



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

**New Course Request**

<b>USD/SDSM&amp;T</b>	<b>Biomedical Engineering/Nanoscience &amp; Nanoengineering</b>
<b>Institution</b>	<b>Division/Department</b>
USD 9/10/2018 <i>Elizabeth M. Freeburg</i>	SDSM&T Senate 10/11/18
<b>Institutional Approval Signature</b>	<b>Date</b>

**Section 1. Course Title and Description**

Prefix & No.	Course Title	Credits
BME 401/BME 501	Introduction to Biomaterials	3

Course Description
This course will provide students an overview of the biomaterials field with the knowledge necessary for biomedical product development and biomaterials research and development. Students will develop an understanding of major classes of materials used in medical devices including metals, polymers, ceramics, composites, and natural materials. Topics include material properties, processing, testing, corrosion, biocompatibility, tissue response, and sterilization methods. Biomaterial applications such as dental, orthopedic, cardiovascular, drug delivery, and tissue engineering will be reviewed.

**Pre-requisites or Co-requisites (add lines as needed)**

Prefix & No.	Course Title	Pre-Req/Co-Req?
MET 232	Properties of Materials	Pre-Req

**Registration Restrictions N/A**

**Section 2. Review of Course**

- 2.1. Was the course first offered as an experimental course?**  
 Yes (*if yes, provide the course information below*)       No
- 2.2. Will this be a unique or common course (place an "X" in the appropriate box)?**  
 **Common Course**      *Indicate universities that are proposing this common course:*  
 BHSU     DSU     NSU     SDSMT     SDSU     USD

**Section 3. Other Course Information**

- 3.1. Are there instructional staffing impacts?**  
 **No.** Schedule Management, explain: Use available FTE.
- 3.2. Existing program(s) in which course will be offered:** Biomedical Engineering, B.S.
- 3.3. Proposed instructional method by university:** R: Lecture
- 3.4. Proposed delivery method by university:** 025/020 DDN Host/Send Site

3.5. Term change will be effective: Fall 2019

3.6. Can students repeat the course for additional credit?

Yes, total credit limit: \_\_\_\_\_  No

3.7. Will grade for this course be limited to S/U (pass/fail)?

Yes  No

3.8. Will section enrollment be capped?

Yes, max per section: 30  No

3.9. Will this course equate (i.e., be considered the same course for degree completion) with any other unique or common courses in the common course system database in Colleague and the [Course Inventory Report](#)?

Yes  No

3.10. Is this prefix approved for your university?

Yes  No

#### **Section 4. Department and Course Codes (Completed by University Academic Affairs)**

4.1. University Department Code: UBME/MNANO

4.2. Proposed [CIP Code](#): 14.0501

*Is this a new CIP code for the university?*  Yes  No

## NEW COURSE REQUEST

### Supporting Justification for On-Campus Review

		<a href="#">Click here to enter a date.</a>
<b>Request Originator</b>	<b>Signature</b>	<b>Date</b>
		<a href="#">Click here to enter a date.</a>
<b>Department Chair</b>	<b>Signature</b>	<b>Date</b>
		<a href="#">Click here to enter a date.</a>
<b>School/College Dean</b>	<b>Signature</b>	<b>Date</b>

1. Provide specific reasons for the proposal of this course and explain how the changes enhance the curriculum.

This course is the first course in the capstone design course sequence in the Biomedical Engineering Department. Students will work in teams to solve biomedical problems through research, design, and produce a prototype.

2. Note whether this course is:       Required                               Elective

3. In addition to the major/program in which this course is offered, what other majors/programs will be affected by this course? None.

If this will be a dual listed course, indicate how the distinction between the two levels will be made.

The term paper assignment for graduate students would instruct them to prepare a research proposal following the National Institutes of Health's guidelines for an R03 research grant application. NIH limits the R03 proposal to 6 pages, but we've typically reduced that to 5-6 pages (since actual proposals contain preliminary data collected by the investigator; students will not have the resources (reagents, cells, equipment, etc.) to gather preliminary data to include in the proposal). While this is the only assignment that will differ between the undergraduate and graduate students, it is a significant difference. Graduate students will be expected to not only know the course content (biomaterials), but how biomaterials will interact with critical biological systems, such as the immune system, and how the materials can be engineered to solve real biomedical problems. The term papers are graded using the same guidelines that the NIH provides to peer-reviewers.

I would defer the decision to the committee. I do concur with Beth in that there seems to be rigor in the expectations for the graduate students since a NIH style R03 paper is expected from them. Although the length may only be six pages, I have often found, more challenges in constricting a grant proposal.

Best Regards  
Ranjit T. Koodali

4.

5. Desired section size    25

6. Provide qualifications of faculty who will teach this course. List name(s), rank(s), and degree(s).

Grant Crawford, Associate Professor, PhD  
Berit Foss, GMP QA Manager, PhD

7. Note whether adequate facilities are available and list any special equipment needed for the course.  
Adequate Facilities are available.
8. Note whether adequate library and media support are available for the course.  
Adequate library and media support are available.
9. Will the new course duplicate courses currently being offered on this campus?  
 Yes                       No  
If yes, provide justification.
10. If this course may be offered for variable credit, explain how the amount of credit at each offering is to be determined. N/A
11. Add any additional comments that will aid in the evaluation of this request.