



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

UNIVERSITY:	University of South Dakota, South Dakota School of Mines & Technology (joint program)
CURRENT PROGRAM TITLE:	Biomedical Engineering, M.S. (BMDE)
CIP CODE:	14.0501
UNIVERSITY DEPARTMENT:	Biomedical Engineering (UBME)
UNIVERSITY DIVISION:	Arts & Sciences (UAS)

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

5/9/2017

Vice President of Academic Affairs or
President of the University

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 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 checked="" type="checkbox"/> Other (explain below) New Specialization integrated and submitted on New Specialization document

2. Effective date of change:

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 impact require updating any related articulation agreements, site approvals, etc.

6. Primary Aspects of the Modification (add lines as needed):

Existing Curriculum

Biomedical Engineering, M.S. (BME)

Proposed Curriculum (highlight changes)

Biomedical Engineering, M.S. (BME) with No Specialization track and Medical Product Development and Manufacturing Specialization

Pref.	Num.	Title	Cr. Hrs.	Pref.	Num.	Title	Cr. Hrs.
Core Coursework:				Core Coursework:			
BME	508	Biomedical Engineering	3	Remove			
BME	601	Biomaterials	3	Remove			
BME	602	Anatomy and Physiology for Engineers	3	Remove			
BME	603	Molecular Biology for Engineers	3	Remove			
BME	710	Experimental Design & Data Analysis in Biomedical Engineering	3	BME	710	Experimental Design & Data Analysis in Biomedical Engineering	3
BME	790	Graduate Seminar	3	BME	790	Graduate Seminar	3
			Core courses Subtotal:				6
Select 1 of the following				Select Plan A or Plan B below:			
BME	788	Master's Research Problem/Project	6	Remove			
BME	798	Thesis		Remove			
Approved electives (approved by advisor & BME Chair)			9				
			Subtotal:				
			15	Plan A			
				BME	798	Thesis	6
				BME	Advisor and Chair Approved Electives		12-21
				Non-Departmental Electives (approved by Advisor and BME Chair)			0-9
				Plan A Subtotal:			33
				Plan B			
				BME	788	Master's Research Problem/Project	6
				Select Specialization or No Specialization option below: (21 cr)			
				No Specialization Option (21 credit hours)			
				BME	Advisor and Chair Approved Electives		12-21
				Non-Departmental Electives (approved by Advisor and BME Chair)			0-9
				Plan B with No Specialization Subtotal:			33
				Medical Product Development and Manufacturing Specialization (21 credit hours)-Plan B only			
				BME	525	Medical Product Development	3
				BME	550	Regulatory Pathways for Medical Product Development	3
				BME	715	Science Communication	3
				Electives (Select 1 course; 3 credit hours required)			
				BME	601	Biomaterials	3
				BME	721	Tissue Engineering	
				BME	723	Cellular Engineering	
				BME	751	Drug Delivery	
				Non-departmental requirements			
				BADM	580	Foundations of Marketing and Organizational Behavior	3
				BADM	771	Leadership Development	3
				POLS	771	Public Policy Process and Evaluation	3
				Plan B with Medical Product Development and Manufacturing Specialization Subtotal:			33
OR				OR			

Accelerated Master's Program: BS/MS
 Up to 12 credits applied toward the B.S. program may be used to satisfy graduate credit. The following restrictions apply:

- The courses must be taken at the 400/500/600 level as an undergraduate. Dual-listed courses taken at the 500-level can be applied to both the B.S. and M.S. degrees. Dual-listed courses must be taken at the 500-level.
- The student must apply to, and be admitted to, the accelerated program prior to taking courses to be credited toward the accelerated program.
- No courses taken prior to admission to the accelerated program may be counted toward an accelerated graduate degree. No exceptions to this policy will be approved.
- Courses that are "double counted" must be approved by the program coordinator for inclusion in the program of study prior to registration for the course or the credits will not be applied toward the accelerated graduate degree. No exceptions to this policy will be approved.
- For accelerated track students only, a 500 level cellular physiology course may be used as an approved substitute for BME 602, a 500 level molecular biology course may be substituted for BME 603, and a 500 level biochemistry, physiology, and anatomy course will substitute for BME 508.
- Only courses taken at the student's home institution are eligible for dual credit. No transferred courses from other institutions will be allowed to count toward the accelerated master's degree.
- Students admitted to the accelerated M.S. Program may be allowed may register for all courses included on his/her program of study and these credit hours may apply to both undergraduate and graduate degree requirements.

Total number of hours required for major	33
Total number of hours required for degree	33

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- The student must apply to, and be admitted to, the accelerated program prior to taking courses to be credited toward the accelerated program.
- No courses taken prior to admission to the accelerated program may be counted toward an accelerated graduate degree. No exceptions to this policy will be approved.
- Courses that are "double counted" must be approved by the program coordinator for inclusion in the program of study prior to registration for the course or the credits will not be applied toward the accelerated graduate degree. No exceptions to this policy will be approved.
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Total number of hours required for degree	33

7. Explanation of the Change:

Students with diverse science and engineering backgrounds are admitted to the graduate program and as such, may have completed comparable advanced coursework in Biomedical Engineering, Biomaterials, Anatomy and Physiology for Engineers, or Molecular Biology for Engineers. Currently, students regularly receive waivers of these requirements, based on their academic backgrounds.. This Substantial Program Modification reduces the number of required core courses and gives the student and their advisor flexibility to tailor their class choices to enable the student to best attain their career goals.

Medical Product Development and Manufacturing Specialization: Several new courses (Course Requests Accompanying) will be offered in medical product manufacturing to serve an emerging regional workforce need for bioinformatics expertise. This will be a non-thesis specialization and will capitalize on the current Good Manufacturing Lab established at the Graduate Education and Applied Research Center in Sioux Falls.

From: Kouris, Demitris A.
Sent: Thursday, April 20, 2017 9:00 AM
To: Freeburg, Beth M <Beth.Freeburg@usd.edu>
Cc: Engebretson, Daniel S <Daniel.Engebretson@usd.edu>; Sinden, Richard R. <Richard.Sinden@sdsmt.edu>; Lineweber, Michelle L. <Michelle.Lineweber@sdsmt.edu>
Subject: Re: Changes to BME graduate programs

Dr. Freeburg,

Based on Dr. Sinden's input, here are our thoughts:

1. We did not see interest in item 1. It could be unique.
2. These changes do not work entirely for us. We need to make VERY similar, but slightly different changes to accommodate the accelerated BME degree.
3. Yes these forms accommodate our interests, but we need to modify them for SDSMT.

I will ask Dr. Sinden to work on these modifications.

Thank you.

Demitris A. Kouris, Ph.D
Provost & VPAA - SD Mines

On Apr 19, 2017, at 9:59 AM, Freeburg, Beth M <Beth.Freeburg@usd.edu> wrote:

Provost Kouris,

Thank you for your feedback. May I clarify further? Attached are the 2 substantive program modifications and new specialization request that will be considered by our Graduate Council curriculum committee. Would you clarify the following questions:

1. Would you like to jointly participate in the non-thesis M.S. specialization in Medical Product Development and Manufacturing?
If no, USD would make this specialization unique.
2. Would you like to include SDSMT on the two substantive program proposals so the changes may be made for both of us?
3. Do these forms accommodate your interests?

Please give me a call if you would like to discuss.

Thank you for your help,
Beth
605-677-5317