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### Introduction

Efforts are underway to develop and offer the AMS online oceanography course at California State University, Los Angeles. The proposed course would be offered by the Department of Geological Sciences. These efforts follow previous attempts to develop the course that were complicated by administrative responsibilities of the principal author. An internal grant for released time to develop and tailor the course for our institution was acquired by Ramirez. However, the released time went unused because of other responsibilities. Our efforts to offer the course continue and we hope to implement the course this coming spring.

### Current Oceanography Course

Currently, a ten-week oceanography course consisting of a traditional lecture and laboratory is offered by the Department. The course is offered principally for general education and liberal arts students seeking to fulfill the University general education requirement of a science course with a laboratory. Physical oceanography is emphasized in the course and topics such as plate tectonics, waves, ocean chemistry, marine sediments and environmental issues are covered. The laboratory prepares students for day trips aboard an ocean going vessel and a coastal trip. Typically, ocean chemistry, properties, zones, and sediments are discussed prior to the ocean cruise. While aboard ship, students measure salinities, dissolved oxygen, pH, temperatures, water clarity, and sediment properties using a variety of instruments (Fig.1). The coastal trip emphasizes coastal processes such as longshore transport, sediment derivation, beach morphology and coastal erosion (Fig. 2).

The Department of Geological Sciences offers multiple sections of oceanography with a traditional 3-hour lecture and 1-1/2 hour lab that includes the half-day boat trip and the half-day beach trip.



Figure 1. Students participating in a data-collecting cruise aboard a California State University operated vessel. The cruise is an important component of the oceanography laboratory.

Course enrollments typically range between 30 and 50. Overall, during the last five years or so, enrollments have shown a steady decline from highs of 70 to the current numbers. A reason for this decline includes decreasing enrollments in the University, especially in the sciences, due to increased registration fees which prompts student to complete general education courses at lower cost community colleges. Additional factors impacting oceanography enrollment center on competition from a popular astronomy course; and a stale oceanography curriculum that remains unchanged for at least 20 years. The oceanography course along with our natural disasters and physical geology general education classes account for most of the budget the Department receives to operate and to support our major which consist of about 35 undergraduate students and about 25 graduate students. The graduate program is in a steady decline.

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Figure 2. Students studying beach processes near the Los Angeles harbor.

### Reason for the Online Course

Through the online course we hope to capture greater enrollments by reaching out to our mostly working students and to a wider range of prospective students in the southern California area. We hope to stimulate enrollments and to hopefully recruit students to the major. Additionally, competition between departments for large lecture rooms and technology rooms would decrease by offering the online course.

Modifications to the AMS course would have to be undertaken. The AMS course is tailored to a 12-15 week semester and not for our quarter system. Commencement of the AMS course does not correspond to our beginning date of the fall quarter, as we begin at a later date. Because CSULA operates under a 10-week quarter system that begins in late September, the AMS online course presents a challenge because of its real-time features. Therefore, archived files that closely resemble real-time data will be used. Archived files will be paired with AMS course materials compressed to fit the quarter schedule resulting in faster-paced classes. We anticipate that we would use the readings, chapter progress reports, and some of the learning activities used in the current AMS course for the lecture and laboratory. Web-CT will be the vehicle for the delivery of the online oceanography course. We wish to leave the current laboratory mostly in tact. The laboratory provides for practical learning field experiences not possible through the current AMS course. The face-to-face laboratory also allows us to address any issues arising from the online delivery of instructional materials. Furthermore, the traditional laboratory allows us to offer ready assistance and feedback to students with their assignments and preserves the important student-instructor interaction. Discussions are underway regarding the possibility of offering a compressed laboratory course extending perhaps five weeks or less.

### California State University, Los Angeles

California State University, Los Angeles is a major urban public institution of higher education located approximately five miles from central Los Angeles in East Los Angeles (Fig. 3). Student enrollments average approximately 21,000 students with approximately 14,000 full time equivalent students. Enrollments have declined from a high of 24000 in 1998 to the current numbers. The campus is a culturally diverse school that mirrors the region from which its students come. 60% of our students live within a 10-mile radius of the school. The majority of our feeder high schools are in East Los Angeles or

in the immediate vicinity. Cal State LA students average 28 years in age and the percentage of females (61%) exceeds that of males (39%). Latinos (52%) dominate the student population followed by Asian (22%), white (16%) and African American (9%) students. The majority of our students are the first to attend college.



Figure 3. California State University, Los Angeles (foreground) on the fringes of downtown Los Angeles

Many students are immigrants or first generation Americans. Three quarters of the freshman list English as their second language and a majority must enroll in remedial English and Math courses. The majority of our students are transfer students seeking access to better jobs and living conditions. Most of our students work at least part time to support themselves through school and the majority qualify for financial assistance in our mostly commuter school.

### Online Instructional Material in Support of the Oceanography Course

Ramirez and LaDochy, through the acquisition of internal grants, have developed several online exercises that could be used to support the online oceanography course. These modules include activities centered on waves, ocean atmosphere interactions, Hurricane Katrina, climate change and the polar regions, ocean current circulation, and sediment distribution in the oceans. A sample of these modules is located at: <http://instructional.calstatela.edu/sladoch/geog170.htm>. The module on ocean atmosphere interactions centers on el Niño/La Niña. Additionally, Ramirez and LaDochy have developed activities using natural disasters that include earthquake, volcanoes, landslides, hurricanes and lightning. Several of these online natural disasters activities support the de Bliq and Muller physical geography text published by Oxford University Press.

A web page has been set up for implementation of the AMS Online Weather course and the oceanography page would follow a similar format. On the webpage are links to natural hazards, such as tsunami and lightning.

### Some Potential Impacts

Potential impacts of offering an online oceanography course include unlimited enrollments, possible recruitment of more majors, and students are provided the opportunity to complete some of University requirements in a more timely fashion. Online courses reach a broader audience that could possibly include not just local but national, and international students thereby stimulating enrollments and reversing declines.

Exposure to Oceanography could also be a stimulus for students to consider the Earth Sciences as a major. Presently, CSULA students average approximately six years to complete their undergraduate degree. Decreasing time to completion of degree is essential. The online course allows students to schedule their course around their busy lives and could lead to a more timely completion of general education requirements. Furthermore, through the course, students have access to technology using real-time data. Exposure to these sites allows students to improve their scientific literacy making them better citizens and for those pursuing the teaching profession, the exposure impacts students they will teach.

#### **Future Plans**

We plan to offer the lecture section of Oceanography as an online course in fall 2008. The laboratory portion of the course would still require classroom laboratory activities as well as the present field trips – a 1-day excursion on the Yellowfin and a 1-day trip to a shoreline to examine coastal processes.

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