



**SOUTH DAKOTA BOARD OF REGENTS**  
**ACADEMIC AFFAIRS FORMS**  
**Substantive Program Modification Form**

<b>UNIVERSITY:</b>	<b>USD</b>
<b>CURRENT PROGRAM TITLE:</b>	<b>Sustainability, B.S. (Natural Sciences Specialization and Social Sciences Specialization)</b>
<b>CIP CODE:</b>	<b>30.3301</b>
<b>UNIVERSITY DEPARTMENT:</b>	<b>Interdisciplinary Programs, College of Arts &amp; Sciences</b>
<b>UNIVERSITY DIVISION:</b>	<b>College of Arts &amp; Sciences</b>

**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.*

Elizabeth M. Freeburg  
 Vice President of Academic Affairs or  
 President of the University

2/5/2018  
 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 checked="" type="checkbox"/> Total credits of elective course work        | <input checked="" type="checkbox"/> Total credits required for program      |
| <input checked="" type="checkbox"/> Program name                                 | <input checked="" type="checkbox"/> Existing specialization                 |
| <input type="checkbox"/> CIP Code  | <input type="checkbox"/> Other (explain below)                              |

**2. Effective date of change: 8/1/2018**

**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: Natural Sciences Specialization to Environmental Science**  
 And  
**Social Sciences Specialization to Human and Natural Systems**

*Reminder: Name changes may require updating related articulation agreements, site approvals, etc.*

**6. Primary Aspects of the Modification (add lines or adjust cell size as needed):**

<i>Existing Curriculum</i>				<i>Proposed Curriculum (highlight changes)</i>			
Pref.	Num.	Title	Cr. Hrs.	Pref.	Num.	Title	Cr. Hrs.
<b>Sustainability, B.S. (Natural Sciences Specialization OR Social Sciences Specialization) Program Requirements:</b>				<b>Sustainability, B.S. (Environmental Science OR Human and Natural Systems specializations) Program Requirements:</b>			
<b>Departmental Requirements</b>				<b>Departmental Requirements</b>			
POLS	226	Introduction to Public Policy	3	POLS	226	Introduction to Public Policy	3
SUST	201	Sustainability and Society [SGR #3]	3	SUST	101	Sustainable Society [SGR #3]	3
SUST	203	Sustainability and Science	3	SUST	103/L	Sustainable Environment (with lab) [under review for SGR #6]	4
SUST	489	Sustainability Capstone	2	ECON	201	Microeconomics	3
<b>Choose one of the following:</b>				<b>Remove</b>			
BIOL	310	Environmental Science	3	BIOL	310	Environmental Science	3
ESCI	205	Environmental Earth Science		<b>Remove</b>			
<b>Choose one of the following:</b>				<b>Remove</b>			
BIOL/PHIL	454	Environmental Ethics	3	BIOL/PHIL	454	Environmental Ethics	3
ECON	472	Resource and Environmental Economics		<b>Remove</b>			
<b>Choose one of the following (1 cr. minimum):</b>				<b>Choose one of the following (1 cr. minimum):</b>			
SUST	494	Sustainability Internship	1	SUST	494	Sustainability Internship	1
SUST	496	Sustainability Field Experience		SUST	496	Sustainability Field Experience	
SUST	498	Sustainability Undergrad. Research		SUST	498	Sustainability Undergrad. Research	
<b>Total Core</b>			<b>18</b>	<b>Total Core</b>			<b>22</b>
<b>Choose one specialization (total 18 cr. with no more than four courses from any one prefix, for Double Majors no more than three courses from any one prefix):</b>				<b>Choose one specialization (15 cr. from course groups or specialization electives plus specialization foundation classes)</b>			
<b>Natural Sciences Specialization</b>				<b>Environmental Science Specialization</b>			
<b>Biological Systems Course Group (at least 2 courses)</b>				<b>Biological Systems Course Group (at least 2 courses)</b>			
BIOL	311/L	Principles of Ecology (with lab)	4	BIOL	311/L	Principles of Ecology	4
BIOL	310	Environmental Science	3	BIOL	407/L	Plants and Civilization	4
BIOL	420/L	Introduction to Biostatistics and Computational Biology (with lab)	3	BIOL	408/L	Landscape Ecology	3
BIOL	492	Topics: Ecosystem Ecology	3	BIOL	410	Conservation Biology	3
BIOL	492	Topics: Biodiversity & Ecosystem Function	3	BIOL	412/L	Freshwater Ecology	3
BIOL	407/L	Plants and Civilization	4	BIOL	417/L	Field Ecology	3
BIOL	408/L	Landscape Ecology (with lab)	3	BIOL	418	Ecosystem Ecology	3
BIOL	410	Conservation Biology	3	BIOL	440/L	Restoration Ecology	4
BIOL	412/L	Freshwater Ecology (with lab)	3	BIOL	466	Environmental Toxicology and Contaminants	3
BIOL	440/L	Restoration Ecology (with lab)	4	<b>Course Group Subtotal</b>			<b>6-9</b>
BIOL/ESCI	442	Introduction to River Studies [G]	3	<b>Earth Systems Course Group (at least 2 courses)</b>			
BIOL/PHIL	454	Environmental Ethics	3	ESCI/SU	412	Earth and Water Resources	3
BIOL	466	Environmental Toxicology and Contamination	3	ESCI/SU	416	Global Climate Change	3
CHEM	110/L	Elementary Environmental Chemistry (with lab) [SGR #6]	4	ESCI/SU	415	Energy and Sustainability	3
CHEM	326/L	Organic Chemistry I [SGR #6]	4-5	ESCI	473	Hydrogeology	3
CHEM	482	Environmental Chemistry	3	ESCI	411	Geomorphology	3
ECON	472	Resource and Environmental Economics	3	<b>Course Group Subtotal</b>			<b>6-9</b>

ESCI/ SUST	321	Earth Resources	3	<b>Environmental Science Electives</b>			
ESCI	360	Global Climate Change	3	BIOL	420/L	Introduction to Biostatistics & Computational Biology	3
ESCI/ PHYS	385	The Energy Crisis	3	BIOL /ESCI	442	Introduction to River Studies	3
ESCI/ ANTH/ POLS	425	Introduction to GIS	3	CHEM	326/L	Organic Chemistry	4
ESCI	473	Fundamentals of Hydrogeology	3	CHEM	482	Environmental Chemistry	3
OCEN	401	Oceanography	3	ESCI	425	Introduction to Geographical Information Systems	3
SUST	491 <sup>a</sup>	Independent Study	1-3	ESCI	401	Oceanography	3
SUST	492 <sup>a</sup>	Topics	1-3	SUST	491 <sup>a</sup>	Independent Study	1-3
				SUST	492 <sup>a</sup>	Topics	1-3
				SUST	396 <sup>a</sup>	Field Experience	1-2
				<b>Subtotal</b>			<b>0-3</b>
				<b>Foundational Requirements (credits may also be applied toward a minor or second major)</b>			
				BIOL	151/L	General Biology I	4
				ESCI	101/L	Dynamic Earth	4
				<b>Complete one course and its corresponding lab (4 credit hours) from the list below:</b>			
				CHEM	106/L	Chemistry Survey	4
				CHEM	112/L	General Chemistry I	4
				CHEM	116/L	Honors Principles of Chemistry	4
				<b>Complete one quantitative course and its corresponding lab, if applicable, (3-5 credit hours total) from the list below:</b>			
				STAT	281	Statistics	3
				BIOL	420/L	Introduction to Biostatistics and Computational Biology (with lab)	3
				MATH	121	Survey of Calculus	4
				MATH	123	Calculus I	5
				<b>Foundational Requirements Subtotal</b>			<b>15-17</b>
<b>Total Specialization</b>			<b>18</b>	<b>Total Specialization</b>			<b>30-32</b>
<b>Total Specialization for the Double Major</b>			<b>12</b>	<b>Total number of hours required for major</b>			<b>52-54</b>
<b>Total Specialization for the Double Major</b>			<b>12</b>				
<b>Social Sciences Specialization</b>				<b>Human and Natural Systems Specialization</b>			
				<b>Sustainable Communities Emphasis</b> (at least 3 courses from the Social Systems course group and 1 from Natural Systems course group)			
				<b>Science and Society Emphasis</b> (at least 3 courses from the Natural Systems Course Group and at least 1 from Social Systems course group)			
				<b>Social Systems Course Group (at least 1 course)</b>			
ANTH/ SUST	426	Collapse of Societies	3	ANTH/ SUST	426	Collapse of Societies	3
ANTH/ SUST	427	The Holocene	3	ANTH/ SUST	427	The Holocene	3
ANTH/ SUST	428	Sustainability and Urbanism	3	ANTH/ SUST	428	Sustainability and Urbanism	3
ANTH/ POLS/ ESCI	425	Introduction to GIS	3	ANTH	470	Anthropology of Food	3
BADM	338	Green Entrepreneurship	3	ECON	472	Resource and Environmental Economics	3
BIOL/ PHIL	454	Environmental Ethics	3	HIST	372	American West	3
ECON	410	Economic Development	3	POLS	320	Public Administration	3
ECON	472	Resource and Environmental Economics	3	POLS	407	Environmental Law & Policy	3

ENGL	305	Professional, Technical, and Grant Writing	3	SOC	432	Collective Behavior and Social Change	3
MCOM	243	Public Relations Principles	3	SOC	450	Race and Ethnic Minorities	3
POLS	320	Public Administration	3	SPCM	418	Environmental Communication	3
POLS	404	Local Government Administration and Politics	3	<b>Course Group Subtotal</b>			<b>3-12</b>
POLS	407	Environmental Law and Policy	3	<b>Environmental Systems Course Group (at least 1 course)</b>			
POLS	421	Introduction to the Nonprofit Sector	3	ESCI	321	Earth and Water Resources	3
POLS	424	Planning Principles and Techniques	3	ESCI	360	Global Climate Change	3
PSYC	418	Advanced Environmental Psychology	3	ESCI	385	Energy and Sustainability	3
SOC	410	Methods of Social Research	3	BIOL	311/L	Principles of Ecology	4
SOC	450	Race & Ethnic Minorities	3	BIOL	410	Conservation Biology	3
SOC	432	Collective Behavior and Social Change	3	BIOL	440/L	Restoration Ecology	4
SPCM	418	Environmental Communication	3	CHEM	482	Environmental Chemistry	3
SPCM	422	Persuasion	3	<b>Course Group Subtotal</b>			<b>3-12</b>
SPCM	485	Communication & Conflict Resolution	3	<b>Human and Natural Systems Electives</b>			
SUST	421	Sustaining the Human Food Supply	3	ENGL	403	Grant Writing	3
SUST	491 <sup>a</sup>	Independent Study	1-3	POLS	404	Local Government Administration and Politics	3
SUST	492 <sup>a</sup>	Topics	1-3	POLS	421	Introduction to the Nonprofit Sector	3
				SOC	410	Methods of Social Research	3
				SPCM	422	Persuasion	3
				SPCM	485	Communication and Conflict Resolution	3
				BIOL	408/L	Landscape Ecology	3
				BIOL	412/L	Freshwater Ecology	3
				BIOL	417/L	Field Ecology	3
				BIOL	418	Ecosystem Ecology	3
				BIOL/ ESCI	442	Introduction to River Studies	3
				BIOL	466	Environmental Toxicology and Contaminants	3
				BIOL	420/L	Introduction to Biostatistics & Computational Biology	3
				ESCI	473	Hydrogeology	3
				ESCI	411	Geomorphology	3
				ESCI	425	Introduction to Geographical Information Systems	3
				SUST	491	Independent Study	1-3
				SUST	492	Topics	1-3
				SUST	396	Field Experience	1-2
				<b>Subtotal</b>			<b>0-3</b>
				<b>Total Specialization</b>			<b>15</b>
				Remove			
				<b>Total number of hours required for major</b>			<b>37</b>
				Remove			
				<b>Double major option</b>			
				Students who choose Sustainability as one of two majors complete a 31-credit hour version of the Sustainability major. Double-majors complete all core requirements for the major (22 hours) and select a specialization. In the specialization, 9 hours of coursework are required with at least one course selected from each course group for the selected specialization.			
Total number of hours required Natural Sciences specialization			18	Total number of hours required	Environmental Science	specialization	30-32
Total number of hours required Social Sciences specialization			18	Total number of hours required	Human and Natural	Systems specialization	15
Total number of hours required for double major			30	Total number of hours required for double major			31
Total number of hours required for major			36	Total number of hours required for major			37-54
Total number of hours required for degree			120	Total number of hours required for degree			120

- 7. Explanation of the Change:** The proposed changes include changes to the core courses for the major and revision of the specializations for the major. Changes to the core courses include the addition to Microeconomics (ECON 201), the deletion of Environmental Earth Science (ESCI 205), the deletion of Resource and Environmental Economics (ECON 472), and updates to Sustainability and Society (SUST 201) and Sustainability and Science (SUST 203) to reflect the changes in course number and name that have been made for those courses.

The revisions of the specializations serve two general objectives: (1) to provide both specializations with a “course group” structure to assure breadth of content in upper-division courses; and (2) to add foundational requirements to the former “natural science” specialization to make it more equivalent to other natural science majors at USD (and other universities). Both specializations have also been renamed to reflect the strengths of the program and the professional opportunities for graduates. Two emphases are offered in the Human and Natural Systems specialization so that students may still choose to have a social science focus or a natural science focus (without the additional courses required for the revised science-oriented specialization).