SOUTH DAKOTA BOARD OF REGENTS
ACADEMIC AFFAIRS FORMS

Substantive Program Modification Program

UNIVERSITY:	**SDSU**
CURRENT PROGRAM TITLE:	**Chemistry Education (B.S.) [S.BS.CHE]**
CIP CODE:	**13.1323**
UNIVERSITY DEPARTMENT:	**Chemistry & Biochemistry**
UNIVERSITY DIVISION:	**Natural Sciences**

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

5/8/18 — Date

1. This modification addresses a change in:

- ☒ Total credits required within the discipline
- ☒ Total credits of elective course work
- ☐ Program name
- ☐ CIP Code
- ☒ Total credits of supportive course work
- ☐ Total credits required for program
- ☐ Existing specialization
- ☒ Other: Restructure of College and Department Requirements

2. Effective date of change: 2018-2019 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: _____

6. 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			**32**	**Systems General Education Requirements**			**33**
SGR 1 – Written Communication			6	SGR 1 – Written Communication			6
ENGL	101	Composition I (3)		ENGL	101	Composition I (3)	
ENGL	201	Composition II (3)		ENGL	201	Composition II (3)	
SGR 2 – Oral Communication			3	SGR 2 – Oral Communication			3
SPCM	101	Fundamentals of Speech		SPCM	101	Fundamentals of Speech	
SGR 3 – Social Sciences/Diversity			6	SGR 3 – Social Sciences/Diversity			6
SGR 4 – Humanities and Arts/Diversity			6	SGR 4 – Humanities and Arts/Diversity			6
SGR 5 – Mathematics			3	SGR 5 – Mathematics			4
				MATH	123	Calculus I	
SGR 6 – Natural Sciences			8	SGR 6 – Natural Sciences			8
CHEM	115-115L	Atomic & Molecular Structure & Lab (3,1)		CHEM	115-115L	Atomic & Molecular Structure & Lab (3,1	

Existing Curriculum				*Proposed Curriculum (highlight changes)*			
CHEM 127-127L Structure and Function of Organic Molecules & Lab (3,1)				CHEM 127-127L Structure and Function of Organic Molecules & Lab (3,1)			
A&S College Requirements *Additional required credits of coursework beyond SGRs, Major, and Support Courses*			**13+** **3**	**Department Requirements** *Additional required credits of coursework beyond SGRs, Major, and Support Courses*			**13+** **3**
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 PHYS 211-211L University Physics I & Lab (4)			10 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.)* This requirement is met by the required courses.			10 0
AIS	211	South Dakota American Indian Culture and Education	3	AIS	211	South Dakota American Indian Culture and Education	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~~ SEED 456 Capstone/Action Research			--
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) This requirement is met by the required courses.			33
Major Requirements			**85**	**Major Requirements**			**81**
BIOL	151-151L	General Biology I & Lab	4	BIOL	151-151L	General Biology I & Lab	4
BIOL	153-153L	General Biology II & Lab	4	BIOL	153-153L	General Biology II & Lab	4
CHEM	119	First Year Seminar	1	CHEM	119	First Year Seminar	1
CHEM	229-229L	Transformations of Organic Molecules & Lab	3, 1	CHEM	229-229L	Transformations of Organic Molecules & Lab	3, 1
CHEM	236	Equilibrium and Energy of Molecular Systems	2	CHEM	236	Equilibrium and Energy of Molecular Systems	2
CHEM	332-332L	Analytical Chemistry I & Lab	3, 1	CHEM	332-332L	Analytical Chemistry I & Lab	3, 1
CHEM	343-343L	Fundamentals of Chemical Thermodynamics & Lab	2, 1	CHEM	343~~-343L~~	Fundamentals of Chemical Thermodynamics ~~& Lab~~	2~~, 1~~
CHEM	3xx/4xx		3	~~CHEM~~	~~3xx/4xx~~		~~3~~
CHEM	452-452L	Inorganic Chemistry & Lab	3, 1	CHEM	452-452L	Inorganic Chemistry & Lab	3, 1
CHEM	464	Biochemistry I	3	CHEM	464	Biochemistry I	3
CHEM	466	Laboratory Methods - Biochemistry	1	CHEM	466	Laboratory Methods - Biochemistry	1
CHEM	482	Environmental Chemistry	3	CHEM OR CHEM	482 484	Environmental Chemistry (3) Chemical Toxicology (3)	3
CHEM	498	Undergraduate Research/Scholarship	3	~~CHEM~~	~~498~~	~~Undergraduate Research/Scholarship~~	~~3~~
				CHEM	237	Intermediate Laboratory Investigations	3
EDFN	101	Exploration of Teaching and Learning	1	EDFN	101	Exploration of Teaching and Learning	1
EDFN	351	Teaching and Learning I	1	EDFN	351	Teaching and Learning I	1
EDFN	352-352L	Teaching and Learning II & Lab	3, 2	EDFN	352-352L	Teaching and Learning II & Lab	3, 2
EDFN	453-453L	Teaching and Learning III & Lab	5, 2	EDFN	453-453L	Teaching and Learning III & Lab	5, 2
EDFN	454	Teaching and Learning IV	11	EDFN	454	Teaching and Learning IV	11
EDFN	475	Human Relations	3	EDFN	475	Human Relations	3
MATH	125	Calculus II	4	MATH	125	Calculus II	4
PHYS	211-211L	University Physics I & Lab	4	~~PHYS~~	~~211-211L~~	~~University Physics I & Lab~~	~~4~~

Existing Curriculum				*Proposed Curriculum (highlight changes)*			
PHYS	213-213L	University Physics II & Lab	4	~~PHYS~~	~~213-213L~~	~~University Physics II & Lab~~	~~4~~
				PHYS	111-111L	Introduction to Physics I & Lab	4
				PHYS	113-113L	Introduction to Physics II & Lab	4
SEED	413	7-12 Science Methods	3	SEED	413	7-12 Science Methods	3
SEED	450	Reading and Content Literacy	2	SEED	450	Reading and Content Literacy	2
SEED	456	Capstone/Action Research	1	SEED	456	Capstone/Action Research	1
Electives *(Taken as needed to complete any additional degree requirements)*			**0**	**Electives** *(Taken as needed to complete any additional degree requirements)*			**3**
Summary of Credits Chemistry Education (B.S.)							
System General Education Requirements			**32**	**System General Education Requirements**			**33**
A&S College Requirements *Additional required credits of coursework beyond SGRs, Major, and Support Courses*			**13+** **3+**	~~**A&S College Requirements**~~ ~~*Additional required credits of coursework beyond SGRs, Major, and Support Courses*~~			~~**13+**~~ ~~**3+**~~
				Department Requirements *Additional required credits of coursework beyond SGRs, Major, and Support Courses*			**13+** **3+**
Majors Requirements			**85**	**Majors Requirements**			**81**
Electives *(Taken as needed to complete any additional degree requirements)*			**0**	**Electives** *(Taken as needed to complete any additional degree requirements)*			**3**
Total number of hours required for major			85	Total number of hours required for major			81
Total number of hours required for degree			120	Total number of hours required for degree			120

7. Explanation of the Change:

The Department of Chemistry & Biochemistry will move from the College of Arts & Sciences to the College of Natural Sciences effective July 1, 2018. The College of Arts & Sciences requirements have been realigned as department requirements within the program.

The additional changes being proposed are designed to better prepare students to teach, add flexibility, and avoid potential scheduling difficulties. Both CHEM 498 Undergraduate Research/Scholarship and CHEM 237 Intermediate Laboratory Investigations are designed to give students an intense research experience. While CHEM 237 is typically taken in the sophomore year, CHEM 498 is typically taken much later, potentially conflicting with student teaching. PHYS 211 and 213 is a calculus-based sequence. PHYS 111 and 113 would be more appropriate for potential teachers, because there is more of an emphasis on what they would potentially teach. Because CHEM 482 is taught every-other year, some students have difficult registering for it. Making CHEM 484-584 an option would address this difficulty. CHEM 343L was dropped and its one credit was combined with the two credits from CHEM 3xx/4xx to give students 3 general elective credit hours. CHEM 343L was dropped because it is not essential for the students and during the semester that they are tentatively scheduled to take CHEM 343, they are scheduled to take two other lab courses and already have 18 credit hours. Three credit hours are shifted from Major Requirements to Electives.