July 16, 2014

Provost Paul DeLuca, Jr.
Dean Martin Cadwallader

Re: Review of the Graduate Certificate in Patient Safety

Dear Provost DeLuca and Dean Cadwallader:

The College of Engineering has completed the review of the Graduate Certificate in Patient Safety. This program began in 2008, and has involved eleven different faculty members from the Department of Industrial and Systems Engineering (ISyE), and the Schools of Medicine and Public Health, Pharmacy, and Nursing. To date twelve students have completed the program and four have presently identified themselves as pursuing the certificate. The program’s mission is to “train the patient safety officers, information technology project leaders, medical device decision-makers, care givers, and health systems engineers of the future to be able to accurately identify, analyze, and solve patient safety problems in order to improve care for all patients.” The certificate requires students to complete a total of five formal courses, a Patient Safety Research Seminar, and a Patient Safety project, for a total of 15 credits. Although all of the required courses are listed or cross-listed with ISyE, three of the courses are housed within departments outside of ISyE, including Pharmacy, Medical Physics, and Population Health Sciences.

The review of the certificate was conducted by an internal College of Engineering review committee consisting of John Pfotenhauer (chair), Jose Pincheira (GFEC), and William Likos on behalf of the Graduate School. This committee reviewed the program self-study (attached) and met with two faculty members (Wiegmann – ISyE, and Chui – Pharmacy) and two of the four students presently registered in the program. Each interview lasted approximately one hour. The College of Engineering Graduate Program Review Committee considered the report of the review committee and approved it on May 12, 2014 (attached). The College of Engineering Academic Planning Council considered the report on July 9, 2014 and recommended acceptance of the report with its recommendations.

The review subcommittee had four recommendations which can be paraphrased as follows:

- The student learning outcomes of the Certificate should be articulated and evidence of student learning and level of achievement should be gathered on a continuous basis in order to assess and demonstrate the value and effectiveness of the program.
- The faculty involved in the program must reorganize the curriculum in order to address the differing course structures in the various departments involved.
- The program must strengthen the method of student tracking.
- Activities should be developed to create an improved sense of identity and cohesiveness for the students in the program.

The College of Engineering will work with the Industrial and Systems Engineering Department to address these recommendations. In addition, the College administration feels that the certificate must increase enrollment in the program. We ask that the GFEC, the UAPC and your office accept this program review in fulfillment of our campus obligation.

Thank you,

[Signature]

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Att:  Graduate Certificate in Patient Safety Self Study
      Graduate Certificate in Patient Safety Review Report
A Program Review of the
Graduate Certificate in Patient Safety
May 7, 2014

Committee members: John Pfotenhauer (chair), Jose Pincheira, and William Likos

Background

The graduate certificate in patient safety began in 2008, and has involved eleven different faculty from the Department of Industrial and Systems Engineering (ISyE), and the Schools of Medicine and Public Health, Pharmacy, and Nursing. To date twelve students have completed the program and four have presently identified themselves as pursuing the certificate. The program’s mission is to “train the patient safety officers, information technology project leaders, medical device decisionmakers, care givers, and health systems engineers of the future to be able to accurately identify, analyze, and solve patient safety problems in order to improve care for all patients.” The certificate requires students to complete a total of five formal courses, a Patient Safety Research Seminar, and a Patient Safety project, for a total of 15 credits. Although all of the required courses are listed or cross-listed with ISyE, three of the courses are housed within departments outside of ISyE, including Pharmacy, Medical Physics, and Population Health Sciences.

Findings

Process: The committee interviewed two faculty (Wiegmann – ISyE, and Chui – Pharmacy) and two of the four students presently registered in the program. Each interview lasted approximately one hour. The names of the students and their advisors in the program were obtained from the student services office for ISyE. The interview questions are included at the end of this document.

Value of program:

- Faculty benefit from the cross campus collaboration. Professor Wiegmann stated that it would be a significant error to cancel the program as this would send the wrong message to colleagues in the Medical and Pharmacy schools regarding the ISyE faculty’s interest in collaboration, cross pollination, and synergies.
- Faculty identify that the cross-breeding of ideas between engineering and medical students in the classroom is valuable and rich.
- Faculty from both ends of campus identified that the program is highly valued by people in the Patient Health industry. Many of the industrial participants in a related summer session have expressed interest in being able to earn the certificate.
- Student benefit: the Patient Health Certificate provides a clear identifier to employers in the medical field of the students’ training. The field is in its infancy, but rapidly growing and the interest and demand for new people in
the field is very high. Thus, the certificate creates a strong advantage for UW-Madison students.

- The program at UW-Madison is one of only 3 such programs in the U.S., but the only one creating synergy with a (Human factors) Engineering component. The other two programs (Vanderbilt and Georgetown) are based only in the Medical field.

Challenges for the program:

- Scheduling classes: The single largest challenge facing the program is a result of class scheduling conflicts across campus. Students in the medical field, especially pharmacy, face a significant challenge trying to fit in the engineering courses. Their class schedule during the day is already very full and allows room only in the evening for courses outside of pharmacy. The engineering students interviewed indicated that the only pharmacy students in the engineering courses were residents who had already graduated from the pharmacy program.

- Differing program styles: A community style of course-instruction in the school of pharmacy creates an ‘outsider’ experience for the engineering students enrolled in the one Pharmacy course (608).

- Frequency of course offerings: ISyE 703 is not always available, but required. The student presently taking it in an independent study format is not pleased with the arrangement.

- The number of faculty involved in the program is relatively small at this point, as some of the faculty initially involved are no longer at UW-Madison.

- Cohesiveness: Students are not required, nor encouraged to register as participants in the program until they are near its completion. Existing records identify only four involved in the program, but both students and faculty involved state that there are many more are involved than are formally enrolled. No joint activities or meetings, outside of the courses, take place for the group of students in the program.

Faculty comments: Those involved in the program are very enthusiastic about it and note that there is no cost to the faculty to maintain the program since the courses involved are already taught on a regular basis.

The faculty involved recognize that the program is presently thin, in comparison with the involvement at its inception, and that various features, especially the differing class schedules for the different student groups will require some creative modifications.

Student comments: The set of courses presently required for the certificate are not sequenced, but they should be. The recommended sequence would place 559 as the first course and 703 as the last. The others would make up the middle in no specific order. Students noted that ISyE 652 has not been offered for the last four years. The students also recommended that three other courses should be included in the certificate: ISyE/BME 662, ISyE 515, and OMT 765.
Both faculty and students involved note that the program is only advertised via word of mouth and through the program’s web-site. However, both groups consider this approach to provide adequate publicity.

**Recommendations:**

1. The committee recognizes that the Graduate Certificate in Patient Safety provides value both to the faculty and students involved in the program. Especially in view of the anticipated rapid growth in this field and the unique strength provided by UW-Madison’s program integrating engineering with the health field, the program should be maintained.

2. The program requires some creative re-organization. To ensure continued success, the faculty involved in the program must address the challenges identified above, especially: a) the differing course structures in the various departments involved and b) course sequence and scheduling. The committee suggests that they also explore possible avenues for extension and/or evening courses via the Department of Engineering Professional Development. Alternative modes of course delivery (e.g., on-line courses) should be considered.

3. Strengthen the method of student tracking. Students should be required to identify their participation in the program at an earlier stage. Program faculty should actively recruit students at an earlier stage and from a broader base of backgrounds (e.g., outside ISyE). Surveys in the form of exit surveys and program alumni surveys are recommended in order to document the value of the program.

4. Activities should be developed to create an improved sense of identity and cohesiveness for the students involved in the program.
Questions for Faculty involved in the Certificate Program on Patient Safety:

1. Enrollments are relatively small and most enrollees are students in ISyE. What are the main features of the certificate that cannot be obtained within the existing graduate program in ISyE?
2. Do the students within ISyE who are enrolled in the certificate have access to resources/classes that they would otherwise not have?
3. Do the students outside ISyE who are enrolled in the certificate have access to resources/classes that they would otherwise not have?
4. Are there activities or organizations associated with the certificate that promote professional development and camaraderie among the students? Provide examples that bring additional value for the students in the certificate program.
5. Please provide details for learning goals and mechanisms by which these goals can be assessed.
6. For past students, provide a list of what they did after graduation (job placement). Is there evidence that the certificate program impacts employment in patient safety?
7. Is there evidence from the employers/industry that the certificate program adds value to the student’s degrees?
8. What are the goals for growing the program within 3 years, 5 years, 10 years?
9. Is the enrollment of this program increasing or decreasing and why?
10. Do similar programs exist at other institutions? If so, where? How does the program here compare with others?
11. Does the program conduct any recruitment efforts? If so, who is the target audience and how are the efforts conducted?

Questions for students involved in the Certificate Program on Patient Safety:

1. How did you find out about the certificate program?
2. Why did you choose to enroll? (what benefit are you anticipating?)
3. What are the mechanisms for obtaining information or advice about the certificate?
4. Would you take the same set of courses if the certificate program did not exist?
5. Any other comments?