The Oceans

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Course Description

•The Oceans is a Marine Studies course targeted to the undergraduate non-science major. It is viewed as an opportunity to develop an appreciation of the importance of the oceans and their impact on our everyday lives.

•The course is multidisciplinary and addresses ocean-related issues by integrating physical, geological, chemical, biological, and human perspectives.

Project Goals

•The course was designed to address the inability of students to quantitatively reason through and critically evaluate problems.

•Twenty-five topically relevant, well-illustrated, integrated, cross-disciplinary quantitative reasoning examples were developed. The purpose of these examples was to help students:

- •Develop and practice quantitative reasoning skills.
- •Integrate and apply quantitative reasoning skills across disciplines.
- •Benefit from enhanced classroom interaction and discussion.

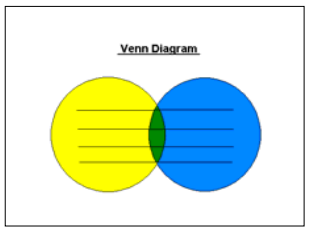
In-Class Writing Exercises

•Students responded to a question that segued from what was just covered to what would be covered next. This was done to start them thinking about how they were going to integrate what they had already learned with the upcoming material.

- •Responses were written on 6x8 cards which were analyzed outside of class.
- •Results were reported back to the class, stimulating class discussion.

•Sample Question: What biological and physical factors affected marine *vs.* terrestrial systems?

- •Students were told to present material in any way that worked for them.
- •Responses came in a variety of forms including narratives, bulleted lists, and Venn diagrams.
- •In the following class students discussed their responses and illustrated the factors using Venn diagrams.



Project Assignments

•5 in-class short writing exercises

•5 new case study examples (we are working toward a total of 20)

•Added 5 short answer questions to each exam

- •Required computation, illustration, or narrative to answer the question
- •Augmented the multiple choice questions that had been standard for this class

Assessment

•Quantitative short answer questions were used as a means of gauging and assessing students' competency in class material.

•Several multiple choice questions on the Fall '04 exams were similar to previous exam questions and can be compared across years.

Case Studies

•Mega Tsunami Class Discussion

- •Identify the two types of tsunamis.
- •What triggers tsunamis?
- •What are the expected results of tsunamis?

•Canary Islands Example

- •What would be generated in the Atlantic if there was an underwater landslide, like the one that is modeled for the volcano on Las Palmas in the Canary Islands?
- •What is the likelihood of its occurrence, speed of propagation, height of the wave (including factors that affected that)?
- •How might one expect to evacuate the east coast of the U.S. and how much notice could be expected?

South-East Asia Tsunami

When a mega tsunami actually happened on December 26, 2004 in Indonesia, students stated in email messages that, thanks to the course, they understood what was happening and even better, could explain it to others.