Online Capstone Course with Industry-Sponsored Projects: Two Case Studies

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Summary

The Professional Science Master's (PSM) program in Biotechnology, at UMUC, is a 36 credit, semester-based online program, divided into 15 credits of core coursework and 21 credits from a selected specialization including 3 credits from the capstone course. Currently, there are three specializations in this program: biotechnology management, biodefense and biosecurity, and bioinformatics.

The capstone course is either the penultimate or final class taken by students. The core of the course is a group project aimed at giving students a real-world intern experience and the opportunity to complete a mutually beneficial project with a small biotechnology company or institution over a 12-week semester. Capstone courses provide an excellent opportunity for innovative teaching methods such as student-led and team-led discussions, cross-disciplinary collaborations, and technology integration. In designing a capstone course it is important to keep class sizes small, build a flexible, integrative syllabus based on the objectives of the entire program and allow students to explore their own strengths and diverse viewpoints to reach beyond traditional perspectives. A challenge is to provide students in different specializations with the same experience.

We compared and contrasted projects from the Fall 2009 and Spring 2010 semesters, conducted by students in the bioinformatics specialization and by students in the biotechnology management specialization. Factors looked at included, team composition, team members’ background, and the team’s approach to addressing the research question. Finally, we looked at the end product from each team and their overall performance and evaluation from the company/organization. Our results indicate that even with different student backgrounds, team composition, and team dynamics, it is possible to conduct track specific capstone projects as part of the same course and provide students with a worldly hands-on experience that prepares them for the workforce.

Presenter Bios

Rana Khan is a professor in and Director of the Biotechnology Program at the University of Maryland University College. Her research interests include developing strategies to enhance the synergy between industry and academia and to increase graduate degree attainment among minorities.

Richard Conroy is an adjunct assistant professor with the biotechnology program at the University of Maryland University College since 2006, teaching face-to-face and online classes regularly. He is particularly interested in how entrepreneurship and translational research can be encouraged in the classroom.

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