Summary report on the mock accreditation evaluation

Important points (strengths, weaknesses, potential problems)

1. **Faculty**

   (a) Quality of faculty is high; but some teach few (if any) CIS courses. The quality of instructors and adjunct faculty is good – and should be described precisely in ss (self-study).

   (b) Supervision of GTAs who teach courses for majors is minimal (with notable exception of 221-222-321). Need some formal oversight for other courses as well. (Weekly meetings, common exams, common slides, etc. would all be positive and should be documented in ss.)

   The addition of faculty even at the Instructor level would provide stability.

   (c) Number of faculty: seems adequate but barely. Students complained of being shut out of courses they wanted to take. Program cannot grow without additional faculty.

2. **Curriculum**

   (a) Recent revisions in 221, 222, 321 are excellent, but the (implicit) requirement for a previous programming course must be observed; and mentioned in the ss as not being counted.

   (b) No problem in meeting CSAB curricular requirements (28-credit core: CIS 221, 222, 321, 360, 541, 570, 601, EE 206, 261; and 34-credit advanced work: CIS 560, 625, 655, 660, 680, 675/EE662, EE567, the capstone course, and 9 credits of electives CIS courses). Further strength due to 459, and pre-req programming course for 221.

   No need to include Math366 in the above; avoids questions about whether it is math or computing. No need to include 459 since that can raise a question of whether it duplicates material from other courses.

3. **Students** Doesn't seem to be any problem here; good tracking mechanisms; advising system seems reasonable; students indicate no real problems.

   But: As the ss is currently written, not a lot of connection between [evaluation, advisement, and monitoring of students] and [assessment of whether program objectives are being met].

4. **Computing Facilities** Looks good with good plans for development and replacement.

5. **Assessment**

   (a) Assessment is planned for individual courses (but not yet being done).

   (b) What about assessment of program as a whole? How do you know the right courses are required and teach the right stuff?

   May want to use exit interviews/surveys (in capstone courses?) Or surveys of recent grads (or their employers).

   (c) Students' progress towards graduation is monitored, but what about success in meeting program objectives?

6. **Objectives Table** Include a table (with more detail) for each ABET (and CSE?) objective explaining which parts of which courses help meet that objective. This will make it clear that if students that if students meet the course objectives they will meet ABET objectives.

Other recommendations

1. Self-study must accurately depict effective strength of faculty teaching courses in the program. Effective FTE for teaching undergrad program (for majors) should be clear. Qualifications of instructors, adjuncts, GTAs, etc. should be clear.
2. Need good oversight mechanism of GTAs and other temporary faculty who teach CIS courses.
3. Undergrad research participation should be better documented (with examples).
4. Annual departmental banquet is ok but weak as an effort to improve contact between students and faculty.
5. It is important to improve existing courses rather than introducing new ones (such as the one on security). Already students don't have time for the existing courses; why not modify existing course to include new topics?

Comments/suggestions on CSAB self-study

1. The reference to 3-hour lab on page 9 is misleading.
2. On page 11, it says (about 459) 'typically second language'; not clear that 459 necessarily involves a second language. Why not just use 655 as the way to handle the second language question?
3. On page 13, the question about electives is: how is it ensured that the intent of the requirements (distribution etc.) is actually followed (advising, requiring signature of advisor on the final form, etc.)
4. Page 15: confusion and misuse of Visual/Performing Arts and Social Diversity in I.1 and I.2.
5. Page 16: location and accessibility of official syllabi should be stated.
6. Use of 'should' in department brochures conflicts with usage in CSAB documents. Use 'must' instead?

Comments/suggestions on ABET self-study

1. **Criterion 1 (Students)** The evaluation is mainly with respect to students' progress toward graduation. Their progress toward meeting program objectives does not seem to be measured. Similarly advising and monitoring is with respect to meeting graduation requirements, not meeting program objectives.

   My comment: maybe some key courses should be identified and poor performance in those courses should be cause for serious concern?

2. **Criterion 2 (Program Objectives)**

   (a) The figure needs explanation, in particular the process used is hard to see from the figure. Also explain how the process produces objectives that evolve over time.

   (b) Constituencies are not explicitly identified; this needs to be done (so we can judge if the objectives are based on their needs).

(c) The process whereby the curriculum evolves and is evaluated relative to whether the CSE objectives are met is not clear.

(Suggestion: Put the program outcomes in section 2 and link them to the objectives and explain how each outcome is monitored.)

(d) On page 5, it is not clear how the achievement of these objectives is evaluated.

Hence it is not clear how the results are used to improve the program.

(e) **IMPORTANT** It is important to explain the processes used to determine that the objectives are met, and show that the results are used to improve the program.

3. **Criterion 3 (Program outcomes and assessment)** Program outcomes have been identified. But assessment is weak. The main tool seems to be the on-line surveys at the end of each course. This is a valid tool but should it be the only one? *Evaluation process needs to be formalized and the results of the process documented.* There is little (or no) documentation of results in the ss.

Demonstration that graduates have:

(a) *ability to apply knowledge of math, etc.*: Presumably this will be via examples of student work (because homework, lab, and exam data is cited as assessment method).

(b) *ability to design and conduct experiments*: Same.

(c) *ability to design system, component or process to meet needs*: Same.

(d) *ability to function on multi-dis. teams*: Mainly through 560 (and to a lesser extent through 321). Not clear this is multi-dis. Conventional assessment tools. (Need to document this better. There was some suggestion about referring to 'Coops'?)

(e) *ability to identify, formulate, and solve eng. problems*: Seems adequate but evaluation is weak.

(f) *understanding of prof. and ethical resp.*: Demonstration of this is hard. Discussion of treatment in 601 seems ok.

(g) *Communicate effectively*: How is this demonstrated and assessed? Exams alone cannot be used. (Suggestion: peer evaluations will be very useful; info from coop employees can be used.)

(h) *broad education*: Seems ok.

(i) *life-long learning*: How do you plan to assess this?

(j) *contemporary issues*: seems ok.

(k) *ability to use tools in eng. practice*: Probably ok via the lab experience of students (but not observed this time).

(l) *transfer students policy*: Ok.

(m) *Validation of transfer credits*: Ok.

(n) *Process to ensure all students meet requirements*: Ok.

Overall: This part of the ss needs to be amplified. The tables indicating which courses have which of these contents is good, as are the course descriptions. A reverse table would be useful.

The evaluation metric 'homework, labs, exams, grades' is not very descriptive. Instead make a reference to specific projects that have been done for a particular course, or the types of questions on the exam for that course.

Need to be creative in inventing some metrics to measure some of these areas.

4. **Criterion 4: Professional component**

   (a) Major design exp: Need to write the description in such a way that it sounds like an engineering design (need to incorporate many of economic, environmental, sustainability, ethical, health and safety, social, political, considerations). Try to model it after descriptions in more classical engineering domains.

   Might try to tie 560 and the capstone as a two-quarter (not necessarily consecutive) design experience. (This can be done if each capstone course makes a strong reference to 560.)

   Some of the capstone courses are questionable: CIS 772 might be questioned by some evaluators as not being 'engineering design' (sounds too 'business-y').

   731 is a BIG problem. It seems to be a regular AI course with design playing a minor role.

   (b) One year math, science: Ok.

   (c) Eng. topics: Ok.

   (d) GEC: No comment?

   The big item is eng. design and capstone design experience. Evaluators (especially engineering types) are going to look most critically at this part.

   Make sure each of the capstone courses is ok and that each is documented properly.

5. **Criterion 5: Faculty** Seems adequate but only marginally. Student faculty interaction seems ok.

6. **Criterion 6: Facilities** Some concern (from students) about lack of 24-hour access.

7. **Criterion 7: Institutional support** Not evaluated.

8. **Criterion 8: Program criteria** Seems ok (with focus on Software eng); need to show application of prob/stat to Computing.

Summary Level of Implementation: Table attached. (Only in the hardcopy version. In summary, the table provides numerical scores for six different areas: Educational objectives, Constituents, Processes, Outcomes Assessment, Results, System. In each of these categories, the possible numerical scores are between 1 and 5; 1 typically means the particular area is being addressed informally with no well-defined processes in place, and 5 means comprehensive processes are in place with all the needed supporting mechanisms in place and working well, etc. In the case of Constituents and Results we got '1 or 2'; in all other categories we were ranked as a 2. The main complaint goes back to not having well documented processes.)