SIGNALS of SPRING ACES Animals in Curriculum-based Ecosystem Studies

Signals of Spring -- ACES 2010-11 Syllabus
Course Requirements
(Graduate Credit or CEU's or Stipend):

***All work must be submitted by**
Dec 1, 2010 (fall semester) or May 1, 2011 (spring semester)*

Course Description:

Follow marine animals like sea turtles, seals, and polar bears as you apply life and Earth topics to the ocean. Learn how students become bathymetry, chlorophyll, and sea surface experts as standards-based topics come alive. Image interpretation of the ocean makes the connection to marine animal movement and related conservation issues. Spark students' inquiry with animals as the hook.

Standards-based topic areas include:

Earth Science:
Seasonal Change; Density; Ocean Currents and Heat Transport; Watersheds; Bathymetry; Tides; Temperature and Pressure Changes with Depth; Upwelling

Life Science:
Photosynthesis & Productivity; Cell Structures; Biodiversity; Food Chains & Food Webs; Nutrient Cycling; Biotic & Abiotic Factors; Needs of Living Things; Ecosystems; Adaptations of Organisms; Human Impacts on Ecosystems

Science Process Skills:
Making and Testing Hypotheses; Data Collection; Data Analysis & Graphing; Image Interpretation; Forming Conclusions; Scientific Instruments; Using Models; Measurement

Course Objectives:

Participants will:

- ✓ Demonstrate related content knowledge and themes (change over time—short term, seasonal, and geologic time; conservation; ocean processes; photosynthesis and food availability, and the interconnectedness of Earth's spheres,) through activities and presentations.
- ✓ Analyze and use Earth data from satellites, ships, and buoys.
- ✓ Illustrate the impacts of humans on the ocean and the ocean on humans.
- ✓ Facilitate authentic research and analysis of the movements of specific animals by examining pathways with respect to oceanic processes.
- ✓ Adopt inquiry and technology-based teaching and learning strategies and successfully implement them in the classroom.

This course is graded on a point scale.

Part I: Synchronous Portion:

At the conclusion of the ACES training, you will have completed these assignments already.

	Assignment	**Maximum Points Value**
Mandatory 1	*Preparation & Participation in Training Sessions, including any pre- and post- course surveys.*	*20*
Mandatory 2	*Online Analysis Journal*	*10*
Mandatory 3	*In-class Presentation*	*5*

Part II: Asynchronous Portion

After the training is complete, you are now ready to begin the asynchronous portion of the course. Choose the options that will be most beneficial and interesting to you and your students as you develop ocean literacy.

Please note that several options suggest pictures of students as an 'artifact.' If you complete these options, please get parental permission for using students' likeness—request the form from Meghan

	Assignment	**Maximum Points Value**
Mandatory 4	*Student Surveys: Your students must complete the pre- and post-program surveys (electronically or on paper) in order for you to receive credit for the course.*	*5*
Option 1	Full Electronic Portfolio Assignment	40
Option 2	Participation in Scientist Webcast	20
Option 3	Participation in National Water Study	20
Option 4	Truncated Electronic Portfolio Assignment	30
Option 5	Campus Debris Survey	20
Option 5	Ocean Literacy Paper	20

Option 1: Full Electronic Portfolio Assignment (40 points possible)
You will be creating an electronic portfolio to demonstrate successful program implementation.

As you implement the program(s), reflect critically on how the program is helping to improve student interest, understanding, or achievement.

Follow the following steps to complete your portfolio:

1. Review the course objectives for this course.
2. As you implement, the program, collect 'artifacts' that illustrate how you have met your course objectives (see above), and passed them on to your students. Artifacts can be in many forms including, but not limited to:

   -student work samples (such as scanned student writings, posters, or journal entries; video/audio recordings of presentations; photographs of work; etc.)
   -digital photographs of students actively engaging in activities
   -lesson plans showing how your are incorporating program into your instruction
   -assessments you have created based on the programs
   -results of assessments
   -PowerPoint presentations created by you for use during class, or by your students
   -notes from parents indicating changes they have seen in their children
   -letters from supervisors discussing the program implementation

3. Select the two artifacts that most effectively illustrate that you have met each objective. You will have a total of 10 artifacts.
4. Write a short (one paragraph) reflection for each artifact that describes why you selected the artifact and what it shows.
5. Write a 2-4 page reflective essay that briefly describes how you implemented the program in your classroom, and how the portfolio illustrates successful implementation. Explain how the program affected your own planning and instruction, your content knowledge, and also your students' learning and success.

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Option 2: Participation in Scientist Webcast (20 points possible)
At least 2-3 times per school year, the ACES team holds special scientist webcasts about ongoing research projects to which your students are invited. To participate, you will need a computer with a projector hooked up to the internet, and also a speaker phone that can dial an outside line.

To earn credit, participate in the webcast with your students, complete the evaluation survey, and write a short (1/2 page) reflection of what students gained from the experience.

Option 3: Participation in National Water Study (20 points possible):
Some researchers in marine education believe that students must literally 'get their feet wet' to appreciate the ocean. One way to establish a connection is to have students participate in a local water testing challenge as outlined in *Lesson 12: Which Way to the Sea.*

Have students work through the lesson, the topographic maps, water testing, and then connections to other schools. Go to www.signalsofspring.net/aces and click on the 'National Water Study Challenge' icon to enter your class data.

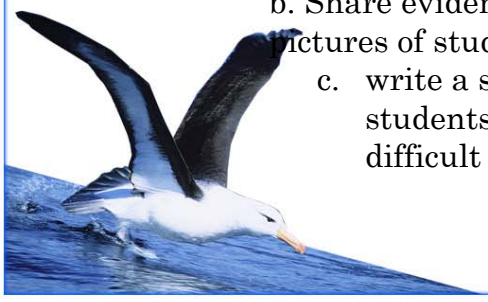
To earn the credit:

a. show evidence of students using the activity (pictures, student work, etc.)
b. enter data online for at least one date
c. write a short reflection (<1 page) about how the lesson went with your students, anything you found particularly useful, interesting, or difficult

Option 4: Truncated Electronic Portfolio (30 points possible)
Follow instructions above but complete the portfolio for three course objectives, rather than all of them.

Option 5: Campus Debris Survey (20 points possible)
One way to make connections to marine debris is for students to assess the impacts of their school community. To earn the credit:

a. Have students complete the Campus Debris and the Ocean activity, available here: http://signalsofspring.net/aces/resources.cfm.
b. Share evidence of students working on the project (i.e., data sheets, pictures of students in the field, etc.)
c. write a short reflection (<1 page) about how the lesson went with your students, anything you found particularly useful, interesting, or difficult



Ocean Literacy Paper (20 points possible)
Review the Ocean Literacy Brochure (available at:
(http://www.coexploration.org/oceanliteracy/documents/OceanLitChart.pdf)

In 5-8 pages, answer the following:

•Provide some background information about your position and school—what grade level/subject you teach, types of students you teach (ability levels, English Language Learners, etc.) As you examine the Essential Principles & Fundamental Concepts in the brochure, identify which of these you could incorporate into your curriculum, which are appropriate for your particular students, grade level, content area, etc and justify your selections.
•Discuss why ocean literacy is important for your particular students. Now that you are more familiar with the ocean and ocean literacy, what concepts might you add to your curriculum that you haven't taught before and why? What obstacles do you foresee when working the ocean into your instruction, and how might you overcome these obstacles?
•Discuss specifically how you implementing the ACES program will help/has helped your students to become more 'ocean literate.' In what ways will/have these activities enhance science instruction for your students? What modifications to the activities are required to make them more relevant to your learners?

Option 6: "In the Spotlight" Article (20 points)
This is the time to "toot your own horn!" The ACES website often features an "In the Spotlight" article. The articles describe scientific research projects, new animal species, special events, and schools and classrooms.

Write an article (in the third person) about how ACES has been used in your school for your students. It may help to frame your article around a special event, i.e. beach clean up, scientist visit, student science fair, etc. Be sure to include:

- A brief description of your school.
- How ACES is being used, i.e. what classes/grade levels
- What you think students have learned and/or how their experiences have been affected
- Something unique about ACES at your school
- Pictures of students working, presenting, in the field, etc. and/or of student work

You may wish to include quotes from faculty or students (no last names of students). Your article may be edited by ACES staff and used on the ACES website!

Course Grading

Minimum for 3 graduate credits = 80 points (B-)
Minimum for 45 hours CEU credit = 75 points

Final Course Grade	Points Range	Performance Indicators
A	90-100	Participant demonstrates an excellent understanding of the ocean in the Earth system and the importance of ocean literacy. Participant is able to successfully implement inquiry and technology-based teaching and bring ocean-related science content into the classroom.
B	80-89	Participant demonstrates a good understanding of the ocean in the Earth system and the importance of ocean literacy. Participant is able to successfully implement inquiry and technology-based teaching and bring ocean-related science content into the classroom.

C	70-79	Participant demonstrates a satisfactory understanding of the ocean in the Earth system and the importance of ocean literacy. Participant shows some success in implementing inquiry and technology-based teaching and bringing ocean-related science content into the classroom.
F	<70	Participant does meet course objectives

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