APR 2 9 2011

UNIVERSITY OF WASHINGTON

CREATING AND CHANGING UNDERGRADUATE ACADEMIC PROGRAMS

[redacted]

After college/school review, send a signed original and 8 copies to FCAS, Box 351271.

For information about when and how to use this form: http://depts.washington.edu/uwcr/1503instructions.pdf

College	Department or Unit	Date
Engineering/Medicine	Bioengineering	28-Mar-2011

New Programs

- ☐ Leading to a Bachelor of _____ in _____ degree.
- ☐ Leading to a Bachelor of _____ degree with a major in _____.
- ☑ Leading to a Nanoscience and Molecular Engineering option within the existing major in Bioengineering.
- ☐ Leading to a minor in _____.

Changes to Existing Programs

- ☐ New Admission Requirements for the Major in _____ within the Bachelor of _____.
- ☐ Revised Admission Requirements for the Major in _____ within the Bachelor of _____.
- ☐ Revised Program Requirements for the Major in _____ within the Bachelor of _____.
- ☐ Revised Requirements for the Option in _____ within the major in _____.
- ☐ Revised Requirements for the Minor in _____.

Other Changes

- ☐ Change name of program from _____ to _____.
- ☐ New or Revised Continuation Policy for _____.
- ☐ Eliminate program in _____.

Proposed Effective Date:

Quarter: ☑ Autumn ☐ Winter ☐ Spring ☐ Summer **Year:** 20 11

Contact Person	Contact's Phone	Contact's Email
Laura Wright	206 – 543 – 8958	lew3@uw.edu

EXPLANATION OF AND RATIONALE FOR PROPOSED CHANGE

For new programs, please include any relevant supporting documentation such as student learning outcomes, projected enrollments, letters of support and departmental handouts. *(Use additional pages if necessary).*

The Nanoscience and Molecular Engineering option within the BS Bioengineering has been approved by our department and is planned to be in effect starting in the 2011-2012 academic year. The option is anticipated to be attractive to our undergraduates, many of whom who have expressed strong interest in nanomolecular engineering. This option will result in a enhanced experience within the BS Bioengineering major for those students interested in a hands-on introduction to diverse approaches to nanoscale phenomena and molecular engineering while being able to remain grounded in the Bioengineering discipline. Ultimately, this option will prepare our students to be future leaders in the modern workforce, where the ability to work across disciplines is an essential skill.

CATALOG COPY

Catalog Copy as currently written. Include only sections/paragraphs that would be changed if your request is approved. Please cross out or otherwise highlight any deletions.

PROPOSED CATALOG COPY

Reflecting requested changes (Include exact wording as you wish it to be shown in the printed catalog. Please underline or otherwise highlight any additions. If needed, attach a separate, expanded version of the changes that might appear in department publications). **Please note:** all copy will be edited to reflect uniform style in the General Catalog.

APPROVALS

Chair/Program Director:	Date:
College/School/Campus Curriculum Committee: See Next Page	Date:
Dean/Vice Chancellor:	Date:
Faculty Council on Academic Standards/ General Faculty Organization/Faculty Assembly Chair: John Schaubberger	Date: 5/13/2011

POST TRI-CAMPUS APPROVAL (when needed)

Faculty Council on Academic Standards/ General Faculty Organization/Faculty Assembly Chair:	Date:

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SEE ATTACHED

SIGNATURES (required)

Chair/Program Director	Date 3/28/11
Dean Engineering Medicine	Date 4-5-11
College Committee Engineering Medicine	Date 4-5-11
Faculty Council on Academic Standards	Date 4/26/11

UoW 1503 (12/05) REVERSE

[redacted]

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College Committee Engineering Medicine 5/2/11	Date 4-5-11
Faculty Council on Academic Standards	Date 4/26/11

UoW 1503 (12/05) REVERSE

[redacted]

Jennifer A. Payne

From: Sandy Pomerinke
Sent: Wednesday, May 04, 2011 8:31 AM
To: Jennifer A. Payne
Subject: RE: Need a Big Favor...BIOEN option 1503

I have one of the Dean's signatures and did not get the other. They are both at Semi-Ah-Moo at a retreat and won't be back in the office until Monday pm. Will the one signature suffice? The one signature is my boss, Dean of Curriculum.

Sandy Pomerinke
Curriculum Operations Specialist
Office of the Dean, Curriculum
Box 356340
A300
Phone: 206-616-7063

From: Jennifer A. Payne
Sent: Tuesday, May 03, 2011 10:35 AM
To: Sandy Pomerinke
Subject: Need a Big Favor...BIOEN option 1503

Sandy,

It appears that the 1503 from BIOEN adding an option in Nanoscience and Molecular Engineering only has the COE signatures.

What is the chance you can get your folks to sign it and email me the scan of the signatures by Friday? ☺

Jennifer

To: Rene Overney, Professor of Chemical Engineering and Dan Schwartz, Chair of Chemical Engineering
From: Christopher Neils, Lecturer of Bioengineering
Date: Tuesday, April 19 2011

The purpose of this memo was to request Chemical Engineering's concurrence with Bioengineering's intent to establish an option in Nanoscience and Molecular Engineering within the existing Bachelor of Science in Bioengineering.

Approvals:
(from Dr. Overney) The document looks good to me. (4/19/2011)
(from Dr. Dan Schwartz) Approved. (4/20/2011)

Dear Rene:

The Department of Bioengineering has developed an option in Nanoscience and Molecular Engineering, meant to complement the similar option that you lead in the Department of Chemical Engineering. Bioengineering and the CEP have approved the relevant paperwork, but CEP approval was contingent on my obtaining your concurrence with the BioE NME option. Therefore, I am asking for your agreement with the creation of an NME option within Bioengineering. I believe that an email reply will be sufficient, although I could prepare a more formal document if you prefer.

The relevant paperwork is attached. I do not expect any of it to surprise you. The relevant additions to the Bioengineering curriculum are listed below and are also shown underlined in the attached Word document.

If you have any questions please let me know.

Regards,
Chris Neils
Lecturer, Bioengineering
206.685.3021

Changes:
Text added under "Department Admission Requirements"

>>> Nanoscience and Molecular Engineering Option (NME): Admission to the NME option for Bioengineering majors is by self-selection and normally occurs in winter quarter of the junior year upon completion of all Bioengineering prerequisites and formal admission to the BS Bioengineering major. Admission is based on the student's academic record and on prior experience/work in the field of nanoscience and/or molecular engineering. Students applying for the NME option should indicate that interest on their Bioengineering major application and discuss their interests/background in their application personal statement.

Text added under "Graduation Requirements"

>>> Nanoscience and Molecular Engineering Option Requirements (78 credits):
1. Engineering Fundamentals (4 credits): AMATH 301
2. Bioengineering Core (44 credits): BIOEN 215, BIOEN 315, BIOEN 316, BIOEN 317, BIOEN 325, BIOEN 326, BIOEN 327, BIOEN 335, BIOEN 336, BIOEN 337, BIOEN 345, BIOEN 401; either 10 credits of BIOEN 402, or 4 credits of BIOEN 403 plus BIOEN 404 and BIOEN 405.
3. Nanoscience and Molecular Engineering Courses (22 credits): NME 220, NME 321, NME 421; minimum 4 additional approved nanoscience and molecular engineering electives, to be chosen from BIOEN 455, 457, 467, 487, 488, 490, 491, 492. The senior capstone (4-10 credits from BIOEN 402 or 403) must be in an NME area.
4. Grade Requirements: Minimum 2.0 grade in each bioengineering course applied to the major.

CURRENT

Bachelor of Science in Bioengineering

Suggested First- and Second-Year College Courses: CHEM 142, CHEM 152, CHEM 162 (or CHEM 144, CHEM 154, CHEM 164); CSE 142, English composition, MATH 124, MATH 125, MATH 126, PHYS 121.

Department Admission Requirements

Admission is competitive. Students may be admitted at three different points. Consult the department's Website for more information.

1. *Direct Admission.* The department enrolls up to 25 percent of its incoming class directly from high school. Students accepted to the UW who indicate bioengineering as their preferred major on their freshman application are considered. Strong applicants have completed chemistry, biology, and calculus in high school. Admission is for autumn quarter only.
2. *Early Admission.* Students enrolled at the UW are eligible to apply at the end of the freshman year if they have completed and earned at least a 2.50 GPA in the following courses: MATH 124, MATH 125, MATH 126; CHEM 142, CHEM 152, CHEM 162 (or CHEM 144, CHEM 154, CHEM 164); and 5 credits of English composition. A 2.50 GPA guarantees consideration but not admission. Application deadline is July 1 for autumn quarter admission.
3. *Upper Admission.* Requires 59 credits of coursework with at least a 2.50 GPA: MATH 124, MATH 125, MATH 126; CHEM 142, CHEM 152, CHEM 162 (or CHEM 144, CHEM 154, CHEM 164); PHYS 121, PHYS 122; BIOL 180, BIOL 200; AMATH 301; and 5 credits of English composition. Any of BIOL 180, PHYS 122, and AMATH 301 may be in progress at time of application. A 2.50 GPA guarantees consideration but not admission. Application deadlines are February 1 for spring quarter and July 1 for autumn quarter. Consult the department's Website or adviser for more details.

Graduation Requirements

Students follow requirements in effect at time of entry into the department. 180 credits as follows:

General Education Requirements (108 credits):

1. *Areas of Knowledge:* 24 total credits in Visual, Literary, & Performing Arts (VLPA) and Individuals & Societies (I&S), with at least 10 credits in each area.
2. *Written and Oral Communication (8 credits):* 5 credits of English composition, from the approved University list; HCDE 231. Additional writing credits are built into the major core courses.
3. *Mathematics (24 credits):* MATH 124, MATH 125, MATH 126; either MATH 307 or AMATH 351; either MATH 308 or AMATH 352; STAT 390 or IND E 315.
4. *Natural Science (44 credits):* CHEM 142, CHEM 152, CHEM 162 (or CHEM 144, CHEM 154, CHEM 164) and CHEM 223 (or CHEM 237); PHYS 121, PHYS 122; BIOL 180, BIOL 200, BIOL 220.
5. *General Electives (8 credits)*

Major Requirements (72 credits):

1. *Engineering Fundamentals (4 credits):* AMATH 301
2. *Bioengineering Core (44 credits):* BIOEN 215, BIOEN 315, BIOEN 316, BIOEN 317, BIOEN 325, BIOEN 326, BIOEN 327, BIOEN 335, BIOEN 336, BIOEN 337, BIOEN 345, BIOEN 401; either 10 credits of BIOEN 402, or 4 credits of BIOEN 403 plus BIOEN 404 and BIOEN 405.
3. *Bioengineering Senior Electives (15 credits):* Fifteen (15) credits from an approved departmental list, including completion of one of three concentration areas: *Molecular and Materials Bioengineering:* four courses from approved departmental concentration list. *Cells, Tissue, and Systems Bioengineering:* four courses from approved departmental concentration list. *Diagnostics and Therapeutic Instruments:* PHYS 123; four courses from approved departmental concentration list. See department for approved list.
4. *Approved Engineering Electives (9 credits):* Chosen from a departmentally approved list or from additional bioengineering senior elective credit. See department for approved list.
5. *Grade Requirements:* Minimum 2.0 grade in each bioengineering course applied to the major.

PROPOSED

Bachelor of Science in Bioengineering

Suggested First- and Second-Year College Courses: CHEM 142, CHEM 152, CHEM 162 (or CHEM 144, CHEM 154, CHEM 164); CSE 142, English composition, MATH 124, MATH 125, MATH 126, PHYS 121.

Department Admission Requirements

Admission is competitive. Students may be admitted at three different points. Consult the department's Website for more information.

4. *Direct Admission.* The department enrolls up to 25 percent of its incoming class directly from high school. Students accepted to the UW who indicate bioengineering as their preferred major on their freshman application are considered. Strong applicants have completed chemistry, biology, and calculus in high school. Admission is for autumn quarter only.
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Graduation Requirements

Students follow requirements in effect at time of entry into the department. 180 credits as follows:

General Education Requirements (108 credits):

6. *Areas of Knowledge:* 24 total credits in Visual, Literary, & Performing Arts (VLPA) and Individuals & Societies (I&S), with at least 10 credits in each area.
7. *Written and Oral Communication (8 credits):* 5 credits of English composition, from the approved University list; HCDE 231. Additional writing credits are built into the major core courses.
8. *Mathematics (24 credits):* MATH 124, MATH 125, MATH 126; either MATH 307 or AMATH 351; either MATH 308 or AMATH 352; STAT 390 or IND E 315.
9. *Natural Science (44 credits):* CHEM 142, CHEM 152, CHEM 162 (or CHEM 144, CHEM 154, CHEM 164) and CHEM 223 (or CHEM 237); PHYS 121, PHYS 122; BIOL 180, BIOL 200, BIOL 220.
10. *General Electives (8 credits)*

Major Requirements (72 credits):

6. *Engineering Fundamentals (4 credits):* AMATH 301
7. *Bioengineering Core (44 credits):* BIOEN 215, BIOEN 315, BIOEN 316, BIOEN 317, BIOEN 325, BIOEN 326, BIOEN 327, BIOEN 335, BIOEN 336, BIOEN 337, BIOEN 345, BIOEN 401; either 10 credits of BIOEN 402, or 4 credits of BIOEN 403 plus BIOEN 404 and BIOEN 405.
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Diagnostics and Therapeutic Instruments: PHYS 123; four courses from approved departmental concentration list. See department for approved list.

9. *Approved Engineering Electives (9 credits):* Chosen from a departmentally approved list or from additional bioengineering senior elective credit. See department for approved list.
10. *Grade Requirements:* Minimum 2.0 grade in each bioengineering course applied to the major.

Nanoscience and Molecular Engineering Option Requirements (79 credits):

1. *Engineering Fundamentals (4 credits):* AMATH 301
2. *Bioengineering Core (44 credits):* BIOEN 215, BIOEN 315, BIOEN 316, BIOEN 317, BIOEN 325, BIOEN 326, BIOEN 327, BIOEN 335, BIOEN 336, BIOEN 337, BIOEN 345, BIOEN 401; either 10 credits of BIOEN 402, or 4 credits of BIOEN 403 plus BIOEN 404 and BIOEN 405.
3. *Nanoscience and Molecular Engineering Courses (22 credits):* NME 220, NME 321, NME 421; minimum 4 additional approved nanoscience and molecular engineering electives, to be chosen from BIOEN 455, 457, 467, 487, 488, 490, 491, 492. The senior capstone (4-10 credits from BIOEN 402 or 403) must be in an NME area.
4. *Grade Requirements:* Minimum 2.0 grade in each bioengineering course applied to the major.

Bioengineering NME Option Core Courses, required of all MSE majors completing BIOEN/NME option

NME 220: Introduction to Molecular Engineering Principles (4 credits), Spr

NME 321: Nanoscience and Molecular Engineering Seminar II (1 credit), Spr

NME 421: Nanoscience and Molecular Engineering Seminar III (1 credit), Spr

NME Elective Courses:

The following is a list of courses, from which a student may choose a minimum of 4, to fulfill the NME/BIOEN electives requirements.

BIOEN 455 (4): BioMEMS

BIOEN 457 (4): Advanced Molecular Bioengineering

BIOEN 467 (3): Biochemical Engineering

BIOEN 487 (4): Bioengineering and Nanotechnology

BIOEN 488 (4): Computational Protein Design

BIOEN 490 (3): Engineering Materials for Biomedical Applications

BIOEN 491 (3): Controlled-Release Systems: Principles and Applications

BIOEN 492 (3): Surface Analysis

NME Hands-On Experience:

4-10 creits of Senior Capstone Research/ Design Project (BIOEN 402 or 403) is required. Project must be approved for NME content during BIOEN 401, in the Spring of the Junior year.

Seattle: Option in Nanoscience and Molecular Engineering within the Bachelor of Science in Bioengineering degree (BIOEN-20110328)

uwcr
uwcr
Board owner

Please review the attached 1503 pdf requesting to establish an option in Nanoscience and Molecular Engineering within the Bachelor of Science in Bioengineering degree and post comments by 5:00 pm on Monday, October 3.

If you have any problems viewing the attachment, please contact the University Curriculum Office at uwcr@uw.edu.

Attachments:

BIOEN-20110328.pdf 7.0M Download View

viralimm
DAVID KOELLE

I am strongly in favor of this program. The US in general and UW in particular need to build skills and dominance in this dynamic and important area of academic and commercial endeavor. Graduates should be highly sought after in industry and academia (further training). David Koelle, Dept. of Medicine