ChBE ABET Meeting

Tuesday, May 6, 2014, **9:30am-12:30pm, COBL 330 (Berg Conf. Room)**
Present: Carlson, Hoo, Richards, Seymour, Foreman, Wilking, Gerlach, Peyton, Gannon, Heys, Anderson, Brown

1. **Inputs Review (Course Reviews)**
   a. EBIO 216 (Gerlach)
      - students have requested the addition Biomedical topics
      - students were struggling with MB 360 (Microbiology) during this past year
      - discussed overlap of energy balances material with ECHM 201 and EBIO 216
      - contemporary issues: intellectual properties, genetic engineering, stem cells -- assessed through homework, NPR clips on Supreme Court discussions of Intellectual Property
      - no concerns noted on Outcomes

   b. EBIO 324 (Richards)
      - changed book since the last review
      - a few homework problems that use COMSOL are part of the course and used to support outcome K -- modern engineering tools
      - very problem based course with a wide range of math, engineering, and science knowledge required
      - students need to review a peer reviewed journal article → may help with life-long learning outcome even though it is not a current outcome tied with the course.
      - no concerns noted on Outcomes

   c. EMAT 251 (Gannon)
      - instructor changed a couple years ago
      - contemporary issues through recycling, rare earth metals, etc.
      - challenge associated with teaching everyone from Sophomores to Seniors
      - no concerns noted on Outcomes

   d. ECHM/EBIO 412 (Peyton)
      - course is now more structured with regards to building the final report gradually throughout the semester
      - added more ethics material to the course (in both ECHM/EBIO 411 and 412)
      - the instructor emphasizes picking the “right tool for the job” instead of prescribing a tool when it comes to analyzing a process.
      - multiple communication styles required, including meetings, oral presentations, and written reports.
      - difficult to assess lifelong learning outcome, but is currently observed through the development of a process based on a very limited problem description.
      - knowledge of contemporary issues is addressed by requiring students to consider the broader impacts of their design on the community and environment.
      - no concerns noted on Outcomes

e. ECHM 451 (Heys)
- A recommendation was made to switch to the textbook by Seyborg et al. (Process Dynamics and Control)
- discussed the timing of the course in other Chemical Engineering programs
- no concerns noted on Outcomes

f. ECHM 322 (Brown)
- no major changes to the instructor or textbook since the last review
- added quizzes and COMSOL homeworks and HYSYS problems (outcome K)
- problem based class on heat exchangers and other heat transfer problems – many of the problems require students to design a system, component, or process
- design is taught through open ended COMSOL problems and HYSYS problems -- students are also asked to compare computational result to hand calculations
- no concerns noted on outcomes

2. Outcomes Review (assessment of student work examples)

- Note that a scale of 0 (unacceptable) to 4 (exceptional) is used in the assessment and a threshold of <2.0 is used to identify areas of concern.

Outcome C (ability to design a system, component, or process) in ECHM/EBIO 412 and assessed through the final design report: average score was **2.3**
Outcome C (ability to design a system, component, or process) in EGEN 310 and assessed through the final design report: average score was **2.1**
Outcome D (function on multi-disciplinary teams) in EGEN 310 and assessed through the final design report: average score was **2.7**
Outcome H (global and societal context) in ECHM/EBIO 412 and assessed through the final design report: average score was **3.0**
Outcome K (modern Engineering tools) in ECHM 323 and assessed through a HYSYS project: average score was **2.1**
Outcome K (modern Engineering tools) in EBIO 324 and assessed through a homework problem that requires COMSOL: average score was **1.9**

3. Review of Program Outcomes

The following program objectives were approved by the faculty on May 6, 2014, after receiving input from the undergraduate students (March, 2014) and department advisory committee (February, 2014).

Chemical Engineering Program Objectives

Our graduates:

- will be confident in their ability to apply chemical engineering fundamentals.
- will be effective communicators and team members.
- will be highly ethical engineering professionals.

- will have the ability to pursue lifelong learning.
- will be proactive problem solvers.
- will embrace process safety.

Biological Engineering Program Objectives

Our graduates:

- will be confident in their ability to apply biological engineering fundamentals.
- will be effective communicators and team members.
- will be highly ethical engineering professionals.
- will have the ability to pursue lifelong learning.
- will be proactive problem solvers.
- will embrace process safety.

4. Review of Program Outcomes

   The current program outcomes (ABET outcomes A-K) where assessed by the faculty after previously being assessed by the undergraduate students and Department Advisory Committee and determine to be acceptable and without need for changes.