

## **An Ohlone Story**

### **Interdisciplinary Computer Applications Courses Science and Engineering**

**Submitted by Rick Arellano and Elisa Webb**

#### **Overview**

Students enrolled in the introductory science classes of Engineering 101, Biology 101A, Chemistry 101A, and Biotechnology 105 need to be proficient in using computer applications programs. It has been customary for the instructors teaching these science classes to spend the first part of the semester reviewing the computer applications tools needed to solve problems presented in each course. This activity has taken instructors time away from teaching the required introductory science concepts.

To help science instructors reduce time spent in teaching computer applications, the CAOT department created four interdisciplinary co-requisite classes for engineering, biology, biotechnology, and chemistry: CAOT 146, 147, 148, and 150. These classes specifically teach computer applications tools and techniques needed to solve problems and exercises presented in these core introductory science classes. A few of the topics covered in the co-requisite classes include statistical analysis, the charting or graphing of science data, how to write a research paper, how to create effective presentations, and the use of databases in science.

The four CAOT co-requisite computer applications classes are delivered fully online either during the first weeks of the semester, or throughout the full semester, as requested by the science professor. Students who enroll in the four introductory science classes are required to enroll concurrently in the co-requisite CAOT class. Each CAOT co-requisite class is fully transferable to the UC and CSU university systems.

#### **Relationship to College Values**

*We provide life long learning opportunities for students, college personnel, and the community*

By creating courses in an interdisciplinary or learning community model, Ohlone College serves better the needs of students, college personnel, and the community. Students skillful in computer applications perform better in the courses mentioned above. Instructors spend less time teaching computer applications and can instead, concentrate on teaching subject matter.

*Maintain high standards in our constant pursuit of excellence*

The development of an interdisciplinary approach to teaching computer applications and science demonstrates the faculty's commitment to excellence and high standards. The program was developed through CurricUNET, an online course development tool, which requires close scrutiny by key faculty and staff. Before the course was approved, these staff members looked for educational elements within the CAOT proposed program, such as subject matter breadth and consistency with the Ohlone College mission statement. In addition to the close evaluation before the program was approved, high program standards are maintained through the evaluation by students, the dean, and instructor colleagues. Revisions to the CAOT co-requisite courses are made through CurricUNET as well.

*We promote teamwork and open communication.*

Both the CAOT instructor and science instructor work together in selecting topics that will be taught online, as well as coordinating the delivery of the appropriate lab exercises. This teacher-to-teacher communication exists throughout the duration of each semester and is considered a key component in

student success. Students are also encouraged to talk with their instructors and to one another via the online class discussion board or e-mail available to each student through the online class Web site. Online students can also visit the instructor during office hours or through appointments.

*We practice innovation and actively encourage risk-taking and entrepreneurship.*

The CAOT interdisciplinary science and computer applications program encourages innovation through its use of an online teaching environment and close attention to offering the latest computer technology to its students.

### **Relationship to Achieving College Goals**

*Develop across the curriculum the Learning College Model, utilizing methods and technologies that hold the most promise for improving student course and program completion success rates.*

Science work in the 21<sup>st</sup> century will require scientists who can manipulate data using computer applications. Ohlone College believes that integrating science and computer studies through this interdisciplinary approach will prepare its students for future work in science. In fact, participant students, the instructors involved, and the Dean of the Math, Science, and Technology division all agree that the CAOT co-requisite classes are helping students succeed in the science classes.

The four CAOT co-requisite classes are delivered fully online; this mode of instruction offers convenience and flexibility to all participants.

*Develop strategies to increase the proportion of full-time students including learning communities, cohort groups, enhanced facilities, and improved course availability.*

The CAOT co-requisite courses which integrate with introductory science classes were developed to promote academic breadth, making these classes transferable to the UC and CSUS systems. We believe that CAOT co-requisite classes help retain science student enrollment by offering one-on-one instruction when necessary and by providing easy-to-understand computer application topics.

By offering the CAOT courses online, students feel free to pursue their main study objective, and still supplement their learning with online computer applications exercises.

CAOT-147 was the first interdisciplinary course offered by the CAOT department. Since CAOT-147 was a success, instructors from other disciplines wanted to participate and develop courses similar to CAOT-147. As a result, three additional CAOT co-requisite courses (CAOT-146, 148, and 150) were developed and are currently offered.

### **Demonstration of the Meeting of One or More of the Accreditation Standards**

*Each electronically-delivered course or program of study results in learning outcomes appropriate to the rigor and breadth of the course credit, degree, or certificate awarded.*

Introductory science classes require knowledge in using computer applications to manipulate data. The CAOT co-requisite classes provide a learning community environment of activities prepared by teachers from two different disciplines in which students can learn or improve computer application skills.

*Enrolled students have reasonable and adequate access to the range of student services appropriate to support their learning and assess their progress.*

Students enrolled in the CAOT online classes have access to academic counseling and the DSPS (Disabled Students) office through links posted on the class Web sites. In addition, students have the

ability to access links to other college services such as the college tutoring lab, bookstore, building map locations, and campus directory.

## **Expression of Accreditation Themes**

### ***Dialogue***

The CAOT department focuses its energies on developing and teaching computer applications that are used in business and academic settings. Its directive also includes supplementing learning by offering help to other academic departments when needed. Three years ago, one biology instructor asked for help in instructing his students in Excel. He was spending too much time instructing students on how to use Excel to solve biology experiments that he assigned. The CAOT department responded to his request by implementing a plan to develop UC/CSUS-transferable computer application classes to augment learning in his biology class. Because the class (CAOT-147) was a success, other professors, including the Math Science, and Technology Dean, requested the department's help in creating other courses similar to CAOT-147. Through several discussions and dialogues between professors, deans, and students, the CAOT department implemented online curricula for engineering, biotechnology, and chemistry, also with an interdisciplinary approach.

### ***Evaluation, Planning & Improvement***

CAOT co-requisite classes are evaluated by students each semester and by deans and colleague evaluations once in the academic year. Through this evaluation review, decisions are made to update course topics and curricula.

Planning is also achieved through course evaluations, changing curricula in response to students' needs. In addition, a yearly advisory committee meeting helps CAOT department instructors to consider adding or deleting course offerings to meet the needs of business and academic professional study.

Instructors also receive employment updates from the Ohlone placement center. This information impacts the types of courses offered by the CAOT department. Improvement of CAOT classes is also monitored by CurricUNET advisory members who are key faculty, administrators, and staff.