

The Department of Information and Computer Sciences at UH at Manoa redesigned Tools for the Information Age, a required course for many majors that provides students the opportunity to learn critical spreadsheet, word processing, presentation, web usage and authoring, and graphics manipulation skills through the study of industry standard applications. Approximately 600 students enroll in this course each term. The traditional course has been offered in two lecture (~300 students) and 20 lab (~30 students) sections per term, taught by one full-time faculty instructor, one course coordinator, and 12 teaching assistants.

The course suffers from several problems typical of multiple-section courses: a) course drift and inconsistent learning experiences for students, b) a one-size-fits-all approach, c) course material that needs constant updating, and d) an inability to scale beyond current infrastructure.

The course was redesigned so that half of the in-class laboratory learning activities was replaced with interactive tutorials. The course was enhanced by lecture podcasts, audio files that are automatically available for download to pocket memory drives. A course coordinator directed the course team, which included the instructor and undergraduate lab assistants. The instructor offered course content through a combination of optional live lectures and required podcast media- and resource-enhanced presentations. The administration and scoring of quizzes and exams utilized WebCT, as well as practical assignments. Grading was facilitated by undergraduate assistants trained for the task.

This iPod-based, technology-enhanced redesign allowed the department to improve the quality of the course. First, high quality media-enriched presentations used in all sections eliminated course drift and inconsistent learning experiences for students. Second, the passive lecture environment was replaced by media-enriched presentations (delivered via iPods and the Web) that required active student engagement and increased students' opportunity to progress at their

own pace. Third, students interacted directly with iPod- and Web-based content, freeing the instructor and teaching assistants to help students when required.

The impact of the redesign on student learning was assessed through a variety of means. Comparison of grades from students who were enrolled in this course in the previous year (2004-05) and scores that were achieved on the final examinations since the course grading scale and exams will be comparable. The team will also create pre- and post-tests for each learning module to measure how much students learn over the course of the semester. To assess implementation, the faculty and teaching assistants kept journals and wrote brief end-of-term reports on the experience. These journals and reports will become part of a Web site used to disseminate information about how to transform a traditional multiple-section course into a single-section, technology-enhanced one.

Cost savings were produced by 1) by doubling the number of students with only a small increase in staff 2) significantly reducing faculty time in the classroom by delivering lectures via the media player, 3) employing undergraduate assistants for active student lab assistance and 4) shifting time-intensive grading of assignments to WebCT. The department estimated a reduction in the cost-per-student from \$125 to \$94, a 25 percent savings, while doubling the number of students from 1024 to 2048.

The final report for this pilot redesign project are being written at this time.