The addition or removal of any graduation requirement in a major or minor requires that this form, accompanied by supporting documentation, be completed and approved as indicated below. Incomplete or incorrect forms will not be processed.

COLLEGE: College of Engineering  
DEPARTMENT: Biomedical Engineering

DEGREE LEVEL: Bachelor  
PROGRAM TITLE: Biomedical Engineering, B.S.

TO BE INITIATED WITH CATALOG YEAR 20__6_7.  
CHANGE REQUESTED FOR:  
■ major program  
□ minor program

Program changes are effective beginning with the fall term in which they appear in the University Catalog.

■ Yes  □ No  Will this change impact the program's assessment process? If yes, attach a description of how the assessment will be impacted and the new process.

DESCRIPTION OF REQUESTED CHANGES: Attach a more detailed description and any supporting documentation.

The B.S. program in Biomedical Engineering is being modified to address concerns that the students and faculty have mentioned. Specifically, students and faculty would like to have a better defined coursework roadmap for emphasis in specific areas of interest in the Biomedical Engineering undergraduate program. These areas include: Biomechanics, Biomedical Instrumentation-Imaging-Computational-Neural Engineering, and Biomaterials-Tissue Engineering. Other Biomedical Engineering Departments adopt this emphasis model.

The changes to the program and catalog description are in the attached document.

Approvals: On completion of appropriate department approvals, submit form to Chair, Graduate Council, or Chair, Undergraduate Curriculum Committee, for approval below and forward to the Catalog & Curriculum Manager.

[Signatures and dates]

[Registrar's Use Only]

CAPP / Degree Evaluation  
□ Yes  □ No  Update completed ________ Date ________ Initials ________

Academic Year

Catalog Management System  
□ Yes  □ No  Update completed ________ Date ________ Initials ________

Academic Year
Changes to the 2016-17 Catalog Description

Current wording on p. 108, left column.

Restricted electives must carry the BME prefix. A list of restricted electives is available from the program office.

Technical electives may be in any field of science or engineering, subject to department head approval. Courses classified as mathematics, basic science, applied science, engineering science, engineering design or some combination of these satisfies the requirement. These courses should be at a level appropriate to the level at which they appear in the program. Only one 3000-level course may be used as a Technical Elective.

New wording for 2016-17 Catalog Description

Area of Emphasis

A wide variety of career paths are open to biomedical engineering graduates. As a result, many undergraduate students are interested in a specific area of biomedical engineering and choose technical and restricted electives related to their area of interest. The department office maintains a list of electives appropriate for students interested in biomechanics, biomedical instrumentation-imaging-computational-neural engineering, and biomaterials-tissue engineering. It should be noted that only one 3000-level course may be used as a Technical Elective.
### Florida Institute of Technology

#### ADDING A NEW COURSE TO THE CURRICULUM

This is a request for reactivation of a course in the system. ☐ Yes ☐ No

**New courses are available beginning with the fall term in which they appear in the University Catalog.**

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>COURSE NO.*</th>
<th>CREDIT HOURS</th>
<th>ACADEMIC YEAR TO BE ADDED TO THE FILE</th>
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<td>(e.g., CSE)</td>
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*Justify level, 1000 level and no co- or prerequisites

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<tr>
<th>CLASS HOURS</th>
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<td>45/semester</td>
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#### DEPARTMENT

- Biomedical Engineering

#### SCHEDULE TYPE

- Lecture (A)

#### COMPUTER TITLE

- Biomechanics

This course will be entered into the system as: ☐ Bi-Level ☐ Cross-Listed ☐ Dual-Numbered ☐ Full-Load ☐ None of these/Standard Listing ☐

#### CATALOG TITLE

- Biomechanics

#### CATALOG DESCRIPTION OF COURSE

Flows basic fluid mechanics principles. Includes conservation equations in both integral and differential formulations; microcirculation modeling of the cardiovascular system; circulation modeling of microvascular systems; and flow modeling in lungs, articular joints, and the lymphatic system.

This description has been approved by the catalog office: [Signature] 11/10/2015

#### In addition, please attach a course syllabus and/or more detailed description.

**Restrictions**

- Prerequisite BME 3030

**Grades to Be Issued**

- A, B, C, D, F

**Additional Restrictions**

#### If this course replaces a course currently offered in BANNER, please indicate all course information and the date from which the course may be removed from the system.

<table>
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<tr>
<th>SUBJECT</th>
<th>COURSE NO. (e.g., CSE)</th>
<th>TERM TO INACTIVATE</th>
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<td>☐ Yes ☐ No</td>
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#### Approval: On completion of description and course number verification, affix appropriate signatures as indicated, and submit to the Office of Graduate Programs, or Undergraduate Curricular Committee Chair for placement on agenda.

- Originator: [Signature] 11/10/15
- Chair, Graduate Council: [Signature] 11/16/15
- Dean or Associate Dean: [Signature] 11/16/15

**Note:** Vice President for Institutional Effectiveness: [Signature]

**Registrar's Use Only**

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- OperatorFill: [ ]
- Date: [ ]

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**Florida Institute of Technology • Office of the Registrar**

150 West University Boulevard, Melbourne, FL 32901-4975 • (321) 674-8114 • Fax (321) 674-7827

ROR-855-915
BME 4030: BIOFLUID MECHANICS 2
Fall 2016

2016-17 Catalog Data: Reviews basic fluid mechanics principles. Includes conservation equations in both integral and differential formulations; macrocirculation modeling of the cardiovascular system; circulation modeling of microvascular systems; flow modeling in lungs, articular joints, and the lymphatic system.

Credits & Contact Hours: 3 Credits, 30 Lectures (75 minutes/lecture)

Required or Elective or Selected Elective: Restricted Elective

Prerequisites: BME 3030

Prequisite by Topic: Introductory Biofluid Mechanics

Grading Policy:
- Homework (10%)
- Exam 1 (25%)
- Exam 2 (25%)
- Final Exam (40%)

Grading System:
- A = 90 – 100
- B = 80 – 89
- C = 70 – 79
- D = 60 – 69
- F = 0 - 59

Textbooks:

Course Outcomes: Students completing the course should be able to:

1. Use appropriate laws of physics to formulate and solve biofluid mechanics problems.
2. Develop a continued understanding of biological fluids and apply engineering principles to model the mechanical behavior of fluid systems.
3. Apply mechanics principles to biofluids to perform calculations in macrocirculation and microcirculation systems.
4. Apply fundamental balance relationship to determine biofluid flow parameters.
5. Understand current challenges in biofluids engineering.

Topics Covered and Associated Time:

1. Review of Basic Biofluid Mechanics (4 lecture)
2. Macrocirculation: Heart (4 lectures)
3. Macrocirculation: Arteries and Veins (4 lectures)
4. Microcirculation: Microvascular Beds (endothelial cells, smooth muscle cells, etc.) (4 lectures)
5. Microcirculation: Mass Transport & Heat Transfer (gas diffusion, glucose transport, etc.) (6 lectures)
6. Systems Flow Modeling (Lungs, Intraocular, Articular Joints, etc.) (6 lectures)
7. Exams (2 lecture periods)

Class Schedule: T-Th 11:00 – 12:15pm

Contribution of course to Meeting the Requirements of Curriculum: This course meets requirements as a restricted elective for a one and one-half year curriculum of engineering science topic.

Relationship of Course to Program Outcomes: See assessment matrix.

Prepared By: Ted Conway, Ph.D. Professor and Head of Biomedical Engineering Department.
Outcomes Assessment Matrix for BME 4030

<table>
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<th>Course Outcomes</th>
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Key

- **Program Outcome Description**
  - a: An ability to apply knowledge of mathematics, science, and engineering
  - b: An ability to design and conduct experiments, as well as analyze and interpret data
  - c: An ability to design a system, component, or process to meet a desired need
  - d: An ability to function on multi-disciplinary teams
  - e: An ability to identify, formulate, and solve engineering problems
  - f: An understanding of professional and ethical responsibility
  - g: An ability to communicate effectively
  - h: Have a broad education necessary to understand the impact of engineering solutions in a global and societal context
  - i: Recognition of the need for, and an ability to engage in, life-long learning
  - j: Knowledge of contemporary issues
  - k: An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

- ♦ = The course outcome *lightly* addresses the Student Outcome
- ♦ = The course outcome *strongly* addresses the Student Outcome

Course outcomes assessment matrix completed by: Ted Conway, Ph.D., Biomedical Engineering

Date: 11/10/2015
Florida Institute of Technology

ADDING A NEW COURSE TO THE CURRICULUM

New courses are available beginning with the full term in which they appear in the University Catalog.

Yes ☐ No ☐

SUBJECT BME COURSE NO. A110 CREDIT HOURS 3 ACADEMIC YEAR TO BE ADDED TO THE FILE Fall 2018

CLASS HOURS 45/semester LECTURE HOURS 45/semester LAB HOURS 0/semester CONTACT HOURS (CEU ONLY) N/A

DEPARTMENT Biomedical Engineering SCHEDULE TYPE Lecture (A)

☐ COLLEGE OF AERONAUTICS - 23 ☐ COLLEGE OF SCIENCE - 26
☐ NATHAN M. BISK COLLEGE OF BUSINESS - 24 ☐ EXTENDED STUDIES/MBI COLLEGE OF BUSINESS - 50
☐ COLLEGE OF ENGINEERING - 1 ☐ SCHOOL OF HUMAN-CENTERED DESIGN, INNOVATION & ART - 28

COMPUTER TITLE Tissue Engineering

This course will be entered into the system as: 81-Level ☐ Cross-Listed ☐ Dual-Numbered ☐ Full-Load ☐ None of these/Standard Listing ☐

CATALOG TITLE Tissue Engineering

Catalog Description of Course: Restricted to 25 characters, including spaces

Studies strategies to engineer different tissues and organs. Consider the impact of biomaterial properties, the use of stem cells and other aspects of the cellular microenvironment for engineering tissues.

This description has been approved by the catalog office

Director of Graduate Programs Date

In addition, please attach a course syllabus and/or a more detailed description.

Restrictions: Prerequisite BIC 9210 ☐ and ☐ or ☐ Corequisite BIC 8250 ☐ and ☐ or ☐ Corequisite BIC 8250 ☐ and ☐ or ☐ Corequisite BIC 8250 ☐ and ☐ or ☐ Corequisite BIC 8250

Grades to be Issued: A, B, C, D, F ☐ A, B, C, D, F, CEU/Audit ☐ CEU ☐ S, U ☐ F ☐ Other

Additional Restrictions: ☐ and ☐ or ☐ (e.g., Major, Class Level, Department Head Approval)

If this course replaces a course currently offered in BANNER, please indicate old course information and the desired term the course may be removed from the system.

Subject Alpha Prefix (e.g., CS1) COURSE NO. (e.g., 1201) Term to Inactivate

Yes ☐ No ☐ Will this course be used to measure program-level student learning outcomes? If yes, review and signature required.**

Yes ☐ No ☐ Will this course be used to satisfy the scholarly inquiry requirement? If yes, attach "Q" materials for review.

Yes ☐ No ☐ Will this course impact any existing programs? If yes, attach "Changing Graduation Requirements" form for each program that is impacted.

APPROVALS: On completion of description and course number verification, affix appropriate signatures as indicated, and submit to the Office of Graduate Programs, or Undergraduate Curriculum Committee Chair for placement on agenda.

Original Date

Department Head/Program Chair Date

Chair, Graduate Council Date

Chair, Undergraduate Curriculum Committee Date

Registrar’s Use Only

SCACISE ☐ SCADIS ☐ SCACUR ☐ SCALAR ☐ SCARIS ☐ Operator Date

Catalog & Curriculum Manager Date

Florida Institute of Technology • Office of the Registrar

150 West University Boulevard, Melbourne, FL 32901-6975 • (321) 674-8114 • Fax (321) 674-7827

RO-253-915
BME 4110 TISSUE ENGINEERING
Fall 2016

2016-17 Catalog Data: Studies strategies to engineer different tissues and organs. Consider the impact of biomaterial properties, the use of stem cells, and other aspects of the cellular microenvironment for engineering tissues.

Credits & Contact Hours: 3 Credits, 30 lectures (45 hours).

Required or Elective or Selected Elective: Elective

Prerequisite and Co-Requisite Courses: BIO 3210 and BME 3260

Prerequisites by Topic: Physiology (tissue organization; organs and organ system function); Organic Chemistry; Biomaterials; Mathematics (basic statistics; linear algebra, and differential equations)

Co-requisites by Topic: None

Grading Policy:
   - Homework / Quizzes (20%)
   - Midterm Exams (50% total, or 25% each)
   - Project (10%)
   - Final Exam (20%)

Textbook:

Course Outcomes: Students completing the course should be able to:
1. Describe what materials are used for tissue engineered scaffolds, and the polymer processing that is involved
2. Understand how cells interact with the components of their microenvironment
3. Apply traditional mechanical concepts and knowledge of cell adhesion to understand cellular mechanotransduction
4. Understand the concepts of an inflammatory response and the integration of a tissue engineered product with the local tissue
5. Design a system that will induce a cellular response that is desired when engineering a particular tissue type. Effectively communicate the results of this project to colleagues through a presentation.
6. Understand the basics of the FDA approval process, and the current challenges for tissue engineering

Topics Covered and Associated Time:
1. Introduction to tissue engineering and regenerative medicine (1 lecture)
2. Cell - microenvironment interactions introduction (1 lecture)
3. Native tissue organization and extracellular matrix (1 lecture)
4. Developing a research model – *in vitro* vs. *in vivo* (1 lecture)
5. Growth factors and other signalling molecules (2 lecture)
6. Polymer-based biomaterial synthesis and processing (2 lecture)
7. Mechanotransduction (2 lecture)
8. Impact of scaffold properties (2 lecture)
9. Bioreactors (2 lecture)
10. Stem Cells (2 lecture)
11. Implantation: regulating the host response and tissue integration (2 lecture)
12. Drug delivery and gene therapy (2 lecture)
13. Tissue-specific: Musculoskeletal (2 lecture)
14. Tissue-specific: Cardiovascular (2 lecture)
15. Tissue-specific: Nervous system (1 lecture)
16. FDA approval process for tissue engineering (1 lecture)
17. Mid-term exams (2 lecture)
18. Class presentation (2 lecture)

**Class Schedule:** Tuesday & Thursday: 9:30 PM – 10:45 PM

**Contribution of Course to Meeting the Requirements of Curriculum:** This course meets requirements for a one and one-half year curriculum of engineering science topics.

**Relationship of Course to Program Outcomes:** See assessment matrix.

**Prepared By:** Chris Bashur, Ph.D., Assistant Professor of Biomedical Engineering
# Outcomes Assessment Matrix for BME 4110

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**Key**

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◇ = The course outcome *lightly* addresses the Student Outcome
◆ = The course outcome *strongly* addresses the Student Outcome

Course outcomes assessment matrix completed by: Chris Bashur, Ph.D., Biomedical Engineering
Date: 11/9/2015
Florida Institute of Technology

ADDING A NEW COURSE TO THE CURRICULUM

This is a request for reactivation of a course in the system.  
☐ Yes  ☐ No

New courses are available beginning with the fall term in which they appear in the University Catalog.

SUBJECT  B M E  COURSE NO.*  4 4 4  CREDIT HOURS  3  ACADEMIC YEAR TO BE ADDED TO THE FILE  Fall 2016

*Justify level, 1000 level, and co- or prerequisites

CLASS HOURS  45/semester  LECTURE HOURS  45/semester  LAB HOURS  0/semester  CONTACT HOURS (CEU ONLY)  N/A

DEPARTMENT  Biomedical Engineering

SCHEDULE TYPE  Lecture (A)

☐ COLLEGE OF AERONAUTICS  -  23  ☐ COLLEGE OF SCIENCE  -  26
☐ NATHAN M. BISEL COLLEGE OF BUSINESS  -  24  ☐ EXTENDED STUDIES/NMBC COLLEGE OF BUSINESS  -  20
☐ COLLEGE OF ENGINEERING  -  1  ☐ SCHOOL OF HUMAN-CENTERED DESIGN, INNOVATION & ART  -  28

COMPUTER TITLE  Neuroengineering

This course will be entered into the system as:  ☐ BI-Level  ☐ Cross-Listed  ☐ Dual-Numbered  ☐ Full-Load  ☐ None of these/Standard Listing

CATALOG TITLE  Neuroengineering

CATALOG DESCRIPTION OF COURSE: Restricted to 350 characters, including spaces

Focuses on applying engineering to neuroscience using models of neural function. Emphasizes neural interfaces and prosthetics from the basic to advanced, including brain computer interfaces. Stresses strategies for design of rehabilitative assistive technologies.

This description has been approved by the catalog office.

Catalog & Curriculum Manager  Date

In addition, please attach a course syllabus and/or more detailed description.

GRADES TO BE ISSUED

☐ A, B, C, D, F  ☐ A, B, C, D, F, CEU/Audit
☐ CEU  ☐ S
☐ P, F  ☐ Other

ADDITIONAL RESTRICTION ☐ and ☐ or

If this course replaces a course currently offered in BANNER, please indicate old course information and the date term the course may be removed from the system.

SUBJECT AlphaB (e.g., CS)  COURSE NO. (e.g., 1391)  TERM TO INACTIVATE

☐ Yes  ☐ No  Will this course be used to measure program level student learning outcomes? If yes, review and signature required.

☐ Yes  ☐ No  Will this course be used to satisfy the scholarly inquiry requirement? If yes, attach "Q" materials for review.

☐ Yes  ☐ No  Will this course impact any existing programs? If yes, attach "Changing Graduation Requirements" form for each program that is impacted.

APPROVALS: On completion of description and course number verification, affix appropriate signatures as indicated, and submit to the Office of Graduate Programs, or Undergraduate Curriculum Committee Chair for placement on agenda.

Originator  09/24/2015  Chair, Graduate Council  Date

Department Head/Program Chair  11/10/15  Date

Dean or Associate Dean  11/16/15  Date

✓ Vice President for Institutional Effectiveness  Date

CATALOG & CURRICULUM MANAGER

These changes/additions have been made for the University Catalog and entered into the BANNER term named above.

Registrar’s USE ONLY

SCASSIE  SCADEEL  SCAPRD  SCARSE

SCARRS  Operator Link  Date

Catalog & Curriculum Manager  Date

Florida Institute of Technology  Office of the Registrar

150 West University Boulevard, Melbourne, FL 32901-6975  (321) 674-8114  Fax (321) 674-7027
BME 4444: Neuroengineering
Fall 2016

2016-17 Catalog Data: Focuses on applying engineering to neuroscience using models of neural function. Emphasizes neural interfaces and prosthetics from basic to advanced, including brain computer interfaces. Stresses strategies for design of rehabilitative assistive technologies.

Credits & Contact Hours: 3 Credits, 45 Lectures (50 minutes/lecture)

Required or Elective or Selected Elective: Restricted Elective

Prerequisite: BME3240

Prerequisite by Topic: Computational Methods for Biological Systems

Grading Policy:
- Homework (10%)
- Midterm (35%)
- Project (20%)
- Final Exam (35%)

Grading System:
- A = 90 - 100
- B = 80 - 89
- C = 70 - 79
- D = 60 - 69
- F = 0 - 59

Textbook:

Course Outcomes: Students completing the course should be able to:

1. Develop a basic understanding of models of neural function for neural interface design.
2. Identify, formulate and solve problems in neural interface design.
3. Apply engineering principles to the design of neural interfaces and prosthetics.
4. Apply engineering principles to the evaluation of neural interfaces and prosthetics.
5. Understand the ethical consideration of neuroengineering.
6. Understand current challenges in neuroengineering.

Topics Covered and Associated Time:

1. History and Overview of Neural Engineering (2 lectures)
2. Review of Neuronal function, models and mechanisms (4 lectures)
3. Cochlear Prostheses (5 lectures)
4. Visual Prostheses (6 lectures)
5. Artificial Memory (4 lectures)
6. Brain–Computer Interfaces (6 lectures)
7. Neural Motor Prosthetics (8 lectures)
8. Therapeutic Brain Stimulation (5 lectures)
9. Neural Stimulation for Epilepsy and Pain Management (4 lectures)

Class Schedule: Monday, Wednesday, Friday 11:00 – 11:50am

Contribution of course to Meeting the Requirements of Curriculum: This course meets requirements as a restricted elective for a one and one-half year curriculum of engineering science topic.

Relationship of Course to Program Outcomes: See assessment matrix.

Prepared By: Gisela Susanne Bahr, Ph.D., Ph.D., Associate Professor of Biomedical Engineering
## Outcomes Assessment Matrix for BME 4444

### Relationship of Course Outcomes to Student Outcomes

<table>
<thead>
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◇ = The course outcome lightly addresses the Student Outcome  
◆ = The course outcome strongly addresses the Student Outcome

Course outcomes assessment matrix completed by: Gisela Susanne Bahr, Ph.D., Ph.D., Biomedical Engineering

Date: 11/09/2015
Florida Institute of Technology

ADDING A NEW COURSE TO THE CURRICULUM

New courses are available beginning with the full term in which they appear in the University Catalog.

SUBJECT  Ω  ME COURSE NO.  Ω  CREDIT HOURS  Ω  ACADEMIC YEAR TO BE ADDED TO THE FILE  Ω  Fall 2016

CLASS HOURS  Ω  LECTURE HOURS  Ω  LAB HOURS  Ω  CONTACT HOURS (CUO ONLY)  Ω  NA

DEPARTMENT  Ω  Biomedical Engineering

SCHEDULE TYPE  Ω  Lecture (A)

COLLEGE OF AERONAUTICS - 23
□  NATHAN M. BISK COLLEGE OF BUSINESS - 24
□  COLLEGE OF ENGINEERING - 1
□  COLLEGE OF PSYCHOLOGY AND LIBERAL ARTS - 25

COMPUTER TITLE  Ω  Biomechanics 2

CATALOG TITLE  Ω  Biomechanics 2

CATALOG DESCRIPTION OF COURSE

Focusses on the mechanics of biological systems. Describes relevant anatomy and physiology, and discusses methods and models to characterize their mechanical behavior. Presents a wide selection of biomechanics-related topics.

This description has been approved by the catalog office.

In addition, please attach a course syllabus and/or more detailed description.

REQUIREMENTS  Ω  Pre-requisite  BME 3030

□  Corequisite  A, B, C, D, E, F, CEU/Audit

□  Corequisite  S, U

□  Corequisite  P, F

□  Corequisite  Other

GRADUATION  Ω  A, B, C, D, E, F

□  A, B, C, D, E, F, CEU/Audit

□  S, U

□  P, F

□  Other

ADDITIONAL RESTRICTIONS □  and □ or

(Restrictions limit major, class level, department head approval)

If this course replaces a course currently offered to students, please indicate old course information and the data term the course may be removed from the system.

SCHEDULE NO. (eg. 1001)

TERM TO INACTIVATE

□  Yes  Ω  No Will this course be used to measure program-level student learning outcomes? Yes, review and signature required.

□  Yes  Ω  No Will this course be used to satisfy the scholarly inquiry requirement? Yes, attach "QA" materials for review.

□  Yes  Ω  No Will this course impact any existing program? Yes, attach "Changing Graduation Requirements" form for each program that is impacted.

APPROVALS
On completion of description and course number verification, attach appropriate signatures as indicated, and submit to the Office of Graduate Programs, or Undergraduate Curriculum Committee, or the relevant department Chair for placement on agenda.

Chair, Graduate Council

Date

Chair, Undergraduate Curriculum Committee

Date

Vice President for Institutional Effectiveness

Date

CATALOG & CURRICULUM MANAGER

These changes/additions have been made to the University Catalog and entered into the BANNER item named above.

Registrar's USE ONLY

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Operators Init.

Date
BME 4700: BIOMECHANICS 2
Department of Biomedical Engineering
Fall 2016

2016-17 Catalog Data: Focuses on the mechanics of biological systems. Describes relevant anatomy and physiology, and discusses methods and models to characterize their mechanical behavior. Presents a wide selection of biomechanics-related topics.

Credits & Contact Hours: 3 Credits, 30 Lectures (45 hours)

Required or Selected Elective: Restricted Elective

Prerequisite Courses: BME 3030 and BME 3081

Prerequisites by Topic: Mathematics, Physics, Thermodynamics, Statics, Biomechanics, Biofluids, Basic introductory computer skills.

Grading Policy: Homework (15%)
Exam 1 (35%)
Exam 2 (35%)
Survey (15%)

Grading System: A = 90-100
B = 80-89
C = 70-79
D = 60-69
F = 0-59

Textbook:

Course Outcomes:
Students completing this course should be able to:
1. Demonstrate the ability to quantitatively analyze the biomechanics of human systems both statically and dynamically (including rudimentary gait analysis)
2. Qualitatively describe the mechanico-adaptive behavior of their load-bearing tissues (ocular, cardiovascular, respiratory, musculoskeletal)
3. Apply the constitutive equations to determine the stress (or strain) in a loaded biomaterials and biostructures, from cell to the entire organ and system level.
4. Quantitatively relate the form of biological load-bearing connective tissue systems to their function.
5. Perform a literature search on a specific current biomechanics research topic.
6. Translate the results of the literature search into a cogent presentation and analysis of a relevant biomechanics problem.

Topics Covered:
Specific topics include:
1. Cellular Biomechanics (10hrs)
2. Cardiovascular system biomechanics (10hrs)
3. Ocular biomechanics (4hrs)
4. Respiratory system biomechanics (4hrs)
5. Musculoskeletal biomechanics (15hrs)
6. Exams (2hrs)

Class Schedule: Tuesday and Thursday 9.30AM – 10.45AM

Contribution of Course to Meeting the Requirements of Curriculum: This course meets requirements as a restricted elective for a one and one-half year curriculum of engineering science topic.

Relationship of Course to Program Outcomes: See assessment matrix.

Prepared by: Alessandra Carriero, Ph.D., Assistant Professor of Biomedical Engineering
## Outcomes Assessment Matrix for BME 4700

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Course outcomes assessment matrix completed by: Alessandra Carriero, Ph.D., Biomedical Engineering

Date: 11/10/2015