

Science Curriculum Development for Teachers

Course Syllabus

Science Teacher Education Program (STEP)

Course Information:

Title: Science Curriculum Development for Teachers

Course Number: ED 595/ATM 595

Credits: 3

Prerequisites: Participating educators must be from schools involved in the Science Teacher Education Program administered by the Geophysical Institute. Approved districts include: Alaska Gateway, Delta Greely, Fairbanks North Star Borough, Lower Kuskokwim, Northwest Arctic Borough, Tanana City, Yukon Flats, and Yukon-Koyukuk. Concurrent enrollment in STEP's Climate Change for Science Teachers is required.

Location: IARC 401

Dates: Monday-Friday, Session 1: July 9 – 20, 2007; Session 2: July 23-August 3, 2007

Meeting Time: 1 PM – 5 PM

Instructors:

Session 1: Lead Instructor Diane McBee, Susan Oliver, Sandi Schultz

Session 2: Lead Instructor Cheryl Cooper, Gary Cooper, Diane McBee

Course materials/textbooks: TBD

Course Description:

Science Curriculum Development for Educators is a special topics course designed to guide K-12 science teachers in developing Learning Cycle Model lessons and assessment based on the Alaska Grade Level Expectations (GLE) for science and best practice skills. The backward design of the Learning Cycle Model requires participants to identify the GLE and write assessment prior to writing the lesson plan. This ensures that assessment and scoring tools are solid and focused on lesson content. All Learning Cycle Model lessons also must incorporate science process skills. After being introduced to the Learning Cycle Model course participants work with instructors and peers in three "Translation Groups" (one per instructor) to translate science content learning from STEP's Climate Change for Science Teachers course. Translation groups are organized by instructors and broken into grade level. Participants who teach K-3 grade work with an instructor in one translation group, those who teach grades 4-6 in another, while participants who teach 7-12 grade work in the third translation group. This allows participants to focus on the science content most applicable in their classroom.

Course Goals and Student Learning Outcomes:

The goal of this course is to guide participants in developing Climate Change lessons and assessment for K-12 students that demonstrate and include: scientific process skills; Alaska Grade Level Expectations; best practice teaching skills; and the Learning Cycle Model for science education. Each participant will write two Learning Cycle Model

lessons to use in the classroom and share with peers. One will be done as a grade level group; the other will be done individually.

Instructional Methods:

This course utilizes a variety of instructional methods including:

- Lecture-delivered by instructor and/or guest lecturers
- Large group discussion led by both instructors
- Small “Translation group” discussion led by a single instructor
- Instructor-modeled Learning Cycle Model activities
- On-site lecture and discussion at research facilities

Assignments:

Each participant must complete two Climate Change Lesson Plans; one prepared individually, one prepared by a grade-level group, for K-12 students (assigned on Day 3 and due on Day 8). Lesson Plans should target a specific grade level or range. The instructor will evaluate each 3-5 page Lesson Plan for the following:

- Adherence to the Learning Cycle Model format
- Accuracy of scientific concepts presented
- Alignment with and clear identification of Alaska Science Grade Level Expectations
- Clear rubric for assessment
- Inclusion of scientific process skills
- Incorporation of best practice teaching skills

Learning Cycle Model Group Lesson Plan will be assigned on Day 3 and due on Day 5.
Learning Cycle Model Individual Lesson Plan will be assigned on Day 3 and due on Day 8.

Course Policies:

Attendance is essential due to the condensed nature of the course. Make up assignments may be arranged as necessary. Participation in class and translation group discussions is required. Transportation for trips beyond UAF will be provided.

Evaluation:

Grades will be based on the following activities:

1. Class attendance: 10%
2. Participation in large group and translation group discussions: 30%
3. Written Learning Cycle Model Group Lesson Plan: 30%
4. Written Learning Cycle Model Individual Lesson Plan: 30%

A grade of **A** will be given for an overall score of 90% or better. A grade of **B** will be given for 80-89%, **C** for 70-79%, **D** for 60-69% and **F** for <60%.

Disabilities Services:

The Office of Disability Services implements the Americans with Disabilities Act (ADA), and ensures that UAF students have equal access to the campus and course materials. We will work with the Office of Disability Services (203 WHIT, 474-7043) to provide reasonable accommodations to students with disabilities.