ABET visited the School of Engineering this fall for a 6-year review of all ABET-accredited programs, lessening the number of requests made to the SOECC this year. However, several strategic decisions were made this year that will affect the curriculum in years to come. Changes approved by the SOECC and subsequently by the faculty of Engineering include:

1. Next year, no pass/fail is allowed in introductory science electives in every program, and thus, no pass/fail is allowed for any introductory courses. Formerly, students could take the science electives pass/fail. The only remaining pass/fail options are for Humanities, Social Sciences, and Arts distribution courses and free electives. The pass/fail option for science courses has not fulfilled its stated mission of encouraging breadth, and the faculty was unanimously opposed to retaining the option. (The faculty eliminated pass/fail in the foundation courses last year for the same reasons.)

2. From this time forward, departmental suffixes will not be appended to Introductory Engineering (EN) ½-credit freshman electives in the registrar’s course listings. This will allow multiple departments to collaborate in offering a single EN elective. Ownership of the elective description will be documented in the catalog listing instead of in the course number. This arose because one course “Lego Robotics” is a joint offering of Mechanical Engineering and Computer Science, and the departmental suffixes mis-represented this collaboration. The suffixes arose originally from a school wide requirement that every freshman take two electives from different departments; this is no longer required so that suffixes are irrelevant.

3. The Bachelor of Science in Biomedical Engineering (BSBME) description was revised to leave the enrollment cap in that program up to departmental discretion. Previously, the cap of 15 students was documented in the Bulletin description for the program. The change was accepted by the faculty of the School of Engineering, after considerable controversy. The existence of the enrollment cap is a controversial issue; the argument for an enrollment cap is that one can provide a higher-quality program for a limited population; the argument against a cap is that this creates a culture of “haves” and “have nots” among the students. Even more controversial was the nature of the cap, which is based on academic cumulative average of the applicants for the first term of freshman year; faculty believe that this places undue pressure upon freshmen, and too much emphasis on grades.

4. A new pilot program for first-term freshmen was instituted for next fall, again with considerable controversy. The purpose of the pilot program is to replace the ½-credit Introductory Engineering courses with a more comprehensive 1-credit experience. The controversy arose from the fact that the recommended freshman experience is – by school policy – limited to four credits a term. Simply replacing a ½-credit course with a 1-credit course would violate that policy. But there is little leeway in that program; freshman courses build a foundation that is drawn upon for the student’s whole time at Tufts. There were thus two options:
a. Replace the ½-credit Introductory Engineering course with a 1-credit alternative, so that students take 4 ½ credits the first term, or
b. Exempt students from the required ½-credit course EN2: Introduction to CAD for that term.

This sparked considerable controversy, because two programs (Civil Engineering and Mechanical Engineering) currently rely upon EN2 as a program requirement. The other programs in the School of Engineering do not rely upon the course, and some even consider it unnecessary.

The final resolution was – for fall 2012 only – to exempt students in the pilot program from taking EN2 in freshman year, but to inform them that if they wish to major in Civil or Mechanical Engineering, they must take EN2 in sophomore year. This is not an ideal solution and is only in effect for one year; next year we must reconsider what to do in going forward with the pilot in subsequent years.

Thus, the pilot program will be implemented as follows:

a. Freshmen in the pilot program will enroll in Engineering Science 93: Special Topics in Engineering. The sections of this course will represent the different experiences that will eventually be listed as separate courses.

b. The description of each section will be documented on the School of Engineering website and in freshman orientation materials.

c. Students enrolled in the pilot will be exempted from the EN2 requirement for fall 2012 by “pro-forma petition”. Dean Knox will fill out and sign each petition without student involvement.

d. Freshmen in the pilot who are interested in majoring in Mechanical or Civil Engineering will be advised to take EN2 in sophomore year.

This year, situations outside the SOECC – including the ABET visit and findings – affected the way the SOECC will do business in the future. In future years,

1. The request-for-action form for the SOECC will contain a mandatory assessment of the amount of Engineering and Math/Science content in each course, for the purpose of complying with ABET EAC rules for minimum Engineering content in accredited programs.
2. Requests for cross-listing of courses in Engineering will require prior approval of the SOECC, for the purposes of monitoring and documenting the Engineering and Math/Science content of the cross-listings. This concern also led to cleanup and removal of several Engineering Science cross-listings.
3. Cross-listing a departmental course as Engineering Science should not be used for advertising of courses suitable for electives. Instead, a centralized list of suitable electives will be maintained.

In addition to the above strategic changes, the following tactical changes were approved by the School of Engineering:
1. Renaming:
   a. CHBE96: RESEARCH becomes CHBE96: HONORS THESIS RESEARCH.
   b. CHBE99: SPECIAL TOPICS becomes CHBE99: INTERNSHIP IN CHEMICAL & BIOLOGICAL ENGINEERING.
2. Renumbering:
   a. COMP22 becomes COMP61: DISCRETE MATHEMATICS.
3. Renumbering with content changes:
   a. CHBE101 becomes CHBE201: MATHEMATICAL METHODS IN CHEMICAL ENGINEERING.
   b. CHBE103 becomes CHBE202: CHEMICAL AND CATALYTIC REACTION ENGINEERING TOPICS.
   c. CHBE135 becomes CHBE203: ADVANCED THERMODYNAMICS.
   d. CHBE114 becomes CHBE204: ADVANCED TRANSPORT PHENOMENA.
   e. COMP106 becomes COMP86: OBJECT-ORIENTED PROGRAMMING FOR GRAPHICAL USER INTERFACES.
   f. COMP180 SOFTWARE ENGINEERING replaced by new course COMP97: SENIOR CAPSTONE PROJECT I in BSCS program.
   g. COMP190: SOFTWARE ENGINEERING PROJECT replaced by new course COMP98: SENIOR CAPSTONE PROJECT II in BSCS program.
   h. CEE53 becomes ES53: INTEGRATING ENGINEERING ECONOMICS AND SYSTEMS.
4. New courses:
   a. BIOE295/296: BIOENGINEERING MASTER’S THESIS.
   b. BME 57: QUANTITATIVE BIOMATERIALS CHARACTERIZATION LABORATORY II.
   c. BME 257: GRADUATE QUANTITATIVE BIOMATERIALS CHARACTERIZATION LABORATORY II.
   d. CEE187: GEOGRAPHICAL INFORMATION SYSTEMS.
   e. CHBE170: DESIGN AND ANALYSIS OF EXPERIMENTS.
   f. COMP23: GAME DEVELOPMENT.
   g. EN81: ENVIRONMENTAL EXPOSURES AND HUMAN DISEASE.
   h. ES93: SPECIAL TOPICS IN ENGINEERING.
   i. ES157: SYSTEMS ANALYSIS IN INDUSTRIAL ECOLOGY.
5. Description changes:
   a. BME8: BIOMEDICAL ENGINEERING SENIOR DESIGN AND RESEARCH II.
   b. BME56: QUANTITATIVE BIOMATERIALS CHARACTERIZATION LABORATORY I.
   c. BME122: QUANTITATIVE PHYSIOLOGY II.
   d. BME256: GRADUATE QUANTITATIVE BIOMATERIALS CHARACTERIZATION LABORATORY I.
   e. COMP40: MACHINE STRUCTURE & ASSEMBLY-LANGUAGE PROGRAMMING.
   f. ME184: ROBOTICS.
6. Prerequisite changes:
   a. COMP111: OPERATING SYSTEMS.
   b. COMP112: COMPUTER NETWORKS.
   c. COMP175: COMPUTER GRAPHICS.
7. Program changes:
   a. Remove limit of two ELS courses toward HASS requirements in all programs (brought to SOE faculty directly – without SOECC involvement – with permission of the SOECC chair).
   b. BSCS program: disallow ES courses from BSCS breadth requirement.
   c. BSCS program: COMP180/190 replaced by COMP97/98.
   d. Revision of Biomedical Engineering First Major (BSBME).
   e. Revision of Biomedical Engineering Second Major.

8. Removal of cross-listings:
   a. ES50: INTRODUCTION TO BIOMEDICAL ENGINEERING no longer cross-listed with EE50, BME50.
   b. ES108: MODERN QUALITY CONTROL no longer cross-listed with ME108.
   c. ES118: ADVANCED DATA ACQUISITION AND IMAGE PROCESSING no longer cross-listed with ME118.
   d. ES121: PHYSIOLOGY FOR ENGINEERS I no longer cross-listed with EE121, BME121.
   e. ES122: PHYSIOLOGY FOR ENGINEERS II no longer cross-listed with EE122, BME122.

The following changes were not subject to School of Engineering Approval:

9. Deletions:
   a. ES20: CONSUMER PRODUCT EVALUATION.
   b. Biomedical Engineering Minor.
   c. Engineering Science Minor.

For next year, no SOECC chair has yet been determined. Challenges to be addressed next year include a final design for the freshman year program based upon the new one-credit EN electives, approval of those electives as courses in the bulletin, and ongoing evaluation of the Engineering and Math/Science content of new courses included in the bulletin.

Respectfully submitted,

Alva L. Couch
Chair of SOECC