



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

<b>UNIVERSITY:</b>	<b>USD</b>
<b>CURRENT PROGRAM TITLE:</b>	<b>Medical Biology, B.S.</b>
<b>CIP CODE:</b>	<b>26.0101</b>
<b>UNIVERSITY DEPARTMENT:</b>	<b>Biology</b>
<b>BANNER DEPARTMENT CODE:</b>	<b>UBIO</b>
<b>UNIVERSITY DIVISION:</b>	<b>College of Arts &amp; Sciences</b>
<b>BANNER DIVISION CODE:</b>	<b>2A</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

5/4/2020

Date

**1. This modification addresses a change in (place an "X" in the appropriate box):**

- |   |   |
|---|---|
| <input 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 checked="" type="checkbox"/> Total credits required for program      |
| <input 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: 8/1/2020**

**3. Program Degree Level (place an "X" in the appropriate box):**

Associate  Bachelor's  Master's  Doctoral

**4. Category (place an "X" in the appropriate box):**

Certificate  Specialization  Minor  Major

**5. If a name change is proposed, the change will occur (place an "X" in the appropriate box):**

- 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:** \_\_\_\_\_

*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):

Existing Curriculum

Proposed Curriculum (highlight changes)

Medical Biology, B.S.

N/A

Medical Biology (B.S.) Program Requirements				Medical Biology (B.S.) Program Requirements			
Departmental Requirements				Departmental Requirements			
BIOL	151/151L	General Biology I with lab	4/0	BIOL	151/151L	General Biology I with lab	4/0
BIOL	153/153L	General Biology II with lab	4/0	BIOL	153/153L	General Biology II with lab	4/0
BIOL	280/280L	Inquiry and Analysis in Biology with lab	2	BIOL	280/280L	Inquiry and Analysis in Biology with lab	2
BIOL	420	Intro to Biostatistics & Computational Biology	3	BIOL	420	Intro to Biostatistics & Computational Biology	3
BIOL	420L	Intro to Biostatistics & Computational Biology Lab	0	BIOL	420L	Intro to Biostatistics & Computational Biology Lab	0
BIOL	471	Genetics	3	BIOL	471	Genetics	3
BIOL	475	Introduction to Molecular Biology	3	BIOL	475	Introduction to Molecular Biology	3
Choose one of the following pre-requisites for PHGY 420 :				Choose one of the following pre-requisites for PHGY 420 :			
BIOL	428	Comparative Physiology	3	BIOL	428	Comparative Physiology	3
BIOL	433	Environmental Physiology of Animals		BIOL	433	Environmental Physiology of Animals	
BIOL	456	Mammalian Physiology		BIOL	456	Mammalian Physiology	
<b>Subtotal</b>			<b>22</b>	<b>Subtotal</b>			<b>22</b>
Required Support Courses				Required Support Courses			
ANAT	411	Human Gross Anatomy		ANAT	411	Human Gross Anatomy	4
BIOC	430	Principles of Biochemistry		BIOC	430	Principles of Biochemistry	3
CHEM	326	Organic Chemistry I		CHEM	310/L	Fundamental Organic Chemistry	5
				OR			
CHEM	326L	Organic Chemistry I Lab		CHEM	326/L	Organic Chemistry I and Lab	4
				AND			
				CHEM	328/L	Organic Chemistry II and Lab	4
MATH	123	Calculus I		MATH	123	Calculus I	4
MATH	123L	Calculus I Lab		MATH	123L	Calculus I Lab	1
PHGY	420	Advanced Human Physiology		PHGY	420	Advanced Human Physiology	3
PHIL	364	Biomedical Ethics		PHIL	364	Biomedical Ethics	3
PSYC	101	General Psychology		PSYC	101	General Psychology	3
SOC	100	Introduction to Sociology		SOC	100	Introduction to Sociology	3
<b>Choose one of the following Chemistry sequences:</b>				<b>Choose one of the following Chemistry sequences:</b>			
CHEM	112/L	General Chemistry I /Lab	3/1	CHEM	112/L	General Chemistry I /Lab	3/1
CHEM	114/L	General Chemistry II/Lab	3/1	CHEM	114/L	General Chemistry II/Lab	3/1
OR				OR			
CHEM	112/L	General Chemistry I /Lab	3/1	CHEM	112/L	General Chemistry I /Lab	3/1
CHEM	116/L	Honors Principles of Chemistry/Lab	3/1	CHEM	116/L	Honors Principles of Chemistry/Lab	3/1
<b>Choose one of the following Physics sequences:</b>				<b>Choose one of the following Physics sequences:</b>			
PHYS	111/L	Introduction to Physics I/Lab		PHYS	111/L	Introduction to Physics I/Lab	3/1
PHYS	113/L	Introduction to Physics II/Lab		PHYS	113/L	Introduction to Physics II/Lab	3/1
OR				OR			
PHYS	211/L	University Physics I/Lab		PHYS	211/L	University Physics I/Lab	4/1
PHYS	213/L	University Physics II/Lab		PHYS	213/L	University Physics II/Lab	4/1
<b>Choose one of the following pre-requisites for BIOC 430:</b>				<b>Choose one of the following pre-requisites for BIOC 430:</b>			
BIOL	443	Cell Biology		BIOL	443	Cell Biology	3
CHEM	330	Structure and Function of Biomolecules		CHEM	330	Structure and Function of Biomolecules	3
<b>Subtotal</b>			<b>47-49</b>	<b>Subtotal</b>			<b>48-52</b>
Required Electives:				Required Electives:			
<b>Select 9 credit hours from below:</b>				<b>Select 9 credit hours from below:</b>			
BIOC	431	Principles of Biochemistry Laboratory		BIOC	431	Principles of Biochemistry Laboratory	3
BIOL	416	Evolution of Disease		BIOL	416	Evolution of Disease	3
BIOL	424	Disease Ecology		BIOL	424	Disease Ecology	3

BIOL	425	Cellular Physiology		BIOL	425	Cellular Physiology	3
BIOL	426	Endocrinology		BIOL	426	Endocrinology	3
BIOL	428	Comparative Physiology		BIOL	428	Comparative Physiology	3
BIOL	429	Biology of Reproduction		BIOL	429	Biology of Reproduction	3
BIOL	430	Neurobiology		BIOL	430	Neurobiology	3
BIOL	432	Behavioral Neuroscience		BIOL	432	Behavioral Neuroscience	3
BIOL	433	Environmental Physiology of Animals		BIOL	433	Environmental Physiology of Animals	3
BIOL	441	Histology		BIOL	441	Histology	3
BIOL	441L	Histology Laboratory		BIOL	441L	Histology Laboratory	3
BIOL	443	Cell Biology		BIOL	443	Cell Biology	3
BIOL	456	Mammalian Physiology		BIOL	456	Mammalian Physiology	3
				BIOL	466	Environmental Toxicology and Chemistry	3
BIOL	473	Evolution		BIOL	473	Evolution	
BIOL	481	Vertebrate Anatomy & Embryology		BIOL	481	Vertebrate Anatomy & Embryology	
BIOL	481L	Vertebrate Anatomy & Embryology Lab		BIOL	481L	Vertebrate Anatomy & Embryology Lab	
BIOL	483	Developmental Biology		BIOL	483	Developmental Biology	
CHEM	330	Structure and Function of Biomolecules		CHEM	330	Structure and Function of Biomolecules	
HSC	315	Intro to Public Health		HSC	315	Intro to Public Health	
MICR	418	Fundamentals of Immunology		MICR	418	Fundamentals of Immunology	
HSC	315	Introduction to Public Health		HSC	315	Introduction to Public Health	
HSC	320	Introduction to Epidemiology		HSC	320	Introduction to Epidemiology	
MICR	420	Microbiology and Infectious Diseases		MICR	420	Microbiology and Infectious Diseases	
MICR	422	Microbiology & Infectious Disease Lab		MICR	422	Microbiology & Infectious Disease Lab	
PHAR	452	Introduction to Pharmacology		PHAR	452	Introduction to Pharmacology	
PHGY	421	Advanced Human Physiology II		PHGY	421	Advanced Human Physiology II	
PSYC	321	Human Development: Lifespan		PSYC	321	Human Development: Lifespan	
PSYC	406	Cognitive Psychology		PSYC	406	Cognitive Psychology	
PSYC	451	Psychology of Abnormal Behavior		PSYC	451	Psychology of Abnormal Behavior	
<b>Subtotal</b>			<b>9</b>	<b>Subtotal</b>			<b>9</b>
If used to fulfill a specific requirement, BIOL 428, 433, 443, 456, and CHEM 330 may not also be used as electives. Students may petition to include 1-3 credits of BIOL 498- Undergrad Research/Scholarship or a comparable course in a related discipline as an elective for the program. This petition must be approved by the Biology Department chair or designee. Students in the University Honors Program may substitute appropriate UHON courses for PSYC 101 and/or SOC 100 with approval of the Biology Department chair or designee.				If used to fulfill a specific requirement, BIOL 428, 433, 443, 456, and CHEM 330 may not also be used as electives. Students may petition to include 1-3 credits of BIOL 498- Undergrad Research/Scholarship or a comparable course in a related discipline as an elective for the program. This petition must be approved by the Biology Department chair or designee. Students in the University Honors Program may substitute appropriate UHON courses for PSYC 101 and/or SOC 100 with approval of the Biology Department chair or designee.			
Students who complete the Medical Biology major will have fulfilled the requirements for the Interdisciplinary Sciences Minor and are not required to complete an additional minor, although they are welcome to add any minor other than Biology. Students completing a Medical Biology major cannot also complete a double major in Biology with the Physiology, Cell & Molecular Biology Specialization, although they may complete the Biology, Conservation & Biodiversity major.				Students who complete the Medical Biology major will have fulfilled the requirements for the Interdisciplinary Sciences Minor and are not required to complete an additional minor, although they are welcome to add any minor other than Biology. Students completing a Medical Biology major cannot also complete a double major in Biology with the Physiology, Cell & Molecular Biology Specialization, although they may complete the Biology, Conservation & Biodiversity major.			
<b>Subtotal Medical Biology BS</b>			<b>78-80</b>	<b>Subtotal Medical Biology BS</b>			<b>79-83</b>
<b>Free Electives:</b>			<b>19-21</b>	<b>Free Electives:</b>			<b>19-21</b>
The following cross-curricular skill areas, identified in SDBOR policy 2.11, will be addressed in the program of study:				The following cross-curricular skill areas, identified in SDBOR policy 2.11, will be addressed in the program of study:			
<ul style="list-style-type: none"> <li>inquiry and analysis</li> <li>critical and creative thinking</li> <li>information literacy</li> </ul>				<ul style="list-style-type: none"> <li>inquiry and analysis</li> <li>critical and creative thinking</li> <li>information literacy</li> </ul>			

<ul style="list-style-type: none"> <li>• teamwork</li> <li>• problem solving</li> </ul>			<ul style="list-style-type: none"> <li>• teamwork</li> <li>• problem solving</li> </ul>	
<b>Total number of hours required for major</b>	<b>78-80</b>		<b>Total number of hours required for major</b>	<b>79-83</b>
<b>Total number of hours required for degree</b>	<b>120</b>		<b>Total number of hours required for degree</b>	<b>120</b>

### 7. Explanation of the Change:

The change reflects a new course offering by the Chemistry department specifically geared towards teaching students in Biology the necessary Organic Chemistry needed for pre-requisites into Medical School. Students can opt to take a full year of Organic Chemistry (8 credits) or the newly devised Fundamental Organic Chemistry (5 credits). It also allows a currently offered course in Biology as an elective in the major.