

Capstone: Transitioning a Successful Undergraduate Research Program to a Multi-Research Model

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Objectives

The Capstone course for computing students at the University of New Hampshire at Manchester (UNH-M) was introduced in spring 2011. It was designed as an undergraduate research project whose focus was speech recognition. In its 10th year, the course is now being transitioned into multiple projects with an initial split of two research topics. Much deliberation was needed to help determine the best approach on how to split the course into two components; a seemingly simple task fraught with pitfalls.

Two important issues were whether to run parallel projects or alternate between spring and fall semesters, and how to determine the best method on dividing students among the competing projects. What initially seemed a trivial task turned into a complex problem that needed to address potential consequences so as not to undermine the successful mechanism that had been put in place and had worked so well over that decade.

Issue

As an internal research project where anonymous peer evaluations drive student success in class, being able to ensure workable class size is important. Offering projects in both spring and fall could present occasion where one semester yields only a handful of students and thus removes a critical element that a large group research project provides where students need to communicate, collaborate, and find ways to contribute to the overall success of the project.

Rationale

Some important issues needed to be addressed:

- Could faculty determine student schedule before their final year and dictate who would take the fall versus spring Capstone to ensure a balanced set of projects, or was that too problematic resulting in a weakened experience?
- Conversely, would running dual research projects in parallel present a shortage of resources in both faculty and facilities?

Offering the course every semester would make it more convenient for students, offering it only once a year adds an element of commitment and responsibility. The decision of simply dropping the course because the student felt unprepared or overwhelmed would mean having to wait an entire year to re-take it. Stated more simply, a student may find it easier, when confronted with a difficult challenge, to drop a course knowing they can simply take it again the following semester, whereas if the course is only offered once a year, that decision has greater ramifications.

An integral part of Capstone is to expose students to experiences to better prepare them for their careers, it was important to balance the convenience of student needs with keeping the principal of Capstone intact. This can affect how a student might respond to the pressures of a real job. Would they simply walk away or formulate successful strategies to confront it head on – something they perhaps learned in Capstone.

Moving forward

The solution decided on:

- Concurrent running projects with an added common time to enable cross project interaction.

The need to continue the undergraduate research model developed at UNH-M over the past decade was an important component. Various materials have been published in computing educational forums on the format and achievements and feedback from colleagues at other institutions has led to the evolution of a strong internal Capstone experience.

This is an important model as it helps create an alternative to the traditional work-embedded model that can add strain to a computing department as much work is needed to build industry relationships. This gives freedom in how to engage industry without the need of those companies providing places for students.

References

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