

## PSCI 4900 -- Teaching Science in Secondary Schools

Spring Semester, 2011  
TR 4:00-4:50, SC 128

Instructor: Dr. Paul R. Larson  
Office: SC 309

Phone: 865-8244  
e-mail: laron\_p@suu.edu

Office Hours: Daily 9-10 AM  
(or by appointment)

The major objective of PSCI 4900 – Teaching Science in Secondary Schools – is to help you, the prospective science teacher, better understand how scientific knowledge is transmitted to students. We will not discuss how to teach, particularly, but how to teach *science*. We will discuss how to instill the love of it in our students. Science is a dynamic and exciting field. Our goal is to learn how to bring that excitement into our classrooms.

General Course Objectives include:

1. Developing specific skills, competencies, and points of view needed by professionals in the field.
2. Developing skill in expressing oneself orally or in writing.
3. Gaining a broader understanding and appreciation of intellectual/cultural activity (your academic discipline).

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### General Course Information and Course Policies

1. Grading: Your grade will be determined from the following activities:

A. Homework exercises

A series of homework exercises will be assigned. If you receive a low score on an exercise, you will be allowed to resubmit it one time in an attempt to raise your grade. These exercises will become part of your portfolio.

B. Student Presentations

You will make three 10 minute oral presentations during the semester. Evaluation sheets will become part of your portfolio.

C. Readings

You will be assigned readings from time to time and will write a short summary or outline of each reading assignment. Your summaries will become part of your portfolio.

D. Observations

Each student will complete at least five hours of one-on-one observation of an in-service secondary teacher. You will keep a journal during the observation. Journal entries will include such things as a time log, reactions to teaching methods employed, teaching strategies, effective use of principles taught in the class, copies of lesson plans (if they are made available), and more general observations. The observations will be included in the portfolio.

E. Portfolio

You will develop a portfolio which will contain course handouts, returned assignments, etc. It will serve as an idea file for later in your teaching career. See the handout for additional suggestions.

F. Exams

We will have two examinations during the semester, a mid-term and a final exam. If you get a low score on an exam, it will not preclude you from receiving an A grade (see notes below). You will be allowed to make up the points you missed on the first test.

G. Quest for Excellence

The Quest for Excellence is an additional project. Possibilities include curriculum development, membership in a professional organization, plan a workshop, teach a class (plan and carry out the entire class, including assessment. This may be one of our classes, another class on campus, or a high school class), write an original research paper on a science education theme, a service-learning project, or another similar project. See me to discuss your ideas.

To receive a grade of B, you must complete items A, B, C, D, E, and F (Items A and D must receive scores of at least 80%).

To receive a grade of A, you must complete items A, B, C, D, E, F, (Items A and D must receive scores of at least 90%), and Item

G. Item G, Quest for Excellence, will only apply to a grade of A. It will not substitute for any other part of the grading scheme.

2. Exams may be rescheduled ONLY with a valid excuse and only by prior arrangement.

3. **Regular attendance and participation is required.** History has demonstrated a very high correlation between attendance and performance in class. And, since this is a participation course, attendance is critical. Because ours is a small class every absence is conspicuous.

This is an excerpt from a letter from a professor of Teacher Education on the subject of attendance (emphasis added).

"About the attendance thing, I really have never had that problem. All my syllabi state that missing more than one class may result in a lowered grade because many learning activities are completed in class. My undergraduate classes are pre-professional courses and we require attendance as a matter of professional training. Children will be in class at the time appointed whether the teacher is or not. ***We want our pre-service teachers to get used to being there whether they feel like it or not.*** We make allowances for illness and other problems, but expect students to call and let us know before class just as if they were employed and needed to contact their principal. We tell them that they are in a transition phase from student to professional. They seem satisfied with that explanation of the attendance requirement."

4. Exam and quiz questions will come from the textbooks, class discussions, and other readings assigned from time to time. We will

- cover topics in class that may not be discussed in the readings, and we may not cover all items contained in the texts.
5. No extra credit work will be authorized.
  6. Assignments are due on the dates specified. Scores on late papers may be deducted up to 50%. May 5 (the last day for the Final Exam period) is the final day any items may be submitted or resubmitted.
  7. **Academic Integrity Policy:** Scholastic dishonesty will not be tolerated and will be prosecuted to the fullest extent. You are expected to have read and understood the current issue of the student handbook (published by Student Services) regarding student responsibilities and rights, and the intellectual property policy, for information about procedures and about what constitutes acceptable on-campus behavior.
  8. **ADA Statement:** Students with medical, psychological, learning, or other disabilities desiring academic adjustments, accommodations, or auxiliary aids will need to contact the Southern Utah University Coordinator of Services for Students with Disabilities (SSD), in Room 206F of the Sharwan Smith Center, or phone (435) 865-8022. SSD determines eligibility for and authorizes the provision of these services and aids.
  9. **HEOA Compliance Statement:** The sharing of copyrighted material through peer-to-peer (P2P) file sharing, except as provided under U.S. copyright law, is prohibited by law. Detailed information can be found at <http://www.suu.edu/it/p2p-student-notice.html>
  10. **Emergency Management Statement:** In case of emergency, the University's Emergency Notification System (ENS) will be activated. Students are encouraged to maintain updated contact information using the link on the homepage of the *mySUU* portal. In addition, students are encouraged to familiarize themselves with the Emergency Response Protocols posted in each classroom. Detailed information about the University's emergency management plan can be found at <http://www.suu.edu/ad/facilities/emergency-procedures.html>
  11. Information contained in this syllabus, other than grade and absence policies, may be subject to change with advance notice, as deemed appropriate by the instructor.
  12. Please feel free to visit me at any time. If posted office hours are not convenient, please make an appointment for another time. Your success is my first priority.

### *Writing Course Objectives*

Dear Paul,

Objectives and outcomes do seem the same and they really are, especially for someone like you who already plans courses based on what students will know, do, and feel as a result of participating in the activities of the course. I think the "outcomes" idea comes from a state initiative for universities to be able to assess courses more accurately. If an instructor states that "such and such" will result in his or her course, can "such and such" be measured? If "such and such" equals "critical thinking" where is the evidence that students will have developed critical thinking skills in the course? So, in this example, the objective is students developing critical thinking. The outcome is perhaps a persuasive paper, or a classroom debate in which students must be prepared to argue various sides of an issue. It is possible to have multiple outcomes for the same objective.

One way to think about curriculum planning is to break objectives into three parts: content, process, and product or performance. "In their studies of natural resources (content), students will analyze professional literature for various sides of environmental issues and formulate arguments for various points of view. (Literature review is a research process. Analysis and argumentation are critical thinking processes). They will share what they have learned in a formal classroom debate (product). The model for writing these objectives is:

"In their study of (content), students will (research and thinking processes) and will share what they have learned in/by (product or performance)."

To translate this model to the language being required by the state, we can think of the content and process components as objective and the product or performance as the student outcome that is evidence that the objective has been met.

When I was on the university curriculum committee, we required course proposals to explicitly state what evidence students would produce that could be used to measure whether or not the objectives of the course were being met. We would say over and over, "Yes, professor, you want your students to 'understand' the principle, a worthy objective. But, what will you ask your students to do so that you can assess whether or not they really do understand? Professor, the outcome is what your students can do as a result of being in your class." Some of them never got it.

Sorry this took a while. I hope it helps.

Love, Ann

Thus, your learning objectives should contain all three elements:

Content -- What are we doing? Where are we going? Simple to complex.

Process -- How do we get there? Basic knowledge to evaluation (Bloom's Taxonomy).

Product -- Where are we going? Fundamental to sophisticated.

*All education is self-education. A teacher is only a guide, to point out the way, and no school, no matter how excellent, can give you an education. What you receive is like the outlines in a child's coloring book. You must fill in the colors yourself.*

*-L. L'Amour*

**PSCI 4900 – Teaching Science in Secondary Schools – Spring 2011**

***NOTE: Due to my duties as department chair, I may be called upon to be absent from class now and again during the semester. You will be notified of any changes in this calendar.***

Week		Monday	Tuesday	Wednesday	Thursday	Friday
1	J A N U A R Y	10	11 Course Introduction	12	13 Bloom's Taxonomy	14
2		17 <b>Martin Luther King Jr. Recess</b>	18 State & National Standards	19	20 Writing Learning Objectives	21
3		24	25 Writing Learning Objectives	26	27 Inquiry	28
4		31	1 Inquiry	2	3 Inquiry	4
5	F E B R U A R Y	7	8 Demonstration	9	10 Demonstration	11
6		14	15 Demonstration	16	17 Student Presentations	18
7		21 <b>Presidents' Day Recess</b>	22 Student Presentations	23	24 OBSERVATION	25
8		28	1 OBSERVATION	2	3 <b>Exam 1</b>	4
9	M A R C H	7	8 Question and Discussion	9	10 Question and Discussion	11
10		14 <b>Spring Recess</b>	15 <b>Spring Recess</b>	16 <b>Spring Recess</b>	17 <b>Spring Recess</b>	18 <b>Spring Recess</b>
11		21	22 Student Presentations	23	24 Student Presentations	25
12		28	29 OBSERVATION	30	31 OBSERVATION	1
13	A P R I L & M A Y	4	5 Classroom Technologies	6	7 Classroom Technologies	8
14		11	12 Cooperative Learning	13	14 Cooperative Learning	15
15		18 <b>E aster Recess</b>	19 Cooperative Learning	20	21 Student Presentations	22 <b>Good Friday Recess</b>
16		25	26 Student Presentations	27	28 Student Presentations Wrapping Up	29 <b>Study Day</b>
17		2 <b>Finals</b>	3 <b>Final Exam 5:00-6:50 PM</b>	4 <b>Finals</b>	5 <b>Finals</b>	6 <b>Finals</b>