

Summer Semester 2001

EDUC 416 - 4
Designs for Learning: Secondary Science

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D01.00

Wednesdays 13:00-16:50 in EDB 7500F

PREREQUISITE

Educ 401/402

COURSE DESCRIPTION

This course is designed for prospective and practising secondary school teachers who wish to explore the fundamentals of the learning/teaching process as it applies to science. The course will draw from the latest research in science learning, and will show how such findings may be used in the classroom. Students will be expected to become familiar with and confident in the use of a variety of teaching strategies including the use of hands-on work, writing, role play, and a number of ways of using group work. They are also expected to prepare themselves for dealing with a range of classroom issues arising, for example, from feminist and anti-racist research traditions. Finally, they will prepare themselves for becoming lifelong innovators in science education, learning how to reflect on their practice.

OBJECTIVES

On completion of the course it is hoped that participants will feel more at ease with science, be able to deal confidently with the prescribed curriculum, and be able to plan teaching and learning science instruction within a consistent framework.

REQUIRED TEXTBOOK

A course reader will be available from the bookstore.
The course web page will be at <http://www.sfu.ca/~vanaalst/educ416.html>

TENTATIVE COURSE SCHEDULE:

<u>Date</u>	<u>Topic</u>
Week 1	Introduction/overview
Week 2	International and B.C. curriculum
Week 3	Models of Instruction
Week 4	Course & unit design
Week 5	Science for all students
Week 6	Strategies for teaching and learning science, I
Week 7	Computers in science education
Week 8	Strategies for teaching and learning science, II
Week 9	The nature and history of science in science education
Week 10	Science-Technology-Society-Environment (STSE) education
Week 11	Action research and professional issues
Week 12	Science Fairs
Week 13	Course summary

COURSE REQUIREMENTS:

1. Investigation assignment (25%)

For this assignment students will work in small groups (3-4 students) to investigate an assigned scientific topic. Students will make their thinking processes and progress visible by contributing on a regular basis to a communal, computer-based discussion forum. These contributions should be an honest attempt to document exactly what thoughts occurred, the dead-ends and false leads that were considered, and ahas. In other words, it should reflect the true process of investigation rather than the reconstructed version of textbooks. Students are also expected to regularly provide other groups helpful hints and constructive criticism. A well-specified framework will be provided that can guide students in deciding when and how to contribute to the discussion.

2. Unit Planning Assignment (25%)

The object of this assignment is to ensure that students obtain some experience in planning a set of learning experiences in science. Students will be expected to identify a grade level and a topic from one of the British Columbia IRPs and plan a coherent sequence of activities that will meet the objectives identified by the student for this topic. These objectives should incorporate those from the IRP but might well extend them depending on the nature of the organization for instruction and the student's outlook on what is to be valued in the science classroom.

3. Class presentation (25%)

Students will, in small groups (3-4 students), teach for approximately one hour of instructional time on a topic selected from a list of possible topics. The goal of this assignment is to expose the class to a wide range of teaching styles, and to provide all students with opportunities to (further) hone and get feedback on their teaching.

4. Individual project (25%)

Each student has his or her own expectation for any course. The individual project is one way of ensuring that individual goals are met. No requirements have been predetermined for this assignment. This assignment includes a self-evaluation component. A proposal of what a student intends to do for this assignment is required by the fourth week.