

Semester 96-2 Session: Regular

Instructor: M. Roth

**EDUC 476 - 4 Designs for Learning: Natural Sciences
(Secondary)**

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Section: E2.00

Scheduled Final Exam: No

PREREQUISITE

Educ 401/402

COURSE DESCRIPTION

There are two major components to this course: a) Learning science and b) designing classroom instruction. Thus, in this course, students will read and discuss current research on how students learn science (see textbook) and design a unit of instruction. The instructor will use materials and videotapes from a recent curriculum development and research project to illustrate designs for learning about simple machines.

The following is an outline of topics to be discussed during the course. This outline is not exhaustive and may include some topics which will not be covered. Additional topics may be added at the discretion of the instructor.

1. What is the nature of scientific knowledge? What is science? How is scientific knowledge constructed?
2. Problem solving. Open-inquiry laboratory activities. What is the scientific method? Does it exist?
3. Students' views of scientific concepts.
4. Analyzing and improving science teaching.
5. The integration of science, mathematics, and technology (computers and others).
6. Collaborative concept mapping.
7. Vee-mapping.
8. Teacher learning and change.
9. Reflective practice in science teaching.

REQUIREMENTS

Students are expected to read the complete textbook and all readings (a timeline will be presented on the first day of class). Some of the chapters will be discussed in class. Specifically, students are to:

1. Submit 5 reflections (400 - 600 words) on readings/chapters by using electronic mail (@ 5% each).....25%
2. Develop and present a unit suitable for teaching secondary students based on the perspectives discussed in class.....75%

READINGS Students are expected to have read the first chapter of the text for the first day of class. **REQ REC**

0-7923-3088-1	Roth, W.M.	Kluwer Academic Publishing	<u>Authentic School Science: Knowing and Learning in Open-inquiry Laboratories.</u>	X
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