University of Alaska- Fairbanks (ED)

Applied Life Science Concepts for Educators in the Context of Polar Regions II

Cyber-based Interdisciplinary Science Education (C-ISE 3)

Course Number: TBD
Credits: 1
Prerequisites: None
Location: Online Course
Dates: 29 October – 14 November 2012
Cost: $90

Meeting Time: This is a web-based course with two required webinars. Feel free to contact the instructor per-email if you have questions.

Instructor:
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COURSE MATERIALS

The course will utilize primarily online and real-time presentations for content. Course participants will be expected to have access to a computer and internet to access course-related materials, which may include, but are not limited to:

- NSTA or other research related articles
- PolarTREC Online Learning Resources Database
- Excel data files
- Existing lesson plans and activities
- Websites

  PolarTREC:
  http://www.polartrec.com
  NSTA National Science Teachers Association
  http://www.nsta.org/
  National science education standards:
  http://books.nap.edu/html/nses/html/index.html

COURSE DESCRIPTION

The purpose of this 1 credit online professional development course is to provide you with resources and tools to increase your knowledge and skills as science educator. This course addresses science content standards in context of the Polar Regions, connects you to researchers, and teachers. The content areas are based on National Science Teacher Association (NSTA) standards and include life-science concepts, such as the adaptations for survival in Antarctica.

The content areas addressed through this module are based on National Science Teacher Association (NSTA) standards and will include: The Fall 2012 module of **Applied Life Science Concepts for Educators in Context of Polar Regions II** will focus specifically on:

- Life History and Natural History of the Weddell Seal
- Other Organisms in Antarctic Waters
- Environmental Conditions affecting life in Antarctica
- Technology and Ingenuity in Polar Science

COURSE GOALS

- Increase educators' knowledge and skills in life science including cutting edge Polar Research and Polar regions specific regional knowledge.
- Introduction to best practices for science teaching including data analysis.
- Connecting with researchers and field based research projects.
- Establish a Cyber-based Interdisciplinary Science Education network (C-ISE)
- Provide teachers with current web based resources and technology applications that have the potential to making science teaching and learning more meaningful, relevant, and fun.

STUDENT LEARNING OUTCOMES

Students will:

- Deepen the understanding of Polar Regions and concepts of life science through successfully completing threaded discussions, interaction with Polar scientists, two webinars (live or recorded), and a final exam project.
- Integrate real time data collection technology effectively into the classroom.
- Model science connections with technology using real life examples.
- Gain knowledge to navigate web- based resources to support real life learning about Polar Regions to improve student engagement and understanding.
- Use web-based threaded discussion within a Cyber-based Interdisciplinary Science Education network (C-ISE).
- Increase knowledge and skills to meet the National Science Teachers Association Standards.
- Design research based, inquiry and technology-rich curriculum & assessment to engage students in science, and to increase and measure student achievement.

INSTRUCTIONAL METHODS

Online Class Forum
This course will utilize web-based delivery. All students will receive of notification to join online platform and any user specific access information. Instruction and interaction forums will be established at the class working site.

Blackboard Collaborate
Additionally, there will be two webinars (web seminars) using Blackboard Collaborate. (http://www.polartrec.com/polar-connect/instructions)

This course will include webinars with scientific research team members and experienced educators, reading assignments, online discussion, and a final comprehensive curriculum project.

As part of the course development, a participant evaluation will measure educators' pre and post course knowledge of the science topic. Evaluation related assignments would only be graded on completion, and not on responses.

Assignments- Evaluation:
Course participants are required to:

- Follow past/current PolarTREC teachers online 15%
- Participate in online discussion forums, learning communities, blogs 20%
- Take a pre- and post assignment that reflects content learning 15%
- Participate in the course survey 15%
- Final comprehensive curriculum project 35%

Students will express what they learned within a Cyber-based Interdisciplinary Science Education network (C-ISE).

EVALUATION

Final Comprehensive Exam: *The final exam will be composed of a publishable lesson plan, or laboratory activity, or multimedia project based on content and skills learned in this course.* Periodic surveys will be given to formative evaluate and improve the course. Those surveys are not graded.

Grading:
Grades will be based on the following percentages:
90-100% A 80-89% B 70-79% C below 70 % F

Attendance policy:
This is a web-based course. Students should submit assignments based on course calendar due dates. To get the most from the class, participants should participate in both webinars. If participation is not possible, archives will be accessible so that participants can watch/listen on their own time.

COURSE POLICIES

Students' Academic Responsibilities
This is an online, asynchronous course. For this reason, the timely taking of weekly quizzes and individual student contributions to weekly online discussion forums is essential. Participation in online discussion and timely completion of weekly assignments is required. It is very easy to fall behind in a web-delivered course. It is important to do the assignments on a regular schedule as directed.

Academic Integrity
High ethical standards are essential for maintaining credibility. Scholastic dishonesty including but is not limited to cheating, plagiarism, collusion, and submission for credit of any work or materials that are attributable in whole or in part to another person, or taking an examination for another person, will be not tolerated.

COURSE CALENDAR & ASSIGNMENTS:

A general outline is available on the following page.

COURSE CALENDAR & ASSIGNMENTS:

Tentative Course Calendar (based on webinars, discussion, and coursework) Assignments will be posted.

1st Week: 29 October – 2 November 2012

Overview

- Introduction: pre-course survey, the online learning environment
- Webinar One- Overview of polar regions, PolarTREC, and Life Sciences in the Polar Regions - Antarctica (focus on Weddell Seals)
- Using multimedia resources in the classroom (PolarTREC webinars)

Content – Overview of the Polar Regions & Life Science of Weddell Seals

- Introductory Readings and Resources
- Overview of Antarctic Life Science
- Beginning review of Weddell Seal biology and the scientific process

Discussions

- Personal Introduction
- Reflection on webinar one

Assignments – Early Week

- Become familiar with online platform for course
- Post short personal/professional introduction for classmates
- Complete Pre-Course Survey
- Set up computer for Blackboard Collaborate webinar platform
- Complete reading assignments for introduction to Polar Regions and course content.

Assignments – Late Week

- Review journals/resources pertinent to content for Week 1.
- Conduct a resource search & list 3 found resources related to any of the concepts being covered (polar or non-polar). Describe resource, ascribe value, and post to class forum.
- Participate in course webinar or view archive.

2nd Week: 5-9 November 2012

Overview:

- Continuation of Content knowledge, personal work, and group interaction
- Webinar Two- *Bringing Polar Science into Teaching, Students, and Community.* PolarTREC alumni Alex Eilers will discuss engaging students in polar science through classroom visits and informal education.
- Formulating Capstone Project

Content – Biology, Survival, and Environmental Factors in Antarctica

- Continued study of Weddell Seal biology
  Methods for Study, Technology, and Ingenuity
  Unique Adaptations and Survival Strategies
- Other Marine Organisms in Antarctica
- Environmental Factors affecting life in Antarctica

Discussions

- Discussion and sharing activities for classroom use in context of the learning objectives and best practices of teaching.
- Reflection on webinar two

Assignments – Early Week

- Explore resource lists posted in the class forum, comment on 2 of classmates contributions.
- Continue pertinent course readings, journals, and exploring resources through PolarTREC.
- Brainstorm concept or theme for capstone project.
- Formulate one question for PolarTREC teacher currently in the field.

Assignments – Late Week

- Post question for PolarTREC teacher to 'Ask the Team' Forum.
- Continue work on capstone project.
- Reflection on webinar two

<u>Week 3: 12-14 November 2012</u>

Comprehensive project due 16 November 2012

Final Project will be emailed to course instructors.

Assignments

- Post 2 comments, suggestions, or ideas for extensions to capstone projects
- Complete the Course Post-Survey

Final Exam Comprehensive Project

Format: Students may create either an original Video (3-5 minutes) / PowerPoint or a Lesson Plan / Lab Exercise. Final projects will be shared reviewed by course instructor. After review final projects will be added to the online PolarTREC Learning Resources database.

All final capstone projects must:

- Address one of the key concepts from the course in regards to course topics including:
    - Life History and Natural History of the Weddell Seal
    - Marine Organisms in Antarctic Waters
    - Environmental Conditions affecting life in Antarctica
    - Technology and Ingenuity in Polar Science

- Address one or more National Science Education Standards