CCGB Meeting Agenda, October 14, 2005

1. Approval of Minutes
2. Undergraduate Announcements
3. ROTC (L. Trotter)

CCGB Minutes, October 7, 2005

Ex-Officio: R. Evans, L. Schneider, D. Maloney Hahn, M. Spencer
Other: C. Pakkala

Approval of Minutes: The minutes of the September 23, 2005 CCGB Meeting were approved as written.

Undergraduate Announcements: D. Gries stated that the College would be utilizing PINS during the course registration process, as usual. Once PeopleSoft is implemented, there will be a different system.

Report from Curriculum Transformation Committee: A. Zehnder said that the CCGB can be a sounding board for curriculum revision ideas and we can bring them back to departments, but we can’t take any action. D. Gries stated that Kent asked them (D. Gries, P. Clancy, C. Pollock, & S. Leibovich) to form a committee, and they have suggestions for transforming the curriculum. They proposed some radical things to prompt a debate. It is up to the faculty as a whole to decide what the transformation should be. The reasons for investigating the curriculum are:

1. ENGRI and ENGRD courses do not provide the intended breadth in engineering science that they should have in the core curriculum.
2. New pedagogical methods can enhance our teaching.
3. Enhance flexibility. Currently students find it difficult to study abroad and take breadth courses both inside and outside of engineering.
4. Promote diversity. Make our curriculum more inviting to women and URMs.
5. Respond to globalization. Engineering and other things are done across the globe. Our students need more awareness of cultures and we need to give them a broader awareness of the world.
6. Address the explosive increase of knowledge by increasing breadth within the curriculum.
7. Identify core engineering knowledge. CS and OR don’t require 293; they instead require probability of math or statistics.
8. A new survey (completed in fall 2005) reports on the stresses perceived by the students in the College of Engineering. The survey was given by Student Services, and 35.5% of engineering students took the survey. Those students completing the survey are most likely the most stressed, and this remains a problem in the curriculum. Course requirements are too constraining, the curriculum is inflexible, etc. Currently the first semester or two here doesn’t create any excitement for the students. The students don’t understand why they need all of the math and science courses that they are required to take. We are good about conveying technical information, but students need to know how other things impact what they are doing, so we should enhance the social sciences and humanities aspects.

The committee proposed ENGR 101-102, a two-semester course where all of the engineering fields could be covered with different topics. The proposed course would bring in all of the elements of the different disciplines so that students could see what each one does. Students should come away with a better experience if a course is well developed. Every year 101-102 would be based on a theme. If introducing a new topic, maybe the college could have a lecturer come in. Then smaller sections would be utilized. ECP would help with communication projects. All faculty would need to be involved in ENGR 101-102.
The committee also wants to rethink the math/chem./physics/cs core: Some math courses can be replaced with another course, i.e. physics.

The committee said that the ENGRD courses should be changed. The original intent was to provide some breadth, but they don’t do that anymore. Maybe they should be removed from the curriculum and we should let departments choose alternatives.

We should provide more flexibility and breadth within the curriculum. Perhaps departments should remove a technical requirement in their major to provide more flexibility. We should also make upper-level technical courses more relevant. Students think we’re giving them technical material that has no relevance. The CCGB has discussed making the curriculum broader and less deep, producing engineers that are more generalists than specialists. They can go and get their master’s degree if they want to specialize in something. We should allow breadth to allow the students to go abroad; we would need to reduce some requirements.

White males, women, and URM would benefit from changes in the curriculum.

We have been viewed as techies in Engineering. Stanford passed a motion that students need applied science in engineering. Princeton and Harvard think it is important that people outside engineering know what engineers do. Maybe we should try and develop a course about engineering for non-engineers. MIT has a rationale for including “engineering thinking” in the MIT General Institutional Requirement. Engineering thinking provides a unique perspective that can enhance and sometime bridge the intellectual perspectives of science and technology.

The world has changed and we can change now or later. The proposed changes are bold. A two-semester course would require the cooperation of faculty and staff. We need to work together for the good of the college and the students. If we see a department is somehow being shut out of it, they should talk to someone so that they are included.

L. Pollack questioned how the teaching would work in these courses. She wondered if many faculty members would be teaching one course. D. Gries replied that he would envision 5 or 6 faculty developing this course. There would be a need for many sections of 25 students, requiring about 30 faculty members. There would be one large lecture each week and then there would be sections. Staffing is a problem. You would want a faculty member in charge of each section. If the two semester course were done right, ENG150 might be eliminated. L. Pollack asked if a section would count as a course. D. Gries replied that it would. C. Pollock said that the goal is efficiency and effectiveness. They might have students break into groups to do projects and have large lectures. The Dean wants us to have more grad students. L. Lion said that this proposed course is a useful suggestion, but his impression is that some of the best received courses are ENGRI courses. Replacing the best-loved courses with this might not be the best for the students. D. Gries suggested that the good teachers could be utilized for this 2-semester course.

K. Pingali said that Cornell should look at how people feel the U.S. can compete globally and not worry as much about rigor and the social aspects of technology. D. Gries responded that the college doesn’t want to give up the rigor, but teach in a more motivating manner. E. Fisher said that flexibility remains an issue. She wondered if time is freed up in a student’s schedule, whether there would be a set of courses they would take.

D. Gries responded that details have not been worked through. L. Pollack wondered if there had been any thought about changing the liberal studies requirement. ENGRI’s allow students to try out departments and figure out what they want to do. Maybe it would be good to allow this course to satisfy the liberal studies requirement. D. Gries said that it would be fine to do that. The current ENGRI courses don’t always provide breadth.

L. Trotter stated that there are things in the curriculum that students need, i.e. math and science. Once students declare majors, they should have the flexibility to take something about socioeconomic impacts. A certain amount of technical maturity exists in the upper-level courses and it can’t be replaced. B. Isacks said that there is a subset of engineering students who need more rigorous courses. Maybe the IM program could be expanded for students who don’t know what they want to do, other than having a major in engineering. L. Pollack stated that AEP students need technical courses in order to be competitive. This is particularly true for those who go on to graduate school. D. Gries said that if students want technical courses, we should let them take them. We can let other students take less technical courses. C. Pollock said that ECE students are better served with a broader degree and the 4-year degree is a springboard for other things, i.e. grad. school, medical school, etc. People want students with a broad background and experience. Current faculty members aren’t incorporating societal issues into the curriculum.
R. Evans stated that he is in favor of taking out liberal studies early in the curriculum rather than the technical courses. Freeing up time for people with a technical base and allowing them to address social issues should be done. An advantage of the 2-semester course would be to introduce students to the practice of engineering. Once they go into the major, they become qualified to make strategic decisions about what type of outside information they need. We should try to build into majors the ways social, cultural and language gaps can be filled in. Generalized courses provide students with a way to feel connected with the university. Students are able to choose more liberal studies courses later on.

L. Trotter stated that he would like examples of upper-level requirements in other courses and know what constraints the students have in other departments. D. Maloney Hahn said that there is a big difference between majors. Some majors have more flexibility than others. Rigor should stay in the core curriculum. C. Pollock said that engineering thinking is different from humanities and some sciences. Engineering is more problem-solving and boundaries/constraints. This is cleverness and not scientific observation. D. Maloney Hahn said that only a few introductory engineering courses give multiple exposure to majors. More than ½ of the students don’t go into the major they thought they would when they first entered Cornell. During the freshman year they need exposure to multiple majors. A. Zehnder stated that the lack of breadth varies from department to department. He is concerned about removing the writing requirement. He taught a year-long course, which was wearisome.

R. Evans said that a goal should be to have the students see the relevance of math and science in critical practices to help them go to the next level. The practice experience is important. This could be a great way of discussing the core writing or teamwork or speaking practices that are important in being an engineer. A year of a single theme would be too long. Faculty could talk about discipline-specific communications, which would be very relevant for the students.

D. Gries requested that the CCGB members make the proposal available to faculty within their departments. This document was sent to department chairs. Kent wants to discuss this proposal at the December faculty meeting. The committee is also willing to come to individual departments to discuss it. A real discussion of the curriculum is needed.

ROTC update: A. Zehnder distributed a handout and said that he hopes to have more information about this issue next week so that the CCGB can come to a consensus on it. He and L. Trotter will work on this. He suggested that the CCGB members look at old minutes from last year for more information.

The meeting adjourned at 8:59 a.m.