College of Engineering Committee on Academic Affairs
Meeting Minutes 1 October 2015

Attendance:
Aero – James Gregory
AVN – Not present (Seth Young)
BME – Mark Ruegsegger - Chair
CHE – Jeff Chalmers
CIV – Frank Croft
CSE – Not present (Ken Supowit)
ECE – George Valco
ENG PHY – Robert Perry
ENV – John Lenhart
FAB – Ann Christy
ISE – Carolyn Sommerich (ASAP Rep)
MSE – Sheikh Akbar
ME – Rob Siston
WLD – Dave Farson
Graduate Student – Joey McEnery (Not present Anas Abumunshar)
Undergraduate Student – Not present (Kareem Rasul, Stiphany Tieu)

Non-Voting:
Associate Dean for Undergraduate Education – Dave Tomasko
KSA – Jane Murphy
Committee Secretary – Ed McCaul
Advisor – Nikki Strader

Guests – None

1. The minutes from the 3 September 2015 meeting were approved as written.

2. Course requests were reviewed by the committee.
   2.1. Carolyn Sommerich made a motion that the new course request for ECE 5550, Computational Humanitarianism be approved. Frank Croft seconded the motion. The floor was opened for discussion.
   2.1.1. The committee was informed that the course deals with computational models of individual and group poverty and is restricted to junior, senior, or graduate students in the College of Engineering.
   2.1.2. The question was asked as to who the audience will be. The responses were that students in KSA and students interested in Humanitarian Engineering would be. The comment was made that there are 50-60 students who take the Humanitarian Engineering course.
   2.1.3. The question was asked as to whether students will have the knowledge they need as there are no course prerequisites. The response was that the syllabus shows that they will be given the information they need before they are required to use it.
2.1.4. There being no further discussion a vote was taken: 13 approved, 0 opposed, and 0 abstentions. The motion passed.
2.2. Carolyn Sommerich made a motion that the course change requests for ISE 5840, Market Engineering and Applications, ME 3501, Introduction to Engineering Thermodynamics, and ME 3670, Design and Analysis of Machine Elements I, be approved. Frank Croft seconded the motion. The floor was opened for discussion.
2.2.1. The committee was informed that the changes to ISE 5840 are to correct mistakes made when the course was switched from quarters to semesters and that ME is adding ME 2850, Numerical Methods, as a prerequisite to both 3501 and 3670.
2.2.2. There being no further discussion a vote was taken: 13 approved, 0 opposed, and 0 abstentions. The motion passed.
2.3. Carolyn Sommerich made a motion that the course withdrawal requests for ECE 8881, Interdisciplinary Seminar on Biomedical Images, and ME 5510H, Direct Energy Conversion, be approved. Ann Christy seconded the motion. The floor was opened for discussion.
2.3.1. The committee was informed that ECE 8881 has never been offered and that ECE has no plans to offer it and that there is insufficient demand for ME 5510H and that the instructor is no longer interested in teaching it.
2.3.2. There being no further discussion a vote was taken: 13 approved, 0 opposed, and 0 abstentions. The motion passed.
2.4. The committee was shown a list of the courses that had been approved by the committee secretary. All of the courses met the criteria set by the committee for the committee secretary to approve the request.

3. The committee was informed that the Humanitarian Engineering Minor is still with EEIC. Ann Christy stated that the minor should be to the committee by the end of the semester.

4. Dave Farson made a motion that the proposed change to CSE’s undergraduate curriculum be approved. John Lenhart seconded the motion. (The proposal is attached.) The floor was opened for discussion.
4.1. The committee was informed that CSE wants to reinstate their technical elective option which existed when we were under quarters.
4.2. The question was asked as to whether the option would be on a student’s transcript. The response was yes, as it is a subplan.
4.3. The question was asked as to whether or not students will be better guided by the change or will they be less guided. The response was better guided.
4.4. The question was asked as to how many options there will be. The response was six.
4.5. The question was asked as to which option was most popular. The response was that software engineering is followed by graphic and game design.
4.6. The question was asked as to whether the new philosophy/engineering ethics course has been approved. The response was that the Core’s Ethics Subcommittee will be recommending that it be approved at next week’s Core Committee meeting.
4.6.1. There being no further discussion a vote was taken: 13 approved, 0 opposed, and 0 abstentions. The motion passed.
5. Dave Tomasko updated the committee on various items.
   5.1. The committee was updated on Expo.
      5.1.1. Autumn Expo has just finished and this year it was a two day event with different companies each day. About 300 companies attended along with about 5000 of our students.
      5.1.2. The comment was made that timing of Expo could have been better as it happened during the week when a lot of instructors are giving midterms. Consequently, a number of instructors had to change the date of their midterm. The committee was informed that there are a number of constraints that limit when we can have Expo. Some of the constraints are that it must be held after school begins; it must be held in September or October so that companies can conduct interviews before the end of the year; it needs to avoid religious holidays; and we need to work around scheduling issues with the Union. This year Expo did conflict with a religious holiday and any student who was impacted by this could request for their cover letter and resume to be hand delivered to the companies they were interested in.
      5.1.3. The request was made that future dates for Expo be put on the college’s calendar to help faculty plan when to have midterms. The question was asked as to when would be an ideal time to let faculty know what the dates will be. The response was in spring.
   5.2. The committee was updated on the status of the EED department request.
      5.2.1. The request will be discussed at CAA next Wednesday and then by the Faculty Council on Thursday. On the 21st of October it is scheduled to be voted on by CAA, and, if approved, it will be voted on by the Senate on the 26th of October. If approved by the Senate it will be on the Board of Trustees November calendar.
      5.2.2. The chair for the department has been identified and will be here as a consultant this autumn. They will officially start as chair in January, assuming the request has been approved, as they need a TIU for their appointment.
      5.2.3. The comment was made that the committee will need to review its membership and voting privileges when EEIC becomes a department.
      5.2.4. The committee was informed that any changes to the committee’s membership and voting privileges will need to be voted on by the full faculty as it is part of the college’s pattern of administration.
      5.2.5. The comment was made that EED will only have a graduate program, just like Nuclear.
      5.2.6. The comment was made that there are a number of options and the committee will need to have a full discussion of them.
   5.3. The possible changes to the university’s summer calendar were discussed.
      5.3.1. The committee was informed that there is no new news concerning the summer calendar. It appears that it will change, but nothing has been approved.
      5.3.2. Students will be impacted the most by the proposed changes as there will probably be no free credit hours.
      5.3.3. The question was asked as to whether the teaching load issue has been resolved. The response was not yet.
5.4. The committee was informed that Patrick Osmer is no longer the Dean of the Graduate
School and that Scott Herness has been appointed interim dean. There has also been
a reorganization of the Provost’s office to include the Office of Academic Affairs.
5.5. Members were asked to whether their unit or student organizations in their unit offer
tutoring. George Valco stated that an ECE honors student organization does; James
Gregory stated that an Aero honors student organization does; and Mark Ruegsegger
stated that he believed one of BME’s student organization does and that he will check
to make sure.

6. The meeting was adjourned at 2:50.
Proposed Changes in the BS-CSE Program

1. Background

Under the quarter system, students in the BS-CSE program were required to choose a technical elective (TE) option from a specified set, including software systems, information and computation assurance, etc. Students choosing a given option had to include, among their technical elective courses, a specified set of courses; each option also listed a number of recommended courses that students might choose from for the remaining tech elective hours. In order to meet the needs of students who may have interests that did not fit into any of the specified options, there was an individualized option; students in this option were expected to consult with their faculty advisor to come up with an appropriate set of courses for their tech electives, matching their interests.

This approach had two advantages. First, a student interested in a given area, such as software systems, had clear guidance on what courses were most relevant for that area, these being the courses required for the particular TE option. Second, upon graduation, the student’s transcript contained a designation, such as SoftSys, denoting the TE option that the student completed. And this designation was of value, for example, to potential employers when considering the student for particular employment opportunities.

When we moved to the semester system, it was not clear, for various reasons, how to translate the TE options to the semester system; e.g., the structure of the required (“core”) courses was different; the total number of courses a student could take was fewer; and the courses, while they were directly based on corresponding courses under quarters, were themselves new. Hence the idea of TE options was not included when we transitioned to semesters.

2. Summary of changes

1. Now that we have had nearly three years of experience with the semester system and the courses have stabilized, and given the advantages noted above of the TE options, the CSE faculty propose to reintroduce TE options. The TE options being proposed are based on the ones under the quarter system, including the Individualized Option.

One point to note is that any set of courses that meets all the requirements of any of the proposed TE options once this change is in place also meets the current requirements of the BS-CSE program. Moreover, any set of courses that meets the current requirements will also, given the individualized option, meet the requirements of the revised program; at the same time, it should be stressed that the primary purpose of this option is to provide flexibility to students to tailor, in consultation with their advisor, a suitable set of courses based on their specific interests, rather than to ensure that the current program requirements match the revised requirements.

Thus the main reasons for proposing the change are the two advantages noted above: that students interested in a given area will have clear guidance on which courses to take; and the students' transcripts will contain a designation indicating the area they focused on in their technical elective courses.

2. A second change, unrelated to the TE options, has to do with ECE 2000 and 2100 (4 cr hrs each), the two ECE courses that BS-CSE majors are required to take. Based on feedback from BS-CSE majors and from ECE majors, the ECE Dept. has proposed replacing these with a set of new courses. For the BS-CSE majors, this would mean replacing the 8 credit hours of ECE 2000, 2100 with 6 credit hours of ECE 2020 and 2060 (3 cr hrs each) and adding 2 cr hrs to the technical electives hours which will increase from 15 cr hrs to 17 cr hrs. This change has been described as part of the proposal from the ECE Dept. but, since that proposal is still going through the system, for the sake of completeness, it is mentioned here.
3. A third and final change, also unrelated to the TE options, has to do with the *engineering ethics* course requirement that all Engineering majors are required to meet and *CSE 2501* that BS-CSE majors are currently required to take. One of the courses approved as an *engineering ethics* course is *Phil 1137, Computing Ethics*, and many BS-CSE majors take that course. *CSE 2501* is 1-cr hr course that was introduced many years ago (under the quarter system, it was CSE 601) and it has two goals: first, to introduce students to key ideas related to ethical and professional issues in computing; and, second, to enable them improve their oral and written communication skills. Both of these are related to key program outcomes for our program and hence the course is required of all BS-CSE majors.

But with the creation of Phil 1337 a few years ago, students who took that course to meet the engineering ethics requirement found, not surprisingly, that there was considerable overlap between the material in the two courses. A number of students, including the student reps on our Undergraduate Studies Committee, raised this issue; the coordinator for the course also expressed concerns about this. Discussions in our Curriculum and Undergraduate Studies committees suggested two possible ways to address this. The first would be to require all BS-CSE majors to take Phil 1337 and then take CSE 2501, with the latter being revised to take account of the additional background that students would acquire in 1337; the second would be to request the Philosophy Dept. to create a new course, now numbered Phil 1338, similar in material to Phil 1337 but also including development of oral and written communication skills of students as key learning objectives as well as discussion of such items as the *ACM Code of Conduct* which is generally considered as guidelines for computing professionals.

The Philosophy Dept. was keen on following this second alternative with the caveat that Phil 1338 would have to be 4 credit hours rather than 3, as is Phil 1337. This seemed reasonable given the additional learning objectives; our committees also decided that, assuming that Phil 1338 is approved as a GE course and is approved as meeting the engineering ethics requirement, any student who completes it would not have to take CSE 2501.

In summary, any BS-CSE major who takes Phil 1338 would not take CSE 2501; a student who takes one of the other approved engineering ethics courses would be required to take CSE 2501; students would be advised not to take Phil 1337 to meet the engineering ethics requirement because then they would have to take CSE 2501 and will find the material duplicative. This change would be neutral with respect to credit hours.
3. Process

The idea of re-introducing technical elective (TE) options was discussed extensively at a number of Undergraduate Studies Committee meetings in Autumn 2014. Toward the end of the fall semester, the CSE faculty as a whole discussed the idea as well as the specific courses to be included in the various options electronically. The idea was strongly endorsed by students, advisors, and faculty. The proposed change was presented at the departmental Annual Undergraduate Forum on March 24. The students at the forum were strongly in favor of the idea. The faculty approved the proposal unanimously via an electronic vote. Following some procedural considerations, the proposal was discussed at a CSE faculty meeting on Sept. 17, 2015, and approved unanimously.

The problems with the ECE 2000, 2100 courses had been discussed previously, including at the Annual Forum of March 2014 and the ECE faculty had been informed of the issues. Over Summer and Fall ’14, the ECE faculty involved us in discussions of how the courses might be modified to meet the concerns of BS-CSE majors (as well as concerns expressed by ECE majors). Based on those discussions, the ECE faculty came up with a proposal to replace ECE 2000, 2100 with a set of three new courses; of these, ECE 2020 and 2060 would be the ones that would meet the needs of BS-CSE majors. The net result would be that BS-CSE majors would be required to take ECE 2020, 2060 (3 cr hrs each) in place of ECE 2000, 2100 (4 cr hrs each) and the 2 cr hrs released by this change would be added to the technical elective hours of the BS-CSE program. CSE faculty approved these changes unanimously and the students are very much in favor of them.

As noted earlier, the problems encountered by students who take Phil 1337 to meet the engineering ethics requirement. i.e., the overlap between the material in that course with that in CSE 2501, was brought up both by students in CSE 2501 which were then conveyed to the Curriculum Committee by the course coordinator for CSE 2501 and by student reps on the Undergrad Studies Committee. The problem was discussed in the committees and following discussions with the Philosophy Dept., the idea of creating a 4-credit Phil 1338 that would not only present material related to ethical and professional issues in computing but also include activities that ensure that students’ oral and written communication skills are developed which is the other key outcome of CSE 2501. The proposal that students who take Phil 1338, assuming that it is approved by Engineering’s Core Committee to meet the engineering ethics requirement, would then be considered to have met both that requirement as well as the equivalent of CSE 2501, was discussed at the Annual Student Forum on March 24, 2015 and was very well received. It was sent to the CSE faculty by email for their approval and was approved unanimously.
4. Current BS-CSE Curriculum

The BS CSE Curriculum consists of the following components:

1. CSE Core (22 hours):
   - CSE 2221, 2231 (Software I, II; 8 hrs)
   - CSE 2321, 2331 (Foundations I, II; 6 hrs)
   - CSE 2421, 2431 (Systems I, II; 7 hrs)
   - CSE 2501 (Professionalism, ethics; 1 hr)*

2. CSE Core Choices (20 hours including 4 hrs of capstone design):
   - CSE 390X Project (4 hrs)
   - CSE 3231 or 3241 (Software Eng or Databases) (3 hrs)
   - CSE 3321 or 3341 (Formal Langs or Prog. Langs) (3 hrs)
   - CSE 3421 or 3461 (Systems: Architecture/Networking) (3 hrs)
   - CSE 3521 or 3541 (Applications: AI/Graphics) (3 hrs)
   - CSE 591X Capstone (4 hrs)

3. Math, Science, Engineering Core (37 hours):
   - Math 1151, 1172 (Calculus I, II) (10 hrs)
   - Physics 1250 (5 hrs)
   - Engineering 1181, 1182 (4 hrs)
   - Engineering Survey 1100.xx (1 hr)
   - ECE 2000, 2100 (ECE I, II) (8 hrs)*
   - Math 3345 (Fnds of Higher Math) (3 hrs)
   - Math 2568 (Lin Alg.) (3 hrs)
   - Stat 3470 (Prob and Stats) (3 hrs)

4. General Education (24 hours):
   - English, Writing I (Engl 1100.xx), Writing II (6 hrs)
   - Literature (3 hrs)
   - Arts (3 hrs)
   - Historical Study (3 hrs)
   - Culture and Ideas: Ethics (3 hrs)
   - Social Science I, II (6 hrs)

5. Electives (23 hours):
   - Math/Stats Elective (3 hrs)
   - Science Elective (5 hrs)
   - Technical Electives (15 hrs)*:
     - At least 8 hrs must be CSE courses at the 3000-level or above; the remaining may be letter-graded non-CSE courses approved by the advisor;
     - At most 1 cr-hr of CSE 425X;
     - At most 2 cr-hrs total of CSE 4193, 4193H, 4998, 4998H, 4999, 4999H;
     - Students are strongly urged to consider choosing a focus area in deciding their tech elective courses.
     - The Advising Office can suggest focus areas based on interest, and minor programs with 7 cr-hrs counted toward Tech Electives.

The minimum total hours for the BS CSE degree is 126 credit hours.
* The changes detailed on the next page are related to the items marked with an asterisk (*).
5. Proposed Revisions:

1. ECE 2000, 2100 (8 hrs) will be replaced by ECE 2020, 2060 (6 cr hrs) with the 2 hours being added to the Technical Elective hours which will become 17 credit hours.

2. Ethics course requirement: Students who take the 4-credit hour Phil 1338 to meet the engineering ethics requirement (pending approval of the course for this purpose), will not have to take CSE 2501 since that course is designed to also meet the intended outcomes of 2501.

3. Technical Electives (17 hrs): Must meet the following requirements:
   - At least 9 hrs must be CSE courses at the 3000-level or above; the remaining may be letter-graded non-CSE courses approved by the advisor;
   - At most 1 cr-hr of CSE 425X;
   - At most 2 cr-hrs total of CSE 4193, 4193H, 4998, 4998H, 4999, 4999H;
   - The Advising Office can suggest minor programs with 7 hrs counted toward Tech Electives.

   In addition, the courses chosen under the categories CSE Core Choices and Technical Electives must meet the requirements of one of the following options:

(a) Artificial Intelligence Option:
   - Required courses: CSE 3521, 5522; one of CSE 5523, 5524, 5525, 5526
   - Recommended courses: CSE 5523, 5524, 5525, 5526, 5914

(b) Computer Graphics and Game Design Option:
   - Required courses: CSE 3902, 3541; one of: CSE 5542, 5543, 5544, 5545, 5912
   - Recommended courses: CSE 5542, 5543, 5544, 5545, 5912

(c) Database systems and Data analytics Option:
   - Required courses: CSE 3241, 5242; one of CSE 5243, 5523
   - Recommended courses: CSE 5243, 5523

(d) Information and Computation Assurance Option:
   - Required courses: CSE 3461, 4471; one of CSE 5472, 5473
   - Recommended courses: CSE 3901, 5351, 5432;
     relevant courses in business, econ, law.

(e) Computer Networking Option:
   - Required courses: CSE 3461; two of: CSE 5432, 5462, 5463, 5472, 5473
   - Recommended courses: CSE 3901, 5351, 5432, 5462, 5463, 5472, 5473

(f) Computer Systems Option:
   - Required courses: CSE 3421; CSE 5433 or 5441;
     3 additional hours from {CSE 5433, 5441, 3461, 5243}
   - Recommended courses: CSE 5433, 5434, 5441, 6421, 6431, 6441

(g) Software Engineering Option:
   - Required courses: CSE 3231, 3232; one of: CSE 3341, 5234, 5235, 5236
   - Recommended courses: CSE 3341, 5234, 5235, 5236

(h) Individualized Option:
   - Recommended courses: Students should consult with their faculty advisors to identify the most reasonable set of courses that would be appropriate, given their specific interests.