

**Chemical and Biological Engineering
Summary of Actions
2014-2015**

Concern	Recommendation	Action	Follow-up
<p>1. The department name is Chemical and Biological Engineering. An analysis of student transcripts showed that the program name and degree name are Bioengineering. This inconsistency led to confusion and was determined to be inconsistent with content and goals of the Biological Engineering program.</p>	<p>The faculty recommended that the degree and program should be renamed from 'Bioengineering' to 'Biological Engineering'. This change requires approval from many constituencies including the Montana Board of Regents.</p>	<p>A new program request was initiated in the fall of 2014 and should receive final approval in May of 2015.</p>	<p>The new program name should appear on transcripts and other materials starting in the 2015-16 Academic Year. Follow-up requires making sure that "Biological Engineering" is used consistently throughout these materials.</p>
<p>2. Concerns were raised about students achievement of Outcome G (ability to communicate effectively) in the first semester of the capstone lab course: ECHM 411 because the students groups were increased in size from 3 students to 4 students. It is more difficult to identify poor written communication in a group report written by 4 people instead of 3.</p>	<p>Faculty recommended reducing group sizes to 3 students if sufficient instructional resources are available.</p>	<p>The department head is pursuing an additional graduate teaching assistant for ECHM 411 for the Fall of 2015 so that there are sufficient instructional resources to reduce group sizes to 3 individuals.</p>	<p>If group size is reduced, the quality of individual writing should be monitored for improvement in ECHM 412, which requires individual reports. If group size is not reduced, the quality of individual writing should be monitored for further decline in ECHM 412, which requires individual reports.</p>

<p>3. A number of students have requested the addition of courses or supplemental material in existing courses that covers biomedical engineering. A popular and well-reviewed special topics course on Biomedical Engineering was offered this past year. The faculty recommended that this course become a regular option for students.</p>	<p>A regular course on Biomedical Engineering was recommended for AY 2015-16.</p>	<p>A new course application for EBIO 461 Principles of Biomedical Engineering was drafted and approved for AY 2015-16.</p>	<p>The ongoing effectiveness of the course will be assessed and requiring the course as part of the Biological Engineering degree will be assessed by examining best practices among other Biological Engineering programs.</p>
<p>4. The second semester of the senior capstone sequence in Chemical Engineering, ECHM 412, is nearing capacity. The current capacity is 72 students, 68 students were enrolled in Spring 2015, and more than 72 are expected in Spring 2016.</p>	<p>The faculty recommended an additional experiment be purchased and developed to add capacity to the course.</p>	<p>The equipment for a CSTR kinetics experiment was purchased in the summer of 2015.</p>	<p>Enrollment in ECHM 412 will continue to be monitored to ensure that sufficient experimental equipment is available to meet demand.</p>
<p>5. For AY 2014-15 and prior years, the capstone design course for the Chemical Engineering and Biological Engineering programs were co-convened in the same classroom. A combination of growth and specialization has made a con-convened course challenging, and new faculty have enabled a change to separate courses.</p>	<p>The faculty recommended that the capstone design sequence: ECHM/EBIO 411 and ECHM/EBIO 412 be separated into a Chemical Engineering specific design and Biological Engineering specific design course.</p>	<p>For AY 2015-16, the Chemical Engineering design sequence: ECHM 411 and 412 will be taught by Dr. Anderson, and the Biological Engineering design sequence: EBIO 411 and 412 will be taught by Dr. Peyton.</p>	<p>The separate courses will be monitored in terms of enrollment and completion rates to ensure that the separate courses have sustainable enrollments (>15 students) and no significant decrease in completion rates.</p>

<p>6. An evaluation of curricula from other Biological Engineering Programs showed that most programs offer or require a biomaterials course. We currently offer a Biomedical Materials course, but it is not required.</p>	<p>The faculty recommended that a biomaterials course be required for a Biological Engineering degree.</p>	<p>EMAT 464 Biomedical Materials was approved as a required course for the Biological Engineering program starting in AY 2015-16.</p>	<p>The analysis of curricula for other Biological Engineering programs will continue so that we can ensure that our students have abilities, skills, and knowledge that is consist with other biological engineering students.</p>
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