CCGB Meeting Agenda, March 28, 2008

1. Approval of minutes
2. Undergraduate announcements
3. Report on how well ENGR 150 meets its objectives (David Gries)
4. Description of new liberal studies approval process (Betta Fisher)
5. Discussion of the use of engineering communications courses to satisfy liberal studies requirements (Betta Fisher)

CCGB Minutes, February 22, 2008

Ex-Officio: B. East, F. Shumway, M. Spencer
Other: D. Fan, C. Pakkala, C. Van Loan

Approval of Minutes: The minutes of the 2/8/08 CCGB Meeting were approved as written.

Undergraduate Announcements: F. Shumway stated that Advising is in the process of early intervention.

New committee assignments and review of committee charges: E. Fisher said that the number of charges had decreased. The Physics Liaison Committee (led by Lois Pollack) has already looked at the integration of math in the physics core curriculum. They concluded that the math topics worked well with the physics courses if they were taken in the sequence listed in the handbook, which requires M 191 before Ph 112, M 192 before Ph 213, and M 293 before Ph 214. Unfortunately, the course description allows co-enrollment in M 191/ Ph 112; M 192/ Ph 213; M 293/ Ph 214, while warning students that topics are sometimes introduced in the physics courses before they appear in the math course. Many students are currently following the courses of study and co-enrolling in those combinations of physics and math courses. The committee has recommended to the physics department that the courses of study be changed to require math prerequisites, not co-requisites, and that the math prerequisites be enforced. If this is done, the course topics are remarkably well coordinated.

D. Gries said that the requirement for students is Math 191, 192, 293 or 294, and another course approved by their major. M. Thompson asked what that means for the physics pre-requisite. E. Fisher said that students need to take Math 192 before Math 293, and they don’t take Physics 214 if they don’t take Math 293.

E. Fisher said that it is too early to review how the CS courses are doing, and they will be reviewed next fall.

For Charge 1, the syllabi of the Math/Science/Computing core courses will be reviewed by a committee of faculty from engineering and all affected departments to ensure that student learning is optimized consistent with the principles elucidated in the CTF Report. The Math and Science Committee will work on this charge and consult members of other committees as needed for assistance. We interpret the charge as guarding against an excessive number of unimportant topics that may interfere with learning the important concepts.

For Charge 2, an expanded version of the CCGB Chemistry/Biology Subcommittee (3 engineering faculty, 1CBE member, 1 MSE member and 1 ECE member + chemistry faculty) will determine if a similar integration of math into CHEM 208 and 209 and into biology courses in the core is appropriate. They will determine appropriate means of implementation.
For Charge 3, the expanded version of the Chemistry/Biology Liaison Subcommittee will review the Fall 2007 CHEM 209 course and make any necessary recommendations.

E. Fisher discussed committee assignments. A vote on the committee assignments was unanimously approved.

**CS100/101 Update and Syllabi:**
C. Van Loan described CS 100M. Students in the course do 2-3 problems every 2 weeks. Design is an important feature and critical to engineering. Continuous math and discrete math have boundaries, which is important for students to learn. The course has problems that illustrate recursion, an important computing idea. A research triangle for both science and engineering illustrated how theory, simulation and experiment interact with each other. The idea is to build an appreciation for computing and how it reacts with information in the triangle. Matlab is a friendly environment, with easy graphics, easy to develop programs, it interacts with large data sets, and processes images and sound. It is important for students to develop a practical intuition about computer problem-solving and its role in science and engineering. Computational intuition includes a sense of geometry, finding edges, a sense of complexity, a sense of probability and statistics via simulation, a sense of approximation, error and noise. Students do sensitivity analysis. Array problems are packaged up so students learn other things with them. The goal of CS 100M is to develop a practical intuition for computing. Students carry away useful computer skills, which also means a heightened respect for rigorous, logical thinking. It is important to be rigorous and scientific when you do computing.

D. Fan discussed CS 101M. The class is a 1 credit, S/U transition to Matlab (CS101J is similar, teaching the object-oriented (OO) parts of Java). The goal is for students to learn how to program in Matlab. The course focuses on the nuts and bolts of programming in Matlab. Students require a mastery of the material to pass the course. Students can make multiple attempts on tests and homework. CS100J is a prerequisite (or equivalence in another language). The instructors try to choose things students will really need. The course is self-paced. There is on-line material (video, reading, exercises), a textbook and optional discussion section. The first run of the class is this semester, with 140 students.

D. Gries said that he had a town meeting with students in CS 101J, and many have not submitted homework. Students told him that they work by deadlines, and there aren’t any in the class. He is trying to get them to move faster and wants module 1 submitted before spring break. The deadline is the end of the semester. D. Fan said that she posted a soft deadline – she told them to submit the first homework by the tenth week. She is trying to reduce pressure by giving them multiple attempts on tests and homework. Perhaps giving them an incentive to increase their pace is an idea. She has only seen 4 students at the discussion section.

D. Williamson asked if there had been any feedback about the online format of the course. D. Fan replied that she had not received any feedback yet. The course web site has a comment box where students can submit comments.

M. Thompson said that he has experienced frustration with students’ post-CS 100 programming abilities. If he hands students a problem without an outline, they are scared. They have problems writing blank code. D. Gries responded that we can’t expect too much out of these courses. There is some attempt at teaching the students to design problems. It is difficult for them to learn programming. D. Fan added that using Matlab allows them to start from a blank page. She gives them English words and they give her code. C. Van Loan tells them what functions to write but also tries to introduce problem-solving, which is a hard step.

J. Bartsch said that the BEE students have to take CS 101J, but the CS 101M sounds more valuable for them. E. Fisher said that there used to be CS 100M with Matlab and Java. She asked if the current CS 100M is totally different. C. Van Loan said that students couldn’t do file or image processing in the old
version in 7 weeks. They can now give students more practice with things and give them more interest-
ing examples, including design.

D. Gries discussed CS 100J and CS 101J. There are about 35, 3-5 minute lectures that students can look
at on the CS101J website. CS100J utilizes Java, which is different from Matlab, mainly due to structur-
ing principles. Java provides richer structuring mechanisms, making it easier to re-use program pieces
and to build more complex structures. Design becomes more of an issue. Java uses an object-oriented
approach.

In CS100J, 70% of students in the class have never programmed. He uses a gentle approach in his class
and presents material in an order and manner that makes learning as easy as possible. He provides each
student with a 1 on 1 session. The first assignment emphasizes learning rather than grading. It teaches
programming rather than programs and emphasizes clear, precise specifications and testing. There are
interesting, exciting, and informative programming assignments, dealing with graphics, manipulating
images, and sound (mp3 files). There are computing labs, not recitations.

Every Java program-part deals with a class or object. Teaching organization gives students a chance to
come to grips with programming. Students learn to move JPG file parts around. M. Thompson asked
whether it was typical for 70% of the students in the class to have no prior experience with program-
ming. D. Gries replied that it is typical because there are not just engineers in the CS100 courses.

**Update on Math 191/2 Workshops:** D. Gries stated that he had a meeting with the Math Department
last week. Students are on board with the math workshops and have found the collaboration useful. The
problems they were given to do in an hour were too numerous, too difficult, and not always tailored to
what they were learning in the course. We are working with Math to find a person from engineering and
one from math to revise the programs and make them more appropriate. We need better collaboration.

With regard to Math 192, near the end of the meeting, someone suggested that we get Math 191 right
before we touch Math 192. After some discussion, it was proposed that Math 192 have 2-3-4 workshops
as a pilot. We need someone to develop Math 192. It is a good idea and needs better implementation.

The meeting adjourned at 9:02 a.m.