

UC 10913 10F

DEPARTMENT OF BIOMEDICAL ENGINEERING

To: David Shattuck, Associate Dean, Undergraduate Programs
From: John Glover, Professor
Date: October 4, 2010
Subject: BME Degree Plan Change

APPROVED NOV 17 2010
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Attached I am submitting a revised version of the Biomedical Engineering Degree plan. The changes reflected there are:

1. Biomechanics Option. The name of the Biomedical Analysis and Design option is being changed to the Biomechanics option to better reflect its true content. Both students and faculty were confused by the current name.

2. BIOE 4458 Instrumentation Electronics. The name of BIOE 4458 Bioinstrumentation is being changed to BIOE 4458 Instrumentation Electronics. The course is required in one of the three options, Neuroengineering. The new name removes confusion regarding the true nature of the course: it is a course in electronics, in how to build instrumentation, not a survey course in bioinstrumentation. Additionally, it was originally intended that both ECE and BME students would take the course, but ECE students have been scared away by the name. Thus the course has had trouble making. The name change, along with appropriate advertising, should make it clear to ECE students that it is an appropriate second-level electronics course for any ECE student to take. Serving both ECE and BME students will raise the numbers sufficiently for the course to make.

3. BIOE 4312 → BIOE 5312: This is apparently an error in the current catalog degree plan for the Biomedical Analysis and Design (Biomechanics) option. The course number in the inventory is BIOE 5312 Computational Fluid Dynamics I.


4. BIOE 2350 → MECE 3400: The course BIOE 2350 Continuum Biomechanics is being replaced by the course MECE 3400 Introduction to Mechanics. Students have complained that they do not feel they are sufficiently prepared to take BIOE 2350, and faculty have similarly expressed that the course content is too advanced at that point in the curriculum. The course MECE 3400 is the course offered by ME to other departments as a mechanics introduction, and we believe that it is the appropriate course to replace BIOE 2350. The 1-2 weeks of fluids taught in BIOE 2350 will be adequately covered in a later course, BIOE 3440 Biothermodynamics and Biofluids.

5. Hours Increase. The change from BIOE 2350 to MECE 3400 will result in a net increase of 1 hour in the curriculum. The result is 129 hours for the Biomechanics and Biomolecular options, and 130 hours for the Neuroengineering option. These are well within the College norm. The hours for the other majors are: CHEE 130; CIVE 130; CPE 130; EE 131; INDE 127; MECE 124; PETE 134/135.

6. Changes to 5000-level for Some Courses. Three courses are being changed to the 5000 level so that corresponding 6000-level courses can be offered:

- 4455 ==> 5455 Bioanalytics
- 4323 ==> 5323 Fundamentals of Tissue Engineering
- 4389 ==> 5389 Transport Phenomena in Physiological Systems

Dean's Signature:


Dr. David P. Shattuck

Date: 13 Oct 2010

Biomedical Engineering

First Year

Fall Semester Suggested Program

Courses	Hours
BIOE 1100 . Introduction to Biomedical Engineering	1
BIOL 1161 . Introduction to Biological Sciences Laboratory	1
BIOL 1361 . Introduction to Biological Sciences	3
CHEM 1111 . Fundamentals of Chemistry Lab	1
CHEM 1331 Fundamentals of Chemistry	3
ENGL 1303 . Freshman Composition I	3
MATH 1431 . Calculus I	4
Total	16

Spring Semester Suggested Program

Courses	Hours
BIOL 1162 . Introduction to Biological Sciences Laboratory	1
BIOL 1362 . Introduction to Biological Sciences	3
CHEM 1112 . Fundamentals of Chemistry Lab	1
CHEM 1332 Fundamentals of Chemistry	3
ECE 1331 . Computers and Problem Solving	3
MATH 1432 . Calculus II	4
PHYS 1321 . Physics I	3
Total	18

Second Year

Fall Semester Suggested Program

Courses	Hours
BIOE 2150 . Biosensors	1
CHEM 3221 . Organic Chemistry I Lab	2
CHEM 3331 . Organic Chemistry I	3
ENGL 1304 . Freshman Composition II	3
MATH 2433 . Calculus III	4
PHYS 1322 . Physics II	3
Total	16

Spring Semester

Courses	Hours
MECE 3400 . Introduction to Mechanics	4
CHEE 2331 . Chemical Processes	3
ECE 2100 . Circuit Analysis Lab	1
ECE 2300 . Circuit Analysis	3
HIST 1373 . The United States to 1877	3
MATH 3321 . Engineering Math	3
Total	17

Students must choose one of the three options below for years three and four:

- [Biomechanics Option](#)
- [Biomolecular Option](#)
- [Neuroengineering Option](#)

Biomechanics Option

Third Year

Fall Semester Suggested Program

Courses	Hours
BIOE 3340 . Quantitative Physiology	3
ENGI 2304 . Technical Communications	3
INDE 2333 . Engineering Statistics I	3
HIST 1378 . The United States Since 1877	3
Visual and Performing Arts Core Course	3
Total	15

Spring Semester Suggested Program

Courses	Hours
BIOE 3350 . Biosensors II	3
BIOE 3440 . Biothermodynamics and Biofluids	4
BIOE 4324 . Advanced Continuum Biomechanics	3
BCHS 3304 . General Biochemistry I	3
POLS 1336 . U.S. and Texas Constitutions and Politics	3
Total	16

Fourth Year

Fall Semester Suggested Program

Courses	Hours
BIOE 5312 . Computational Fluid Dynamics I	3
BIOE 5323 . Fundamentals of Tissue Engineering	3
BIOE 5455 . Bioanalytics	4
BIOE Technical Elective ¹³	3
POLS 1337 . U.S. Government: Congress, President and Courts	3
Total	16

Spring Semester Suggested Program

Courses	Hours
BIOE 4334 . Capstone Design	3
BIOE 4325 . Engineering Principles Applied to Biological Systems	3
BIOE Technical Elective ¹³	3
Social Science Core Course	3
Humanities Core Course	3
Total	15
Degree Total:	129

Biomolecular Option

Third Year

Fall Semester Suggested Program

Courses	Hours
BIOE 3340 . Quantitative Physiology	3
ENGI 2304 . Technical Communications	3
INDE 2333 . Engineering Statistics I	3
HIST 1378 . The United States Since 1877	3
Visual and Performing Arts Core Course	3
Total	15

Spring Semester Suggested Program

Courses	Hours
BIOE 3350 . Biosensors II	3
BIOE 3440 . Biothermodynamics and Biofluids	4
BIOE Technical Elective ¹³	3
BCHS 3304 . General Biochemistry I	3
POLS 1336 . U.S. and Texas Constitutions and Politics	3
Total	16

Fourth Year

Fall Semester Suggested Program

Courses	Hours
BIOE 5323 . Fundamentals of Tissue Engineering	3
BIOE 4366 . Biomolecular Engineering Fundamentals	3
BIOE 4393 . Cellular and Biological Transport Phenomena	3
BIOE 5455 . Bioanalytics	4
POLS 1337 . U.S. Government: Congress, President and Courts	3
Total	16

Spring Semester Suggested Program

Courses	Hours
BIOE 4334 . Capstone Design	3
BIOE 5389 . Transport Phenomena in Physiological Systems	3
BIOE Technical Elective ¹³	3
Social Science Core Course	3
Humanities Core Course	3
Total	15
Degree Total:	129

Neuroengineering Option

Third Year

Fall Semester Suggested Program

Courses	Hours
BIOE 3340 . Quantitative Physiology	3
BCHS 3304 . General Biochemistry I	3
ECE 3337 . Engineering Analysis I	3
ENGI 2304 . Technical Communications	3
INDE 2333 . Engineering Statistics I	3
Total	15

Spring Semester Suggested Program

Courses	Hours
BIOE 3350 . Biosensors II	3
BIOE 3440 . Biothermodynamics and Fluids	4
BIOL 4315 . Neuroscience	3
ECE 3355 . Electronics	3
ECE 3155 . Electronics Laboratory	1
POLS 1336 . U.S. and Texas Constitutions and Politics	3
Total	17

Fourth Year

Fall Semester Suggested Program

Courses	Hours
BIOE 3366 . Introduction to Digital Signal Processing	3
BIOE 4458 . Instrumentation Electronics	4
BIOE Technical Elective ¹³	3
HIST 1378 . The United States Since 1877	3
Visual and Performing Arts Core Course	3
Total	16

Spring Semester Suggested Program

Courses	Hours
BIOE 4334 . Capstone Design	3
BIOE Technical Elective ¹³	3
POLS 1337 . U.S. Government: Congress, President and Courts	3
Social Science Core Course	3
Humanities Core Course	3
Total	15
Degree Total:	130