

**SIMON FRASER UNIVERSITY
SPRING SESSION 2005**

**EDUC 416-4
DESIGNS FOR LEARNING: SECONDARY SCIENCE
(E01.00)**

Concurrent

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Monday Jan 10, 24 and Mar 7 (time to be determined)
Saturday Jan 8 9:00, Jan. 15, 29 Feb. 26, Apr. 2 & 9 (time to be determined)
Location: CET instructional Lab
(Please see course timetable)

PREREQUISITE: EDUC 401/402. Educ 405 desired.

Corequisites:

This course is designed to be taken concurrently with EDUC 405; you should also register in EDUC 404 so that EDUC 416 is counted as one of the courses in EDUC 404; you will need to register in EDUC 404 again in 2005-2.

Preamble:

This is a version of EDUC 416 that has been modified so that it can be taken concurrently with EDUC 405. The premise is that learning how to design for learning is most relevant to your practice when you are teaching. You should expect some overlap between the course assignments and your activities in school. For example, you can choose to design lessons that you will teach during your practicum. This course was offered on an experimental basis for two years and was very well received by students. The course schedule is tailored to the demands on your time from EDUC 405. In January, when you are preparing for your immersion in school, we have a high concentration of classes; in February and March, when you are busy in school there are very few classes; and after the end of your practicum there are two classes dealing with issues arising from your practice. Classes are also kept shorter than usual by adding a small online component (training for this will be provided). The schedule is shown on the next page (minor changes are still possible). This schedule accounts for 39 hours; the remaining time is spent independently in online discussion of case studies of science teaching and other topics arising from student interests.

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. You are 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. You are also expected to prepare yourself for dealing with a range of classroom issues arising, for example, from feminist and anti-racist research traditions. Finally, you will prepare yourself for becoming lifelong innovators in science education, learning how to reflect on their practice.

Objectives:

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

Date	Hours	Topic	Textbook	Assignment
Sat., Jan. 8	5	Course introduction; the nature of science; computer training; the science curriculum	Chap. 3	
Mon., Jan. 10	3	Unit planning and lesson planning	Chap. 4	
Sat., January 15	5	Misconceptions; models of inquiry; critical thinking	Chaps. 5, 6	
Mon., Jan. 24	3	Assessment in Science	Chap. 10	
Sat., Jan. 29	5	Learning in the lab and informal settings;	Chap. 7	Critical Challenge
Sat., Feb. 26	5	Learning from practice; controversial issues; making use of resources in the community	Chap. 8	
Mon., March 7	3	The role of computers; projects in science	Chap. 9	
Sat., April 2	5	Emerging topics; presentations		Unit Plan Analysis
Sat. April 9	5	Emerging topics; presentations		Learning portfolio

NOTE: The first class starts at 9:00 AM, Saturday January 8. The exact timing of other classes will be determined during the first class.

Assignments:

1. (20%) Critical Challenge. You will design a lesson that fosters critical thinking. The lesson can be part of your unit plan or can be the workshop you present (below).
2. (10%) Online discussion. (This will take about 45 minutes per week, after training)
3. (25%) Analysis of Unit Plan. In EDUC 405 you will plan one or more units. In this 416 assignment you provide an analysis of the unit based on your experience teaching it. This takes the form of a short paper (about six pages, double spaced).
4. (25%) Group lesson. Working in a group of 2-3 students, you prepare a workshop on a topic on the science or mathematics curriculum. 15% of marks are based on the actual workshop (collaborative) and 10% on an (individual) response to feedback on the workshop (about 2 pages, double spaced.)
5. (20%) Learning portfolio. This is a paper (about 6 pages, double spaced) in which you synthesize what you have learned about science teaching from reading, online discussion, and interactions with colleagues in school. The paper should demonstrate your growth as a science teacher and point out areas in which you need to invest in more learning.

Textbook:

Thomas R. Koballa, Jr., and Deborah J. Tippins (2004). Cases in Middle and Secondary Science Education:

The Promise and Dilemmas. Columbus, OH: Pearson/Merril Prentice Hall. ISBN 0-13-112798-5.

Questions:

In the past students have had questions about the impact of this course on their ability to do well in EDUC 405. Such anxieties are almost always put to rest in the first class when the schedule and the nature of the assignments becomes clearer. However, if you have questions that you need to have answered now, please email me at vanaalst@sfu.ca.

I look forward to meeting you in a stimulating course.

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