

**University of Massachusetts
Academic Year 2003-04
Final Report On Professional Development Grant**

Development of a 1-Credit Online Course for Science and Engineering Majors
"Introduction to Excel With Chemistry, Math and Statistics Applications"

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Preliminary Phase (Summer, 2003)

The initial setup of the framework for the two separate tracks of the course (Chemistry and Statistics) was done as the project for an online course on "Teaching Online with Intralearn" offered from UMass Lowell. Although first half of CHM 172, which consists of an introduction to Excel with some math applications, is the same for both tracks, it was logistically simpler in Intralearn to set them up as completely separate courses.

The items in the topic outlines in Intralearn contain descriptions of and links to the corresponding sections of the online textbooks for the two tracks of the course. (Since the online texts were partially complete at the time, they were left intact to obviate the need to move the files (over 500 of them for each track) into Intralearn. This turned out to be a fortuitous decision because Intralearn will no longer be the CMS used by UMass after this summer.)

Completion of Intralearn Sites and Online Text Content (Fall, 2003)

Conversion of the old versions of the Excel and Statistics online texts to the new format with links to and from Intralearn was completed. Additional text material was added and some of the older material was modified to make it suitable for a more general audience. The online texts are designed so that the material in the adjacent frames can be printed out on separate pages.

Development of Interactive Components (January, 2004)

A senior chemistry major (who had taken both courses from which the two tracks of this new course were derived) was hired to help organize and choose questions for the interactive components of the online texts. She also had some experience in HTML, so she agreed to continue working during the spring semester to help incorporate the interactive review quizzes and in-text questions into the online texts and to test the links and functionality of both sites.

The review quizzes, which are in multiple choice format, permit the students to test their accumulated knowledge at the ends of most of the main sections of the course. If a wrong answer is chosen, an explanation of why it is wrong appears, and the student is allowed to make another guess. The in-text questions, which occur at random places in the online text, are designed to test the student's understanding of the recently covered material. Each has a button with a large question mark icon next to it. The students are advised to try to answer the question and then click on the button, which contains a link to an page containing the answer to the question and an

explanation of it. An arrow button at the bottom of the answer page contains a link which brings the student back to the same point in the text where the question was located. (These components are rather tedious and time-consuming to set up and test, so the assistance of the student was invaluable.)

Offering of Course and Continued Development of Interactive Components (Spring, 2004) Both tracks of the course were offered in the Spring 2004 semester, with twelve students in the Chemistry track and two in the Statistics track. All the students enrolled were regular day school students at UMD*, so the course was offered as a hybrid course rather than completely on line. For that reason, there was no need to distribute the credit homework assignments and quizzes *via* the internet, so they were offered in conventional paper format as needed. In addition to the online course materials, two optional recitations were held per week. They were well-attended near the beginning of the semester, but less and less so as the students grew busier.

*The course was incorporated in the schedule too late to be included in the Division of Continuing Education catalog as an UMass Online course, so it was offered only in the regular day school.

Assessment

At the end of the semester an online version of the department's course evaluation form was set up and offered to the students. The response was minimal during the time allotted, so the form was set up again during the last week of May. Another form designed to elicit comments on the effectiveness and functionality of the course, the web site, and the online interactive materials have also been distributed to the students.

Further Plans

The course will be modified by the addition of homework assignments in the form of downloadable PDF files and online quizzes set up as HTML forms. This will enable it to be offered entirely in an online format in the future. It is general enough in content to be of interest to science and engineering majors who have completed one or two semesters of freshman chemistry and lab. In fact, a civil engineering student who is anticipating a senior level statistics course in his major has already expressed a desire to take the statistics version. There are very few one-credit courses offered in the university, so there is always some interest among students who need one more credit to graduate or to barely qualify for full-time status. More and more regular day school students are taking online courses as a part of their schedules, especially commuters who live far from campus.

Expenditures

Amount Awarded
\$5000.00

Equipment
(eMac Computer)
\$1228.00

Student Assistant Salary (226.25 hours @ \$10/hour)
(Vanessa Sindjeu, Chemistry Major, UMass)
\$2262.50

Total Expenditures
\$3490.50

Remaining Balance
\$1509.50