



# SOUTH DAKOTA BOARD OF REGENTS ACADEMIC AFFAIRS FORMS

## Substantive Program Modification Form

<b>UNIVERSITY:</b>	SDSU
<b>CURRENT PROGRAM DEGREE:</b>	Bachelor of Science (B.S.)
<b>CURRENT PROGRAM MAJOR/MINOR:</b>	ACS Certified Chemistry
<b>CURRENT SPECIALIZATION</b>	N/A
<b>CIP CODE:</b>	40.0501
<b>UNIVERSITY DEPARTMENT:</b>	Chemistry & Biochemistry
<b>BANNER DEPARTMENT CODE:</b>	SCHB
<b>UNIVERSITY COLLEGE:</b>	Natural Science
<b>BANNER COLLEGE CODE:</b>	3T

### University Approval

*To the Board of Regents and the Executive Director: I certify that I have read this proposal, that I believe it to be accurate, and that it has been evaluated and approved as provided by university policy.*

Dennis D. Hedge

Vice President of Academic Affairs or  
President of the University

4/28/2023

Date

### 1. This modification addresses a change in:

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Total credits required within the discipline | <input checked="" type="checkbox"/> Total credits of supportive course work |
| <input type="checkbox"/> Total credits of elective course work                   | <input type="checkbox"/> Total credits required for program                 |
| <input checked="" type="checkbox"/> Program name                                 | <input type="checkbox"/> Existing specialization                            |
| <input type="checkbox"/> CIP Code  | <input type="checkbox"/> Other (explain below)                              |

### 2. Effective date of change: 2023-2024 Academic Year

### 3. Program Degree Level: Associate ☐ Bachelor's ☒ Master's ☐ Doctoral ☐

### 4. Category: Certificate ☐ Specialization ☐ Minor ☐ Major ☒

### 5. If a name change is proposed, the change will occur:

☐ On the effective date for all students

☒ On the effective date for students new to the program (enrolled students will graduate from existing program)

Proposed new name: **Chemistry**

### 6. Is the program being modified associated with a current articulation agreement? Yes ☐ No ☒

a. If yes, will the articulation agreement need to be updated with the partner institution following the approve of the program change? Please explain: N/A

### 7. Primary Aspects of the Modification:

*Existing Curriculum*

*Proposed Curriculum (highlight changes)*

Pref.	Num.	Title	Cr. Hrs.	Pref.	Num.	Title	Cr. Hrs.
		Systems General Education Requirements	33			Systems General Education Requirements	25
		Systems General Education Requirements – Electives	12			Systems General Education Requirements – Electives	21

Existing Curriculum				Proposed Curriculum (highlight changes)			
Pref.	Num.	Title	Cr. Hrs.	Pref.	Num.	Title	Cr. Hrs.
						SGR #1	3
						SGR #1	3
						SGR #2	3
		SGR #3	3			SGR #3	3
		SGR #3	3			SGR #3	3
		SGR #4	3			SGR #4	3
		SGR #4	3			SGR #4	3
<b>Systems General Education Requirements – Required</b>			<b>21</b>	<b>Systems General Education Requirements – Required</b>			<b>4</b>
ENGL	101	Composition I (SGR #1)	3	ENGL	101	Composition I (SGR #1)	3
ENGL	201	Composition II (3) (SGR #1)	3	ENGL	201	Composition II (3) (SGR #1)	3
CMST	101	Fundamentals of Speech (SGR #2)	3	CMST	101	Fundamentals of Speech (SGR #2)	3
MATH	123	Calculus (SGR #5)	4	MATH	123	Calculus (SGR #5)	4
CHEM	112	General Chemistry I (SGR #6)	3	CHEM	112	General Chemistry I (SGR #6) (Major Requirement) (3)	--
CHEM	112L	General Chemistry I Lab (SGR #6)	1	CHEM	112L	General Chemistry I Lab (SGR #6) (Major Requirement) (3)	--
CHEM	114	General Chemistry II (SGR #6)	3	CHEM	114	General Chemistry II (SGR #6) (Major Requirement) (1)	--
CHEM	114L	General Chemistry II Lab (SGR #6)	1	CHEM	114L	General Chemistry II Lab (SGR #6) (Major Requirement) (1)	--
<b>Department Requirements</b>			<b>3</b>	<b>Department Requirements</b>			<b>0</b>
<i>Additional required credits of coursework beyond SGRs, Major, and Support Courses</i>				<i>Additional required credits of coursework beyond SGRs, Major, and Support Courses</i>			
		Natural Sciences (10+) Satisfying coursework must include - at least two classes with laboratory components - at least two different prefixes (MATH and STATS courses do not count toward the Science requirement.) (6 credits of SGR #6 are counted toward this goal and 4 credits of major coursework)	0			Natural Sciences (10+) Satisfying coursework must include - at least two classes with laboratory components - at least two different prefixes (MATH and STATS courses do not count toward the Science requirement.) (6 credits of SGR #6 are counted toward this goal and 4 credits of major coursework)	0
AHSS	111	Introduction to Global Citizenship and Diversity	3	AHSS	111	Introduction to Global Citizenship and Diversity	3
		One declared minor outside of the major prefix OR a second major OR a teaching specialization. The minor may be a traditional minor within one department or it may be interdisciplinary involving more than one department. The minor can be in a different college. The minor must be declared no later than the student's third semester of enrollment.	-			One declared minor outside of the major prefix OR a second major OR a teaching specialization. The minor may be a traditional minor within one department or it may be interdisciplinary involving more than one department. The minor can be in a different college. The minor must be declared no later than the student's third semester of enrollment.	-
		Capstone course within major CHEM 498 Undergraduate Research/Scholarship	--			Capstone course within major CHEM 498 Undergraduate Research/Scholarship	--
		33 Upper Division Credits (300-400 level coursework inside and outside of the major)	--			33 Upper Division Credits (300-400 level coursework inside and outside of the major)	--
<b>Major Requirements</b>			<b>39</b>	<b>Major Requirements</b>			<b>48</b>
<b>Major Core</b>			<b>30</b>	<b>Major Core</b>			<b>39</b>
				CHEM	112	General Chemistry I (SGR #6)	3
				CHEM	112L	General Chemistry I Lab (SGR #6)	1
				CHEM	114	General Chemistry II (SGR #6)	3
				CHEM	114L	General Chemistry II Lab (SGR #6)	1

*Existing Curriculum*

*Proposed Curriculum (highlight changes)*

Pref.	Num.	Title	Cr. Hrs.	Pref.	Num.	Title	Cr. Hrs.
CHEM	119	First Year Seminar	1	CHEM	119	First Year Seminar	1
				CHEM	180	Introduction to Laboratory Safety	1
CHEM	237	Introduction to Research	1	CHEM	237	Introduction to Research	1
CHEM	326	Organic Chemistry I	3	CHEM	326	Organic Chemistry I	3
CHEM	326L	Organic Chemistry I Lab	1	CHEM	326L	Organic Chemistry I Lab	1
CHEM	328	Organic Chemistry II	3	CHEM	328	Organic Chemistry II	3
CHEM	328L	Organic Chemistry II Lab	1	CHEM	328L	Organic Chemistry II Lab	1
CHEM	332	Analytical Chemistry I	3	CHEM	332	Analytical Chemistry I	3
CHEM	332L	Analytical Chemistry I Lab	1	CHEM	332L	Analytical Chemistry I Lab	1
CHEM	343	Fundamentals of Thermodynamics	2	CHEM	343	Fundamentals of Thermodynamics	2
CHEM	343L	Fundamentals of Thermodynamics Lab	1	CHEM	343L	Fundamentals of Thermodynamics Lab	1
CHEM	452	Inorganic Chemistry	3	CHEM	452	Inorganic Chemistry	3
CHEM	452L	Inorganic Chemistry Lab	1	CHEM	452L	Inorganic Chemistry Lab	1
CHEM	464	Biochemistry I	3	CHEM	464	Biochemistry I	3
CHEM	466	Laboratory Methods in Biochemistry	1	CHEM	466	Laboratory Methods in Biochemistry	1
CHEM	490	Seminar	1	CHEM	490	Seminar	1
CHEM	498	Undergraduate Research, must be taken over a minimum of two semesters. (Research Experience)	4	CHEM	498	Undergraduate Research, must be taken over a minimum of two semesters. (Research Experience)	4
Chemistry Electives			9	Chemistry Electives			9
CHEM	329	Intermediate Organic Chemistry	2	CHEM	329	Intermediate Organic Chemistry	2
CHEM	329L	Intermediate Organic Chemistry Laboratory	2	CHEM	329L	Intermediate Organic Chemistry Laboratory	2
				CHEM	345	Quantum Mechanics of Chemical Systems	2
				CHEM	347	Chemical Kinetics	2
CHEM	432	Analytical Chemistry II	2	CHEM	432	Analytical Chemistry II	2
CHEM	433	Bioanalytical Chemistry	3	CHEM	433	Bioanalytical Chemistry	3
CHEM	448	Biophysical Chemistry	3	CHEM	448	Biophysical Chemistry	3
CHEM	448L	Biophysical Chemistry & Lab	1	CHEM	448L	Biophysical Chemistry & Lab	1
CHEM	465	Biochemistry II	3	CHEM	465	Biochemistry II	3
CHEM	467	Essentials of Glycobiology	3	CHEM	467	Essentials of Glycobiology	3
				CHEM	468	Chemical Biology	3
CHEM	482	Environmental Chemistry	3	CHEM	482	Environmental Chemistry	3
CHEM	484	Chemical Toxicology	3	CHEM	484	Chemical Toxicology	3
Supporting Coursework			16	Supporting Coursework			18
MATH	125	Calculus II	4	MATH	125	Calculus II	4
MATH	225	Calculus III	4	MATH	225	Calculus III	4
PHYS	211	University Physics I	4	PHYS	211	University Physics I	4
PHYS	211L	University Physics I Lab	0	PHYS	211L	University Physics I Lab	1
PHYS	213	University Physics II	4	PHYS	213	University Physics II	4
PHYS	213L	University Physics II Lab	0	PHYS	213L	University Physics II Lab	1
Electives (Taken as needed to complete any additional degree requirements)			29	Electives (Taken as needed to complete any additional degree requirements)			29
Summary of Credits Chemistry (B.S.)							
System General Education Requirements			33	System General Education Requirements			25
Department Requirements Additional required credits of coursework beyond SGRs, Major, and Support Courses			3	Department Requirements Additional required credits of coursework beyond SGRs, Major, and Support Courses			0
Majors Requirements			39	Majors Requirements			48
Supporting Coursework			16	Supporting Coursework			18
Electives (Taken as needed to complete any additional degree requirements)			29	Electives (Taken as needed to complete any additional degree requirements)			29
Total number of hours required for major			79	Total number of hours required for major			70
Total number of hours required for degree			120	Total number of hours required for degree			120

## 8. Explanation of the Change:

The Department of Chemistry and Biochemistry has identified the following changes to the ACS Certified Chemistry major:

- Changed name of the major from ACS Certified Chemistry to Chemistry for directness and simplicity. The major remains certified by the American Chemical Society.
- Removed a specific course selection from SGR #1 and SGR #2 to allow students more flexibility in meeting their System General Education requirements.
- Dropped AHSS 111 Introduction to Global Citizenship and Diversity and minor requirements to more directly focus the major.
- Added CHEM 180 Introduction to Laboratory Safety (1 cr.) to better prepare students for laboratory experiences. Safety is of prime consideration in the chemistry laboratory. Recent serious accidents in academic research laboratories nationwide have renewed the emphasis on creating a culture of safety. This course will be required of departmental majors in their first semester in order to instill safety principles at the onset of their education, shifting part of the burden of safety education from individual research laboratories students typically engage during their junior and senior years.
- Added CHEM 345 Quantum Mechanics of Chemical Systems (2 cr.), CHEM 347 Chemical Kinetics (2 cr.), and CHEM 468 Chemical Biology (3 cr.) as chemistry electives to provide students increased flexibility reflective of recent developments in the discipline.
- Updated zero credit lab courses. Departments made change to zero credit lab courses to accurately reflect contact time. PHYS 211-211L University Physics I & Lab and PHYS 213-213L University Physics I & Lab increased from 4+0 to 4+1 credit courses.
- Removed the department requirement to complete 10+ credits of Natural Science coursework. This language is redundant to current program requirements. The requirement was carried over when the department transitioned from the College of Arts and Sciences to the College of Natural Sciences.