UNIVERSITY FACULTY SENATE FORMS

Academic Program Approval

This form is a routing document for the approval of new and revised academic programs. Proposing department should complete this form. For more information, call the Faculty Senate Office at 831-2921.

Submitted by: ___Jill Higginson_____
phone number__302.831.6622____

Department: ____Biomedical Engineering_____
email address_higginson@udel.edu

Action: modify Bachelor of Biomedical Engineering degree program
_____
(Example: add major/minor/concentration, delete major/minor/concentration, revise major/minor/concentration, academic unit name change, request for permanent status, policy change, etc.)

Effective term__12F_____
(use format 04F, 05W)

Current degree_BBE_____
(Example: BA, BACH, BACJ, HBA, EDD, MA, MBA, etc.)

Proposed change leads to the degree of: _BBE_____
(Example: BA, BACH, BACJ, HBA, EDD, MA, MBA, etc.)

Proposed name:__not applicable_____
Proposed new name for revised or new major / minor / concentration / academic unit (if applicable)

Revising or Deleting:

Undergraduate major / Concentration:__Biomedical Engineering_____
(Example: Applied Music – Instrumental degree BMAS)

Undergraduate minor:_____
(Example: African Studies, Business Administration, English, Leadership, etc.)

Graduate Program Policy statement change:_____
(**Must attach** your Graduate Program Policy Statement)

Graduate Program of Study:_____
(Example: Animal Science: MS Animal Science: PHD Economics: MA Economics: PHD)

Graduate minor / concentration:_____

Note: all graduate studies proposals must include an electronic copy of the Graduate Program Policy Document, highlighting the changes made to the original policy document.

List new courses required for the new or revised curriculum. How do they support the overall program objectives of the major/minor/concentrations)?
None. We propose to update the list of available technical electives for the BBE degree. Rather than list a specific set of courses which may or may not be offered each semester, we will maintain a list of approved courses on our webpage: (http://www.engr.udel.edu/biomed/downloads/BMEG_tech_electives.pdf).

Explain, when appropriate, how this new/revised curriculum supports the 10 goals of undergraduate education: http://www.ugs.udel.edu/gened/

Not applicable.

Identify other units affected by the proposed changes:
(Attach permission from the affected units. If no other unit is affected, enter "None")

None.

Describe the rationale for the proposed program change(s):
(Explain your reasons for creating, revising, or deleting the curriculum or program.)

The proposed change to the list of technical electives is motivated by the desire for flexibility given the fluid nature of scheduling and offering non-required courses. Furthermore, we expect to pursue ABET accreditation in future years and want to limit the choice of technical. The current list of approved technical electives will be posted on our webpage and is derived from the common set of courses approved as technical electives from other departments within the College.

Program Requirements:
(Show the new or revised curriculum as it should appear in the Course Catalog. If this is a revision, be sure to indicate the changes being made to the current curriculum and **include a side-by-side comparison** of the credit distribution before and after the proposed change.)

DEGREE: BACHELOR OF BIOMEDICAL ENGINEERING
MAJOR: BIOMEDICAL ENGINEERING

CURRICULUM		**CREDITS**

Parenthesized figures indicate year (1 = freshman, 2 = sophomore, 3 = junior, 4 = senior) and semester (F = fall, S = spring).

UNIVERSITY REQUIREMENTS

ENGL 110	Critical Reading and Writing (minimum grade C-)	3 (1F)
First Year Experience (FYE)		0-4
Breadth Requirements		12
Discovery Learning Experience (DLE)		3
Multicultural Course(s)		3

MAJOR REQUIREMENTS

College of Engineering Breadth Requirements 21

The College of Engineering requires 21 total Breadth Requirement credits (essentially 9 credits in addition to the University Breadth Requirement.)

- If chosen carefully, up to 3 credits from each of the University Breadth Requirement categories may be used to simultaneously satisfy the College of Engineering Breadth Requirements for this major.
- Of the 21 credits, 6 credits must be at the Upper Level (usually 300-level or higher) as designated on the College of Engineering Breadth Requirement list.
- Of the 21 credits, 3 credits may be used to satisfy the University Multicultural Requirement (recommended for timely progress toward degree completion.)
- All Breadth Requirement coursework must be passed with a minimum grade of C-.

Core Courses

BISC 207	Introductory Biology I	4 (1S)
BISC 208	Introductory Biology II	4 (2F)
BMEG 301	*Systems Physiology I*	3 (3F)
BMEG 302	*Systems Physiology II*	3 (3S)
BMEG 310	Bioengineering Mechanics	4 (3F)
BMEG 320	Cell and Tissue Transport	3 (3S)
BMEG 330	Medical Instrumentation/Electronics Lab	3 (3S)
BMEG 450	Biomedical Engineering Design (DLE)	4 (4F)
CHEG 404	Probability and Statistics for Engineers	3 (3S)
CHEM 103	General Chemistry I	4 (1F)

CHEM 104	General Chemistry II	4 (1S)
CHEM 321	Organic Chemistry I	4 (2F)
CHEM 322	Organic Chemistry II	4 (2S)
CHEM 527	Introduction to Biochemistry	3 (3F)
CISC 106	General Computer Science for Engineers	3 (1F)
EGGG 101	Introduction to Engineering (FYE)	2 (1F)
ELEG 305	Signals and Systems	3 (2S)
ELEG 479	Introduction to Medical Imaging Systems	3 (4S)
MATH 241	Analytic Geometry and Calculus A	4 (1F)
MATH 242	Analytic Geometry and Calculus B	4 (1S)
MATH 243	Analytic Geometry and Calculus C	4 (2F)
MATH 305	Applied Mathematics for Chemical Engineers	3 (2S)
MEEG 483	Orthopaedic Biomechanics	3 (3S)
MSEG 302	Materials Science for Engineers	3 (3F)
MSEG 460	Biomaterials and Tissue Engineering	3 (4F)
PHIL 444	Medical Ethics	3 (4S)
PHYS 207	Fundamentals of Physics I	4 (2F)
PHYS 208	Fundamentals of Physics II	4 (2S)

~~**NOTES:**~~

- ~~Italicized courses are under development. See website for course descriptions.~~
- ~~For students desiring more advanced training in mathematics, the 2-course sequence of MATH 351 and MATH 352 or MATH 351 and MATH 353 may be substituted for MATH 305 and one Technical Elective.~~
- ~~PHIL 444 counts as an Upper Level Breadth Requirement.~~

TECHNICAL ELECTIVES

Students must take 12 credits (usually 4 courses) of Technical Electives from ~~the following list~~ an approved list of courses. Independent Study, Senior Research, and additional courses for satisfying this requirement can be approved by the advisor.

~~BMSC 630~~	~~Human Movement Control~~	~~3~~
~~CHEG 420~~	~~Biochemical Engineering~~	~~3~~
~~CHEG 621~~	~~Metabolic Engineering~~	~~3~~
~~CHEM 443~~	~~Physical Chemistry~~	~~3~~
~~ELEG 418~~	~~Digital Control Systems~~	~~3~~
~~ELEG 471~~	~~Mathematical Physiology~~	~~3~~
~~ELEG 478~~	~~Introduction to Nano and Biophotonics~~	~~3~~
~~ELEG 680~~	~~Immunology for Engineers~~	~~3~~
~~MEEG 482~~	~~Clinical Biomechanics~~	~~3~~
~~MEEG 485~~	~~Control of Human Movement~~	~~3~~
~~MEEG 612~~	~~Biomechanics of Human Movement~~	~~3~~
~~MSEG 630~~	~~Introduction to Science and Engineering of Polymer Systems~~	~~3~~
~~MSEG 632~~	~~Principles of Polymerization~~	~~3~~
~~MSEG 635~~	~~Principles of Polymer Physics~~	~~3~~
~~UNIV 401~~	~~Senior Thesis~~	~~2-4~~
~~UNIV 402~~	~~Senior Thesis~~	~~2-4~~

CREDITS TO TOTAL A MINIMUM OF **126**

ROUTING AND AUTHORIZATION: (Please do not remove supporting documentation.)

Department Chairperson _____ Date _____

Dean of College _____ Date _____

Chairperson, College Curriculum Committee _____ Date _____

Chairperson, Senate Com. on UG or GR Studies _____ Date _____

Chairperson, Senate Coordinating Com. _____ Date _____

Secretary, Faculty Senate _____ Date _____

Date of Senate Resolution _____ Date to be Effective _____

Registrar _____ Program Code _____ Date _____

Vice Provost for Academic Affairs & International Programs _____ Date _____

Provost _____ Date _____

Board of Trustee Notification _____ Date _____

Revised 10/23/2007 /khs