2 December 2019

TO: Remzi Arpaci-Dusseau, Chair, Computer Sciences

FROM: Eric Wilcots, Interim Dean, L&S

RE: L&S Completion of Capstone Certificate in Computer Sciences

CC: Jenna Alsteen, Academic Planning Specialist, Graduate School
Kristin Eschenfelder, Associate Director, School of Computer, Data & Information Sciences, L&S
Elaine M. Klein, Associate Dean for Academic Planning, L&S
Jocelyn Milner, Vice Provost and Director, Academic Planning and Institutional Research
James Montgomery, Associate Dean for Fiscal Initiatives, L&S
Parmesh Ramanathan, Associate Dean, Graduate School

On November 5, 2019, the L&S Academic Planning Council reviewed materials related to the 5th year review of the Professional Capstone Certificate in Computer Sciences. Professor Kristin Eschenfelder, Associate Director for the L&S Division/School of Computer, Data, and Information Sciences, led discussion. She noted that this capstone certificate is focused on the needs of post baccalaureate students who are building skills needed to advance in their profession; the certificate requires 12 credits and if students are later admitted to the CS professional master’s program, they may use certificate courses toward completion of those requirements. This structure thus allows students to explore graduate-level study without committing fully to a degree program. The program has been very successful, with peak enrollment at 260 students (likely increased due to pent-up demand); it currently serves about 150 students.

The majority of students in the capstone are Wisconsin state residents. Enrollment of targeted minority students in capstone certificate is modest (4-8%), but higher than other CS academic programs. Enrollment of women in capstone certificate is equivalent to the CS professional masters, but higher than the CS bachelors. A 2017-2018 review conducted by CS showed that students from racial/ethnic minority groups received grades of “C” or better at the same (and even higher) rate than majority students.

The capstone certificate program has clear and appropriate learning outcomes and has a submitted assessment plan. Direct assessment began in spring 2019, when faculty evaluated
student work in upper-level project courses using a rubric calibrated to learning outcomes for
the program. As might be expected, results of this assessment activity led to minor revisions in
courses and requirements. The program also reports surveying upcoming graduates each spring
beginning in 2018. In data from 2018, 91 percent of graduates answered “Agree” or “Strongly
Agree” to the statement “What I learned from the program will help me reach my career goals.”

The APC was interested to learn that this emphasis on service to a Wisconsin-based audience is
intentional, and that this program makes an important contribution by supporting the local tech
industry, chiefly in partnership with Epic Systems. The APC appreciated that this type of
partnership can be challenging, but members were impressed that while the program was
initially designed to provide professional development opportunities for the Epic workforce (and
many certificate students are Epic employees), it serves other students as well. We encourage
to department to continue to work to address identified challenges of finding enough instructors
to teach a breadth of courses at the Epic location and to explore ways to increase other student
enrollment as the Epic student demand levels off.

The APC approved unanimously a motion to accept the review as complete and to continue to
offer this program. We will convey this recommendation to the Graduate School, which will
schedule a discussion of this program with the Graduate Faculty Executive Committee.

In looking toward the future, members offered some advice that might contribute to future
planning and improvement: for example, they suggested that CS track completion and
persistence rates of various student populations, to see if there are any markers that predict
persistence. In addition, members thought that a new full-time enrollment plan designed to
recruit international students may also be of interest to domestic (and local) students, too, and
could be marketed more widely. Finally, we note that the Department and Program will
continue to engage in regular discussions with Associate Dean James Montgomery, as a
component of administering this non-pooled revenue program. We wish you continued success
with it.
A summary of the activities of the review committee and materials reviewed

L&S Dean John Karl Scholz charged the committee to complete the first five-year review of the Capstone Certificate in Computer Sciences for Professionals. The analysis and report were prepared by the committee.

The committee received the following documents:

- Charge from Dean John Karl Scholz.
- The self-study prepared by the program faculty and staff.
- Reply of the four focused questions for the capstone certificate program review.
- Review of academic programs in computer sciences.
- UW-Madison certificate review guidelines, which also includes an appendix with some advice for the work of the review committee.

The committee met on September 12 for roughly an hour to review and discuss the charge, analyze the self-study and set up a plan for verifying facts and obtaining information from CS administration, faculty, students, and EPIC representatives. On October 3 the committee spent three hours to interview relevant individuals, including:

- the CS department chair Remzi Arpaci-Dusseau
- Professor Suman Banerjee (a member of the program committee overseeing the department Capstone Certificate and Professional Master Programs; the committee chair and program director Steve Wright was unavailable for the interview)
- program instructors Paul Barford, Charles Fischer, and Andy Kuemmel
- Epic representatives Mike Epley and Molly Stiffler Syal (via phone)

The program coordinator left recently, and the department is in the process of hiring a new program coordinator. The student feedback was solicited through email and collected by phone, coordinated by Catherine Arnott Smith.
An evaluation of the strengths and weaknesses of the program

CS department has two revenue-generating programs: the capstone certificate program and the professional master program. The capstone certificate program was originally designed for the Epic Systems corporation. The department offers two courses per semester to train Epic employees in fall, spring and summer semesters, and instructors drive to Epic to teach during evenings. There is a strong synergy between Epic and the CS department, and the capstone certificate program is mutually beneficial to both Epic and the CS department. Epic indicates that the capstone certificate program is a powerful program that helps to train its workforce and recruit new employees. The students enrolled in the program are very dedicated, and they appreciate the instructors and value the courses. The revenue generated programs help the CS department to hire more faculty and teaching staff and expand course offering to the revenue programs as well as regular educational programs. The capstone certificate students enhance student diversity in the CS programs.

The professional programs committee appointed by the department chair works with Division of Continue Studies to oversee the capstone certificate program. The program is in high demand among Epic employees and is also very popular beyond Epic. Although the majority of students in the program are Epic employees, the program is being expanded to enroll non-Epic students, including international students. It allows students to enroll in the capstone certificate program full-time or part-time and to take courses on-campus during the day or off-campus at Epic in the evenings.

Professor Smith heard from four Epic employees interested in giving feedback about the certificate program, one of whom followed through with a phone interview. This student, in the second year of the program, had virtually all positive things to report. The program has fulfilled his expectations as a “non-mathy” humanities graduate who wants to move into a design role; he finds the homework the most educational experience, more so than exams. This student was particularly complimentary about his UW faculty, saying that he has learned a great deal because “They clearly value the learning over the grade”.

A major challenge for this certificate program is the difficulty in finding instructors and staff to teach and manage the program. Due to the uncommon schedule and demanding teaching at Epic, many faculty are reluctant to teach courses for the capstone certificate program. Online and simulcasting courses are being explored as an option to teach classes for the program. The program coordinator is in charge of routine administration for the revenue programs such as handling capstone certificate students and communicating with Epic representatives. The former program coordinator had stayed for about three years and left in the summer. It is a high priority for the department to hire a new program coordinator. Overall, instructor staffing is the main obstacle to maintaining or expanding the capstone certificate program. The limited number of available instructors restricts the diversity of courses that are offered. Feedback from Epic indicated that there would be great interest to have a broader array of courses offered and/or taught more frequently to address the demand by Epic employees.
Recommendations for future directions

One recommendation is to establish some reward mechanism to encourage faculty to teach courses in the capstone certificate program. Partial teaching relief or other incentives could enhance the appeal of teaching these courses. Such options may be possible with the resources generated from the program. The current approach provides no incentive for instructors. Given the extra overhead associated with teaching courses within the capstone certificate program, it is understandable that many faculty find these courses unappealing options.
I think we are all good w/ this report. Thanks!
Remzi

On Thu, Oct 24, 2019 at 8:52 PM Remzi H. Arpaci-Dusseau <remzi@cs.wisc.edu> wrote:
Hello Elaine,

I have read it over and it looks fine to me. However, I am also sharing it with others to see if there are other comments; we'll be back to you shortly.

Thanks!
Remzi

On Thu, Oct 24, 2019 at 3:54 PM ELAINE M KLEIN <elaine.klein@wisc.edu> wrote:

Dear Remzi,

We have received the report of the faculty committee convened to review the Professional Capstone certificate in Computer Sciences; per our usual procedure, we would like to give you an opportunity to review the report and offer comment to correct errors of fact that may have crept into the report. Once we hear from you, we can schedule L&S APC discussion of the self-study and the review committee report (and your corrections).

If we hear from you soon, perhaps we can schedule this for the November 1 APC meeting, and get this review wrapped up!

Please let me know.

Thanks,

Elaine

Elaine M. Klein
Associate Dean for Academic Planning, L&S
Please note that there are two “Elaine Kleins” on campus; are you sending your messages to the right one?