



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

**Institutional Substantive Program Modification Requests**

**Institution:** South Dakota Mines **Date:** 3/14/23

Institutional representatives should provide direct links to PDF documents for each of the program modification requests represented below. All requests should be posted on the campus Curriculum and Instruction website one week prior to the Academic Affairs Council meeting where the program modification request is being considered.

<b><i>Program Title (Substantive Changes Not Requiring Board Approval)</i></b>	<b><i>Approval</i></b>
<b>MS Paleontology</b>	PC
<b>MS Biomedical Engineering</b>	PC
<b>PhD Chemical Engineering</b>	PC

Program modifications referenced above for approval have been reviewed by the Academic Affairs Council and the System Vice President for Academic Affairs and may be advanced forward for entry in the student information system. For those program modifications listed above that did not receive approval, additional clarification or justification will be necessary and should be re-routed through the review process on a separate “Institutional Substantive Program Modification Requests” form once all issues have been resolved.

*Pamela Canivan*

**Signature: System Vice President for Academic Affairs**

5/16/2023

**Date**



**SOUTH DAKOTA BOARD OF REGENTS  
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**Substantive Program Modification Form**

Use this form to request minor changes in existing programs (majors, minors, certificates, or specializations).

<b>UNIVERSITY:</b>	SDSM&T
<b>CURRENT PROGRAM TITLE:</b>	Paleontology MS
<b>CIP CODE:</b>	400604
<b>UNIVERSITY DEPARTMENT:</b>	Geology and Geological Engineering
<b>BANNER DEPARTMENT CODE:</b>	MGGE
<b>UNIVERSITY DIVISION:</b>	4L
<b>BANNER DIVISION CODE:</b>	4L

**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.*

Vice President of Academic Affairs or President of the University	Click here to enter a date. Date
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**1. This modification addresses a change in (place an "X" in the appropriate box):**

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

**2. Effective date of change:** 8/24/2023

**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):**

<i>Existing Curriculum</i>				<i>Proposed Curriculum (highlight changes)</i>			
Pref.	Num.	Title	Cr. Hrs.	Pref.	Num.	Title	Cr. Hrs.
		<b>Paleontology MS, Thesis Option</b>				<b>Paleontology MS, Thesis Option</b>	
GEOL/ GEOE	700	Developing and Planning Research	1	GEOL/ GEOE	700	Developing and Planning Research	1
GEOL	771	Paleobiology	3	GEOL	771	Paleobiology	3
GEOL	771L	Paleobiology Lab	1	GEOL	771	Paleobiology Lab	1
GEOL	571	Advanced Field Paleo	2	GEOL	571	Advanced Field Paleo	2
GEOL/ GEOE	798	Thesis	6	GEOL/ GEOE	798	Thesis	6
		Electives	17			Electives	17
A minimum of 17 elective credits are required to complete the degree. The candidate's committee is responsible for assisting the student in developing a program of study that prepares the student for his/her intended field of study. The program of study must include at least twelve (12) credits of electives with a GEOL/GEOE/PALE prefix and at least eleven (5) credits of additional GEOL/GEOE/PALE or other electives.				A minimum of 17 elective credits are required to complete the degree. The candidate's committee is responsible for assisting the student in developing a program of study that prepares the student for his/her intended field of study. The program of study must include at least twelve (12) credits of electives with a GEOL/GEOE/PALE prefix and at least eleven (5) credits of additional GEOL/GEOE/PALE or other electives.			
						<b>Paleontology MS, Non-thesis Option</b>	
				GEOL	700	Developing And Planning Research	1
				GEOL/ GEOE	788	MS Research Problems/Project	3
				PALE	771	Paleobiology	3
				PALE	771L	Paleobiology Lab	1
				GEOL/ GEOE/ PALE	600 or above	GEOL/GEOE/ PALE electives	12
						Graduate level course work	10

Total number of hours required for major, minor, or specialization	
Total number of hours required for degree	

Total number of hours required for major, minor, or specialization	30
Total number of hours required for degree	30

**7. Explanation of the Change:**

The department will now admit students to the non-thesis option as well as the thesis option. This change results from the effort to increase graduate enrollment and to expand the potential market and number of applicants who might consider applying for the Paleontology MS program. This request also results from the effort to stay abreast of current national trends in geoscience MS programs and to remain competitive with other geoscience departments who offer non-thesis MS programs. **This modification is not intended to replace the existing Paleontology (Thesis) MS option.**



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**Substantive Program Modification Form**

Use this form to request minor changes in existing programs (majors, minors, certificates, or specializations).

<b>UNIVERSITY:</b>	Choose an item.
<b>CURRENT PROGRAM DEGREE:</b>	<b>MS in Biomedical Engineering</b>
<b>CURRENT PROGRAM MAJOR/MINOR:</b>	<b>Biomedical Engineering</b>
<b>CURRENT SPECIALIZATION (If applicable):</b>	
<b>CIP CODE:</b>	<b>140501</b>
<b>UNIVERSITY DEPARTMENT:</b>	<b>Department of Nanoscience &amp; Biomedical Engineering</b>
<b>BANNER DEPARTMENT CODE:</b>	<b>MNNS</b>
<b>UNIVERSITY COLLEGE:</b>	<b>4E</b>
<b>BANNER COLLEGE CODE:</b>	<b>4E</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.*

Vice President of Academic Affairs or President of the University	Click here to enter a date. <hr style="width: 100%;"/> Date
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**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 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 (explain below)                              |
| <input type="checkbox"/> Modification requiring Board of Regents approval<br><i>Must have prior approval from Executive Director or designee</i> |   |

2. Effective date of change: 5/1/2023

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. 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:

7. 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.
BME	690	BME Seminar	3	BME	690	BME Seminar	2
				BME	XXX	Elective	1
Total number of hours required for major, minor, or specialization			17-18	Total number of hours required for major, minor, or specialization			16-17
Total number of hours required for degree			32	Total number of hours required for degree			32

## 8. Explanation of the Change:

We previously changed the Seminar (BME 690) credit requirements for the MS in Biomedical Engineering (BME) from 3 to 2 credits to increase program efficiencies. The previous paperwork only covered this change for the thesis option of the MS in BME. We are now updating this change to apply to the non-thesis option as well. The previously required seminar credit will be made up in an additional elective credit for the non-thesis option of the BME MS program. A minimum of 11 elective credits will now be required for the non-thesis MS in BME with a maximum allowance of 17 credits of elective requirements. Students may still take 0-6 credits of research/project courses to meet the required 32 total credits required for the non-thesis MS in BME.

**For substantial modifications requiring Board approval, complete the items below.** References to external sources should be documented with a footnote (including web addresses where applicable).

9. Date of approval from the Executive Director or designee.
10. Identify the program modification requested.
11. Provide justification for the desired modification.
12. Would the requested modification require a change to the catalog description and/or the program learning outcomes? If so, describe.
13. Indicate the number of students currently enrolled in the program.
14. Describe the real impact to students.
15. Describe the real impact to the university.
16. Describe any cost associated with the program modification.
17. Describe any risks and unintended consequences associated with the program modification.
18. Would this modification be effective for current and future students, or only students who enroll following the change?



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<b>UNIVERSITY:</b>	SDSM&T
<b>CURRENT PROGRAM DEGREE:</b>	PhD
<b>CURRENT PROGRAM MAJOR/MINOR:</b>	<b>Chemical and Biological Engineering</b>
<b>CURRENT SPECIALIZATION (If applicable):</b>	
<b>CIP CODE:</b>	<b>140701</b>
<b>UNIVERSITY DEPARTMENT:</b>	Chemical and Biological Engineering
<b>BANNER DEPARTMENT CODE:</b>	<b>MCBE</b>
<b>UNIVERSITY COLLEGE:</b>	<b>4E</b>
<b>BANNER COLLEGE CODE:</b>	<b>4E</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.*

Vice President of Academic Affairs or President of the University	Click here to enter a date. <hr style="width: 100%;"/> Date
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**1. This modification addresses a change in (place an "X" in the appropriate box):**

- |   |  |
|---|--|
| <input 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 (explain below)                   |

**2. Effective date of change: 5/22/2023**

**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:** N/A

*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.
Must complete a minimum of six credits from the chemical engineering core classes and a minimum of six credits from the biological engineering core classes, with a total of 24 credits from the core classes below.				Must complete all courses in the list below, totaling 15 credits.			
CHEMICAL ENGINEERING CORE CLASSES				CHEMICAL AND BIOLOGICAL ENGINEERING CORE CLASSES			
CBE	605	Applied Chemical Engineering Mathematics	3	CBE	605	Applied Chemical Engineering Mathematics	3
CBE	611	Chemical Engineering Transport Phenomenon	3	CBE	611	Chemical Engineering Transport Phenomenon	3
CBE	544	Reactor Design	3	CBE	544	Reactor Design	3
CBE	550	Systems Analysis Applied to Chemical Engineering	3				
CBE	612	Transport Phenomena: Momentum	3				
CBE	613	Transport Phenomena: Heat	3				

CBE	616	Computations in Transport Phenomenon	3				
CBE	621	Advanced Chemical Engineering Thermodynamics	3	CBE	621	Advanced Chemical Engineering Thermodynamics	3
CBE	714	Transport Phenomena: Mass	3				
<b>BIOLOGICAL ENGINEERING CORE CLASSES</b>							
CBE	584	Fundamentals of Biochemical Engineering	3	CBE	584	Fundamentals of Biochemical Engineering	3
CBE	584L	Biochemical Engineering Laboratory	1				
CBE	586	Immuno-Engineering	2-3				
CBE	603	Molecular Biology for Engineers	3				
CBE	735	Bioseparations	3				
CBE	741	Microbial and Enzymatic Processing	3				
CBE	792	Topics	1-4				
<b>ADDITIONAL REQUIREMENTS</b>				<b>ADDITIONAL REQUIREMENTS</b>			
				<b>CBE</b>	<b>Xxx</b>	<b>CBE Electives</b>	<b>09</b>
Xxx	Xxx	Course Electives	12	Xxx	Xxx	Course Electives	12
CBE	690	Seminar	04	CBE	690	Seminar	04
CBE	898D	Dissertation Research	32	CBE	898D	Dissertation Research	32
			Total Hours Required				Total Hours Required
			72				72

## 7. Explanation of the Change:

In an attempt to increase our rigor, simplify our path to success, ensure offerings of our curriculum, and align our curriculum with our current master program (M.S. Chemical Engineering), we aim to enforce a set of core courses for our students to be mandated to complete. This change will not change the total number of courses. The students will still be required to take 24 credits of CBE courses, as previously required.