

Engineering Faculty Document No. 27-03

December 18, 2003

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**TO:** The Engineering Faculty**FROM:** The Faculty of the Department of Biomedical Engineering**RE:** New Undergraduate Program Degree Requirements for the Bachelor of Science in Biomedical Engineering

The faculty of the Department of Biomedical Engineering has approved the following new course requirements. This action is now submitted to the Engineering Faculty with a recommendation for approval.

**Reason:** The proposed program degree requirements for the Bachelor of Science in Biomedical Engineering are to establish the minimum requirements for this new program. The proposed program degree requirements provide students with the necessary basic science and engineering knowledge and skills, integration of engineering and life sciences early and continuously throughout the program, and an exposure to other related engineering disciplines and to the breadth of the field of biomedical engineering. The proposed degree program is intended to satisfy ABET requirements for Biomedical Engineering. The plan of study provides students with an integrated and efficient pathway of course selection, allowing for diversification in the final year depending on student interest.

George Wodicka  
Professor and Head  
Department of Biomedical Engineering

**APPROVED FOR THE FACULTY  
OF THE SCHOOLS OF ENGINEERING  
BY THE COMMITTEE ON  
FACULTY RELATIONS**

CFR Minutes           #984            
Date           2/20/04            
Chairman CFR           [Signature]

THE BOARD OF TRUSTEES  
OF THE UNIVERSITY OF CALIFORNIA  
BY THE COMMITTEE ON  
FACULTY RESEARCH

APPROVED AND FORWARDED:

DATE:

BY:

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## B.S. BME Degree Program Requirements

### Minimum Degree Requirements for Bachelor of Science in Biomedical Engineering (B.S. BME)

Credit Hours Required for Graduation: 130

**Freshman Requirements:**<sup>1</sup> (31 credit hours; see Freshman Engineering)

<sup>1</sup> No more than 8 credit hours of freshman calculus can be applied towards the BME degree.

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**Core Biomedical Engineering (BME) Courses** (18 credit hours):

**BME** 201, 204, 205, 206, 301, 304, 305, 306, 390.

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**BME Breadth Requirement** (50 credit hours):

**Core Life Sciences Requirement:** **BIOL** 295E and three (3) additional Life Science courses\* at the 300-level or above.

**Core Engineering Requirement:** **ABE** 591W; **ECE** 301; **IE** 230\*; **ME** 200, 270, 309; and **MSE** 230. (\*or **STAT** 503)

**BME/Engineering Electives:** Three (3) additional BME/Engineering courses\* at the 400-level or above.

**Senior Design Requirements:** **BME** 405

**Other Requirements:** **CS** 490B

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**Advanced Physics** (3 credit hours):

**PHYS** 241

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**Advanced Math** (7 credit hours):

**MA** 261 and (**MA** 266 or **MA** 262)

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**General Education Electives** (18 credit hours): Course selections must meet the General Education Program requirements. Refer to "*General Education Program*."

Includes an ethics elective to be chosen from either **PHIL** 270 or **PHIL** 280.

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**Unrestricted Elective** (3 credit hours): Additional coursework to bring the total to at least 130 hours.

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**GPA Requirement:** A Graduation Index of 2.0 or better is required to fulfill the BSBME degree requirements. A minimum overall GPA of 2.0 is required in major-area (BME) courses to qualify for graduation with a BSBME degree.

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\* Selected from a list of courses approved by the Biomedical Engineering faculty and maintained by the undergraduate advising office.



## Suggested Plan of Study

**Credit Hours Required for Graduation: 130**

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**Freshman Year**, see Freshman Engineering

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### Sophomore Year

<i>Third Semester</i>	<i>Fourth Semester</i>
(4) MA 261 Multivariate Calculus	(3) MA 266 Ordinary Differential Equations
(3) PHYS 241 Electricity and Optics	(3) MSE 230 Structure and Properties Materials
(3) BIOL 295E Biology of the Living Cell	(3) BME 204 Biomechanics Hard/Soft Tissue
(3) BME 201 Biomolecules	(1) BME 206 BME Laboratory II
(1) BME 205 BME Laboratory I	(3) ME 200 Thermodynamics I
(3) ME 270 Basic Mechanics	(3) General education elective
17	16

### Junior Year

<i>Fifth Semester</i>	<i>Sixth Semester</i>
(3) BME 301 Bioelectricity	(3) BME 304 Bioheat and Mass Transfer
(2) BME 305 Bioinstrumentation Lab	(1) BME 306 Biotransport Laboratory
(1) BME 390 BME Professional Seminar	(3) ECE 301 Signals and Systems
(4) ME 309 Fluid Mechanics	(3) IE 230 Probability and Statistics in Engr.
(3) Life Science elective	(3) CS 490B Introduction Bioinformatics
(3) General education elective	(3) Ethics elective
16	16

### Senior Year

<i>Seventh Semester</i>	<i>Eighth Semester</i>
(3) ABE 591W Nonlinear Dyn. Biol. Sys.	(4) 405 BME Design Project*
(3) BME/Engineering elective	(*or can be taken in the Fall)
(3) BME/Engineering elective	(3) BME/Engineering elective
(3) Life Science elective	(3) Life Science elective
(3) General education elective	(3) General education elective
(3) Unrestricted elective	(3) General education elective
18	16

