Texas A&M University
Departmental Request for a Change in Course
Undergraduate • Graduate • Professional
Submit original form and attachments

1. This request is submitted by the Department of
BMEN
BMEN 680 Biomedical Engineering of Tissues

2. Course prefix, number and complete title of course:
Attach a brief supporting statement for changes made to items 3a thru 3d, and 5 below.

3. Change requested
a. Prerequisite(s): From: Approval of instructor To: BMEN 343 or approval of instructor.
b. Withdrawal (reason):
c. Cross-list with:
Cross-listed courses require the signature of both department heads.
d. Change in course title and description. Enter complete current course title and current course description in item 4; enter proposed course title and proposed course description in item 5.
e. Change in course number, contact hours (lab & lecture), and semester credit hours. Complete item 6. Attach a course syllabus.

4. Complete current course title and current course description: Introduction to aspects of tissue engineering with an emphasis placed on tissue level topics including tissue organization and biological processes, with insights from recent literature (state-of-the-art).

5. Complete proposed course title and proposed course description (not to exceed 50 words): Introduction to engineering strategies used to repair tissue; literature-grounded overview of current strategies using stem cells, 3D scaffolds and drug/gene delivery including ethical considerations of these therapies.

6. a. As currently in course inventory:

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b. Change to:

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Approval recommended by:

Head of Department Date

Chair, College Review Committee Date

Dean of College Date

Dean of College Date

Submitted to Coordinating Board by:

Associate Director, Curricular Services

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu.
Curricular Services – 10/08
To Whom It May Concern:

BMEN 680 Biomedical Engineering of Tissues- Change in course description and prerequisites.

The proposed course description provides clearer and more detailed information about the topics covered in the course. The updated course description is intended to aid prospective students in evaluating their interests in the courses offered at Texas A&M and to aid current students with their decision as to whether or not to enroll in the course, according to their interests and previous experience.

The department feels that students who have not taken BMEN 343 (Introduction to Biomaterials) or equivalent will not be fully prepared to take this class; therefore, it is being added as a prerequisite.
BMEN 480/680
Biomedical Engineering of Tissues

Instructor: Dr. Elizabeth Cosgriff-Hernandez
Office: 335E Zachry, Phone: 979-845-1771
E-mail: cosgriff.hernandez@tamu.edu

Lecture: TR 5:30-6:45 pm (ZACH 105A)
Office Hours: MW 10:00-11:30 am or by appointment

Prerequisites: BMEN 343 or instructor approval; this course assumes basic knowledge of biomaterials, cell biology, human anatomy/physiology and engineering principles

Course Description: This course will provide an introduction to tissue engineering approaches for the augmentation or replacement of compromised tissue function. A focused review of the principles of development, wound healing, regeneration, and repair through remodeling will be used as the foundation for class discussions. Case studies will be used to conduct an integrative exploration of the use of three-dimensional polymeric scaffolds, drug delivery vehicles, gene therapy and cellular engineering for functional repair of injured tissues. An overview of contemporary methods in tissue and cell engineering will be given including tissue scaffold design, use of bioreactors in tissue engineering, and molecular surface modifications. Ethical considerations related to clinical application of tissue and cell engineering technology will be integrated into each lecture.

By the end of this course, students will be familiar with current strategies and techniques used in regenerative medicine to create functional replacements of damaged tissue. Specifically, students will be able to identify key challenges in the development and assessment of therapies utilizing stem cells, 3D scaffolds and drug/gene delivery. The ability to apply course materials will be evaluated through a design project that will engage students in their own research interests.

Course Objectives:
- Develop a fundamental understanding of the guiding principles in tissue engineering including issues related to stem cell isolation/differentiation, scaffold fabrication and gene/drug delivery.
- Identify and understand the ethical considerations in the development and application of tissue and cell engineering technology.
- Apply the knowledge gained in the course in a proposal outlining a new tissue engineering approach that will be presented in class and peer reviewed.

Reference Texts:
- Readings: Recent research articles and book chapters will be handed out in class and posted on biomed.tamu.edu/MTE
- Recommended:

Course Evaluation:
Your final course grade will be determined as follows:
A= 100.00-90.00  B=89.99-80.00  C=79.99-70  D=69.99-60  F=59.99-0

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<th>Graduate Evaluation:</th>
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Homework and Quizzes:
Homework questions will be due one week after being assigned and must be handed in at the beginning of class. There will be a total of 5 homework assignments and in-class quizzes. Group work on homework assignments is encouraged; however, individual write-ups are required for each student. Quizzes will be handed out at the beginning of class and will be collected ten minutes later without exception. Failure to complete a quiz due to tardiness will not be excused. Each quiz and homework assignment will be worth 20 points for a total of 100 possible points.

Exams:
Exams are closed book and closed notes. Any necessary equations will be provided. Exams are typically a combination of short answer and problem solving. A request for an excused or rescheduled exam must be made at least one week before the regularly scheduled exam date (except in unavoidable situations, such as a medical emergency) and is at the discretion of the instructor.

Design Project:
Topic: The class will be divided into groups for the design project with one graduate student leading each group. The purpose of this assignment is to use the knowledge and understanding gained in this course to propose a new tissue engineering approach. Each group will be assigned a tissue but it is up to the group to decide on the focus of the research proposal. The proposal must either improve or modify an existing therapeutic system, or create a new one based on your understanding of the problem. Please avoid just reporting on an already existent system; introduce new components or capabilities into your proposed design. All proposals should give a clear overview of the current approaches and the limitations of each. Explain why your proposed strategy was selected and why it is required or preferred. You should be sure to address all of the advantages and disadvantages of your proposed strategy and how the overall design is an improvement upon the current options. The key point is to be able to identify the critical research problem that will make a given strategy succeed where others have failed. Grading: You will be graded on your knowledge of the subject matter, referencing (depth and accuracy), description of tissue engineering construct, design concepts – creativity and feasibility. Proofread carefully, points will be deducted for excessive grammatical errors.

Length: 20-30 pages double spaced not including title page or references (12 point type, Times New Roman, 1 inch margins, pages numbered, stapled in left hand corner)

Presentation: Each group will be required to make an in-class presentation on the design project. Each group will have 20 minutes for the presentation and 5 minutes for audience questions. This presentation should be done in a teaching style rather than just reporting research. This means that anything you feel the rest of the class won’t understand, you must explain. The graduate student leading each group will present the proposal; however, all group members will be responsible for answering questions. Please bring sufficient copies of your slides to be given out as a handout to the students in the class. Grading: You will be graded on your choice of topic, content of your slides (clarity, organization, technical content) and familiarity with your subject (i.e. ability to answer reasonable questions). Loss of points: You must attend all days of student presentations or 20 points will be deducted from your score for each day of presentations that you miss.

Peer Review: Each person will be required to provide a summary statement of the other proposals. Summary statements are to be done individually using the guidelines and ranking system provided. You will be assigned as the primary reviewer on one proposal and secondary reviewer on the other proposals. Individuals assigned as the primary reviewer will lead the discussion of the proposal in the mock Study Section that will be held on the day of the final. The proposal with the best score will be ‘funded’ following the Study Section discussions. Grading: You will be graded on your critical review of your assigned proposals, leading the review discussion and participation in review discussions. Loss of points: You must attend the peer review session or 50 points will be deducted from your score. Lack of participation or knowledge of the proposals in the review discussion will result in loss of points.
Course Policies:

Attendance: Proper documentation is required for all University-excused absences. You are responsible for all course material presented and no make-up quizzes/tests will be administered for non-excused absences. A request for an excused or rescheduled exam or presentation must be made in person at least one week before the regularly scheduled exam/presentation date (except in unavoidable situations, such as a medical emergency) and is at the discretion of the instructor.

Grade Appeal Process: Requests for review of grading must be submitted in person within one week after the work is returned. Material returned for grade review is subject to re-grading of entire exam/homework. Assignments may be turned in up to 1 day late (by 5 pm the day after the homework is due) for up to 50% credit, after which no credit will be given.

Academic Integrity Statement:

Aggie Honor Code: "An Aggie does not lie, cheat, or steal, or tolerate those who do." It is the responsibility of students and instructors to help maintain scholastic integrity at the university by refusing to participate in or tolerate scholastic dishonesty (Student Rule 20. Scholastic Dishonesty, http://student-rules.tamu.edu). New procedures and policies have been adopted effective September 1, 2004. Details are available through the Office of the Aggie Honor System (http://www.tamu.edu/aggiehonor/). An excerpt from the Philosophy & Rationale section states: "Apathy or acquiescence in the presence of academic dishonesty is not a neutral act -- failure to confront and deter it will reinforce, perpetuate, and enlarge the scope of such misconduct. Academic dishonesty is the most corrosive force in the academic life of a university."

On all course work, assignments, and examinations at Texas A&M University, the following Honor Pledge shall be preprinted and signed by the student: "On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work."

Special Accommodations:

Americans with Disabilities Act (ADA) Policy Statement:
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Department of Student Life, Services for Students with Disabilities in Room B-116 of Cain Hall, call 845-1637, or e-mail ssd@tamu.edu.