



**SOUTH DAKOTA BOARD OF REGENTS
ACADEMIC AFFAIRS FORMS**

Substantive Program Modification Program

UNIVERSITY:	SDSU
CURRENT PROGRAM TITLE:	Microbiology (B.S.)
CIP CODE:	26.0502
UNIVERSITY DEPARTMENT:	Biology & Microbiology
BANNER DEPARTMENT CODE:	SBIM
UNIVERSITY DIVISION:	College of Natural Sciences
BANNER DIVISION CODE	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

3/25/2020

Vice President of Academic Affairs or
President of the University

Date

1. This modification addresses a change in:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Total credits required within the discipline | <input type="checkbox"/> Total credits of supportive course work |
| <input checked="" type="checkbox"/> Total credits of elective course work | <input 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 |

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)

Pre	Num	Title	Cr Hrs	Pre	Num	Title	Cr Hrs
		System General Education Requirement	33-35			System General Education Requirement	32-34
		SGR 1 Written Communication: ENGL 101 English Composition I ENGL 201 English Composition II	6			SGR 1 Written Communication: ENGL 101 English Composition I ENGL 201 English Composition II	6
		SGR 2 Oral Communication: SPCM 101 Fundamentals of Speech	3			SGR 2 Oral Communication: SPCM 101 Fundamentals of Speech	3
		SGR 3 Social Sciences/Diversity	6			SGR 3 Social Sciences/Diversity	6
		SGR 4 Arts and Humanities/Diversity	6			SGR 4 Arts and Humanities/Diversity	6

Existing Curriculum

Proposed Curriculum (Highlight Changes)

Pre	Num	Title	Cr Hrs	Pre	Num	Title	Cr Hrs
SGR 5 Mathematics: MATH 102 (3) and MATH 120 (3) or MATH 115 (5) or MATH 121-121L (5) or MATH 123 (4)			4-6	SGR 5 Mathematics: MATH 102 (3) and MATH 120 (3) or MATH 115 (5) or MATH 121-121L (5) or MATH 123 (4)			4-6
				MATH 115 Pre-Calculus (5) or higher			3-5
SGR 6 Natural Sciences: BIOL 151-151L General Biology I & Lab (4) BIOL 153-153L General Biology II & Lab (4)			8	SGR 6 Natural Sciences: BIOL 151-151L General Biology I & Lab (4) BIOL 153-153L General Biology II & Lab (4)			8
Department Requirements			--	Department Requirements			--
<ul style="list-style-type: none"> – 25 semester credits must be upper division (300 and above), with the exception that MATH 125 and 225, Calculus II and III, may be counted as five credits toward the total. – Students must complete a minimum of 33 credits from the natural sciences. Refer to departments offering the degree for specific course listings. 			--	<ul style="list-style-type: none"> – 25 semester credits must be upper division (300 and above), with the exception that MATH 125 and 225, Calculus II and III, may be counted as five credits toward the total. – Students must complete a minimum of 33 credits from the natural sciences. Refer to departments offering the degree for specific course listings. 			--
Major Requirements			74-81	Major Requirements			74-76
Biology & Microbiology			30	Biology & Microbiology			30
BIOL	119	First Year Seminar	2	BIOL	119	First Year Seminar	2
BIOL	202-202L	Genetics and Organismal Biology & Lab	4	BIOL	202-202L	Genetics and Organismal Biology & Lab	4
BIOL	204-204L	Genetics and Cellular Biology & Lab	4	BIOL	204-204L	Genetics and Cellular Biology & Lab	4
BIOL OR MICR	290	Seminar (1)	1	BIOL OR MICR	290	Seminar (1)	1
BIOL	383	Bioethics	4	BIOL	383	Bioethics	4
MICR	233-233L	Introductory Microbiology & Lab	4	MICR	233-233L	Introductory Microbiology & Lab	4
MICR	332	Microbial Physiology	2	MICR	332	Microbial Physiology	2
MICR	332L	Microbial Physiology Lab	2	MICR	332L	Microbial Physiology Lab	2
MICR	439	Medical and Veterinary Immunology	3	MICR	439	Medical and Veterinary Immunology	3
MICR	448	Molecular and Microbial Genetics	4	MICR	448	Molecular and Microbial Genetics	4
Applied and Environmental Microbiology			6-8	Applied and Environmental Microbiology			6-8
Select at least <u>two</u> courses from the following:			6-8	Select at least <u>two</u> courses from the following:			6-8
MICR	310-310L	Environmental Microbiology & Lab	4	MICR	310-310L	Environmental Microbiology & Lab	4
MICR	311-311L	Food Microbiology & Lab	4	MICR	311-311L	Food Microbiology & Lab	4
MICR	421-421L	Soil Microbiology & Lab	3	MICR	421-421L	Soil Microbiology & Lab	3
				BIOL	235-235L	Introduction to Biotechnology & Lab	3
MICR	450	Applied Microbiology & Biotechnology	3	MICR	450	Applied Microbiology & Biotechnology	3
Infectious Disease (at least 2 courses)			6	Infectious Disease (at least 2 courses)			6
Select at least <u>two</u> courses from the following:			6	Select at least <u>two</u> courses from the following:			6
BIOL	467-467L	Parasitology & Lab	3	BIOL	467-467L	Parasitology & Lab	3
MICR	424	Medical & Veterinary Virology	3	MICR	424	Medical & Veterinary Virology	3
MICR	433	Medical Microbiology	3	MICR	433	Medical Microbiology	3
MICR	440L	Infectious Disease Lab	3	MICR	440L	Infectious Disease Lab	3
Chemistry			20	Chemistry			20
CHEM	112-112L	General Chemistry I & Lab	4	CHEM	112-112L	General Chemistry I & Lab	4
CHEM	114-142L	General Chemistry II & Lab	4	CHEM	114-142L	General Chemistry II & Lab	4

Existing Curriculum

Proposed Curriculum (Highlight Changes)

Pre	Num	Title	Cr Hrs	Pre	Num	Title	Cr Hrs
CHEM	326 -326L	Organic Chemistry I & Lab	4	CHEM	326 -326L	Organic Chemistry I & Lab	4
CHEM	328 -328L	Organic Chemistry II & Lab	4	CHEM	328 -328L	Organic Chemistry II & Lab	4
CHEM	464	Biochemistry I	3	CHEM	464	Biochemistry I	3
CHEM	466	Laboratory Methods – Biochemistry	1	CHEM	466	Laboratory Methods – Biochemistry	1
Physics			4-8	Physics			4
PHYS	111-111L	Introduction to Physics I & Lab (4)	4-8	PHYS	111-111L	Introduction to Physics I & Lab (4)	4-8
OR				OR			
PHYS	113-113L	Introduction to Physics II & Lab (4)		PHYS	113-113L	Introduction to Physics II & Lab (4)	
OR				OR			
PHYS	101-101L	Survey of Physics & Lab (4)		PHYS	101-101L	Survey of Physics & Lab (4)	
						PHYS electives	4
Mathematics			3-4	Mathematics			3
MATH	125	Calculus II (4)	3-4	MATH	125	Calculus II (4)	3
OR				OR			
STAT	281	Introduction to Statistics (3)		STAT	281	Introduction to Statistics (3)	
Capstone and Advanced Writing			5	Capstone and Advanced Writing			5
MICR	490	Seminar	2	MICR	490	Seminar	2
ENGL	379	Technical Communication (Section: Biology & Microbiology)	3	ENGL	379	Technical Communication (Section: Biology & Microbiology)	3
Electives			5-14	Electives			9-14
Summary of Credits Microbiology (B.S.)							
System General Education Requirement			33-35	System General Education Requirement			32-34
Department Requirements			--	Department Requirements			--
Major Requirements			74-81	Major Requirements			74-76
Electives			4-13	Electives			10-14
Total number of hours required for major			74-81	Total number of hours required for major			74-76
Total number of hours required for degree			120	Total number of hours required for degree			120

7. Explanation of the Change:

The Department of Biology & Microbiology has identified the following changes to the Microbiology major:

- Removed the requirement students must complete MATH 115 or MATH 121 for SGR #5. Changes to the SDSU MATH course sequence, as well as varying requirements of healthcare programs necessitated the change for SGR#5.
- Simplified the PHYS requirement. Students will complete a minimum of 4 credits in PHYS course(s).
- Removed MATH 125 Calculus II. Modern microbiology is aided by large data sets so future professionals need a solid foundation in statistics. STAT 281 Introduction to Statistics will now be required.
- The new course BIOL 235-235 Introductory Biotechnology & Lab has been added as one of the option under Applied and Environmental options.
- The overall decrease in required course credits will free up credits for electives or towards a minor in another discipline area.