

UMBC UGC Change in Existing Course: ENME489 Special Topics in Mechanical Engineering: Biomechanics

Date Submitted: 2/09/16

Proposed Effective Date: Fall 2016

	Name	Email	Phone	Dept
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COURSE INFORMATION: (please provide all information in the "current" column, and only the information changing in the "proposed" column)

change		current	proposed
<input checked="" type="checkbox"/>	Course Number(s)	ENME489	ENME477
<input checked="" type="checkbox"/>	Formal Title	Special Topics in Mechanical Engineering: Biomechanics	Biomechanics
<input checked="" type="checkbox"/>	Transcript Title (≤30c)	Special Topics in Mechanical Engineering: Biomechanics	Biomechanics
<input type="checkbox"/>	Recommended Course Preparation	ENME220	ENME220
<input type="checkbox"/>	Prerequisite NOTE: Unless otherwise indicated, a prerequisite is assumed to be passed with a "D" or better.	You must have completed all 300 level ENME courses with a grade of "C" or better and have senior standing with a 2.0 or better GPA.	You must have completed all 300 level ENME courses with a grade of "C" or better and have senior standing with a 2.0 or better GPA.
<input type="checkbox"/>	Credits	3.0	3.0
<input checked="" type="checkbox"/>	Repeatable?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<input type="checkbox"/>	Max. Total Credits		Max. Total Credits: This should be equal to the number of credits for courses that cannot be repeated for credit. For courses that may be repeated for credit, enter the maximum total number of credits a student can receive from this course. E.g., enter 6 credits for a 3 credit course that may be taken a second time for credit, but not for a third time. Please note that this does NOT refer to how many times a class may be retaken for a higher grade.
<input type="checkbox"/>	Grading Method(s)	<input checked="" type="checkbox"/> Reg (A-F) <input checked="" type="checkbox"/> Audit <input checked="" type="checkbox"/> Pass-Fail	<input checked="" type="checkbox"/> Reg (A-F) <input checked="" type="checkbox"/> Audit <input checked="" type="checkbox"/> Pass-Fail

CURRENT CATALOG DESCRIPTION:

Selected topics of current importance in mechanical engineering. Note: May be repeated for a maximum of nine credits with permission of student's advisor. Recommended Preparation: Senior standing and permission of department. This course is repeatable for a maximum of 9 credits or 3 attempts.

PROPOSED CATALOG DESCRIPTION (no longer than 75 words): leave blank if no changes are being proposed to the catalog description. NOTE: information about prerequisites should NOT appear in the catalog description.)

Biomechanics is the application of mechanics and mechanical engineering to a biological or living system. In this course, we will focus on understanding the natural human mechanical systems, as well as artificial mechanical systems used to treat human diseases. Examples are: joint mechanics, blood flow, soft tissue (muscle, lung, etc.) mechanics, artificial blood vessels, artificial joints, limb lengthening, et al. The course will be about 1/4 guest lectures by experts in various fields of Biomechanics, Biofluid Mechanics, Bioheat and Mass Transfer, and Biomaterials. Since biomechanics and biomechanical engineering are active areas of research in the Mechanical Engineering Department at UMBC, we may also have the opportunity to engage in topics of current research as they become available. In addition, the course will have the potential to examine topics or details of topics according to student experience and interest.

RATIONALE FOR CHANGE:

This special topic has been offered consistently that it should have its own course number.

ENME 477

Biomechanics

Fall 2016

Instructor: Dr. Topoleski, ECS 225C, x3302, topoleski@umbc.edu

Time and Room: Monday/Wednesday, 4:00PM – 5:15PM, Phys 201

Text: no required textbook

The Course: Biomechanics is the application of mechanics and mechanical engineering to a biological or living system. In this course, we will focus on understanding the natural human mechanical systems, as well as artificial mechanical systems used to treat human diseases. Examples are: joint mechanics, blood flow, soft tissue (muscle, lung, etc.) mechanics, artificial blood vessels, artificial joints, limb lengthening, et al. The course will be about 1/4 guest lectures by experts in various fields of Biomechanics, for example, potential guest lecturers include: Dr. Eggleton on Biofluid mechanics, Dr. Zhu on Bioheat and mass transfer, and Dr. Topoleski on Biomaterials. Since biomechanics and biomechanical engineering are active areas of research in the Mechanical Engineering Department at UMBC, we may also have the opportunity to engage in topics of current research as they become available. Finally, we will have the potential to examine topics or details of topics according to student experience and interest.

Homework: Homework will be assigned approximately bi-weekly, and will consist of problem solving, reading, and research assignments. (20% of grade)

Exams: There will be a mid-term and a cumulative final exam (25%+25%=50% of grade)

Final Project: There will be a medium length (~15 page) research paper/design project on topics to be discussed later in the course (30% of grade, including an oral project presentation).

Those taking the Graduate Version (ENME 685): Those students taking the course for graduate level credit will earn their graduate experience from additions/amendments to the assignments, different assignments, different readings, and different expectations in their assigned work, and a separate discussion section.

STATEMENT OF ACADEMIC INTEGRITY:

By enrolling in this course, each student assumes the responsibilities of an active participant in UMBC's scholarly community in which everyone's academic work and behavior are held to the highest standards of honesty. Cheating, fabrication, plagiarism, and helping others to commit these acts are all forms of academic dishonesty, and are wrong. Academic misconduct could result in disciplinary action that may include, but is not limited to, suspension or dismissal. To read the full Student Academic Conduct Policy, consult the UMBC Student Handbook, the Faculty Handbook, or the UMBC policies section of the UMBC Directory.