Chemical Analysis	3
PHYS 1125	Physics of Color and Sound	3	CHEM 2315	Quantitative Chemical Analysis Lab	1
PHYS 1325	Physics of Color and Sound Lab	1	Complete a physics course sequence (Principles required for ACS Track).		8
PHYS 2211 & PHYS 2311	Principles of Physics I and Principles of Physics I Lab	4	Introductory Physics Sequence:		
PHYS 2212 & PHYS 2312	Principles of Physics II and Principles of Physics II Lab	4	PHYS 1111	Introductory Physics I	
<b>Core IMPACTS Area : Social Sciences</b>		<b>6</b>	PHYS 1311	Introductory Physics I Lab	
Select one Behavioral Science course			PHYS 1112	Introductory Physics II	
ECON 2105	Principles of Macroeconomics		PHYS 1312	Introductory Physics II Lab	
ECON 2106	Principles of Microeconomics		Principles of Physics Sequence:		
PHIL 2030	Moral Philosophy		PHYS 2211	Principles of Physics I	
PSYC 1101	Introduction to General Psychology		PHYS 2311	Principles of Physics I Lab	
SOCI 1101	Introduction to Sociology		PHYS 2212	Principles of Physics II	
Select one World Cultures course		3	PHYS 2312	Principles of Physics II Lab	
ANTH 1107	Discovering Archaeology		Field of Study Requirements Total		
ANTH 1105	Cultural Anthropology		18		
ANTH 2105	Ancient World Civilizations		<b>Required for the Major</b>		
ANTH 2136	Language and Culture		Students must have a grade of C or better in the courses used to satisfy the major.		
ENGL 2136	Language and Culture		BIOL 1107K	Principles of Biology I	4
GEOG 1101	World Regional Geography		BIOL 1108K	Principles of Biology II	4
HIST 1111	World History to 1500		CHEM 3111	Organic Chemistry I	3
HIST 1112	World History since 1500		CHEM 3135	Inorganic Chemistry	3
ITDS 1156	Understanding Non-Western Cultures		CHEM 3141	Biochemistry I	3
<b>Core IMPACTS Total Hours</b>		<b>42</b>	CHEM 3345	Biochemistry Lab I	1
<b>Health and Wellness</b>		<b>3</b>	CHEM 3311	Organic Chemistry I Lab	1
KINS 1106	Lifetime Wellness	2	CHEM 3335	Inorganic Chemistry Lab	1
or PHED 1205	Concepts of Fitness		CHEM 4115	Foundations of Physical Chemistry	3
Select one of the following		1	CHEM 4175	Instrumental Methods of Chemical Analysis	3
Any PEDS course			CHEM 4375	Instrumental Methods of Chemical Analysis Lab	1
MUSC 1206	Body Mapping (Music Majors Only)		CHEM 4315	Foundations of Physical Chemistry Lab	1
<p><sup>1</sup> The hours applied in the Institutional Priorities; Mathematics &amp; Quantitative Skills; and Technology, Mathematics, and Sciences areas must add to 18 credit hours.</p> <p><sup>2</sup> ITDS 1145 Comparative Arts, though listed under both Fine Arts and Humanities, may be taken only once.</p> <p><sup>3</sup> At least 4 of the credit hours in this area must be in a lab science course.</p>			<p>Select the following UTeach Columbus Courses (only two attempts allowed for each of the following courses):</p>		
<b>Major Requirements</b>			SPED 4115	Teaching Math and Science to Exceptional Learners (Students must earn a grade of B or better in order to be certified to teach in the state of Georgia.)	2
<b>Code</b>	<b>Title</b>	<b>Credit Hours</b>	UTCH 1201	Step I: Inquiry Approaches to Teaching	1
<b>Core Requirements</b>			UTCH 1202	Step II: Inquiry-Based Lesson Design	1
Complete the core requirements for this program		45	UTCH 2105	Knowing and Learning in Mathematics and Science	3
<b>Field of Study Requirements</b>			UTCH 2203	Step III: Technological and Pedagogical Content Knowledge	3
Students must have a grade of C or better in the courses used to satisfy the major.			UTCH 3205	Classroom Interactions	3
			UTCH 3215	Research Methods	3
			UTCH 4205	Inquiry-Based Instruction	3
			UTCH 4485	Student Teaching	9
			UTCH 4795	Student Teaching Seminar	1
			Required for the Major Total		57
			<b>General Electives</b>		
			Choose 3 general elective credits.		3

General Electives Total	3
<b>Total Credit Hours</b>	<b>123</b>

## Admission Requirements

There are no program specific admission requirements.

## Additional Program Requirements

There are no program specific academic regulations.