

Physical Science 183 – Earth Science For Elementary Teachers

Winter 2008

Lecture: S: 10:20 am – 1:20 pm

Room: PS 223

Activity: S: 8:30 am – 10:10 pm

Room: PS 227

Instructor: Sonjia Leyva

Office: PS 221, 323-343-2149

Office Hours: S: 8:15 – 8:30 am

Webpage: www.calstatela.edu/faculty/sleyva

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Course Description: Primarily for students preparing for the Multiple Subjects credentials. Basic concepts in earth science correlated with the California science standards for the Multiple Subjects credential. Topics illustrated by demonstrations and activities. Lecture 2 ½ hours and activity 2 hours per week, plus additional time for assignments and studying. Satisfies “Elementary Subject Matter Teacher Preparation Program Common Core” Science Requirement.

Course Objectives: This class is an introduction to various Earth Science topics, including minerals, rocks, plate tectonics, oceans, weather, and the solar system. Lectures are used to provide the background necessary for teaching Earth Science; these concepts are reinforced through weekly activities. By the end of the quarter, students will have a basic understanding of the Earth Sciences, and be able to apply this knowledge by creating standards based lessons for their classrooms..

Text & Materials: You will need to bring the following no **every class session**.

- Foundations of Earth Science, 4th edition, by Lutgens and Tarbuck, Prentice Hall 2002.
- Earth Science for Teachers Activity Manual, compiled by Sonjia Leyva (download at <http://www.calstatela.edu/faculty/sleyva>)
- a calculator, color pencils, a ruler (combination metric/standard scale), plus any other supplies required for the activities

Tentative Schedule

Week	Date	Lecture Topic	Textbook	Activity
1	1/5	Introduction Solar System	- Ch. 15	Introduction, prep for future activities, Science Inquiry
2	1/12	no class!		Start Weather Journal
3	1/19	Plate Tectonics Minerals	Ch. 1 Ch. 5	Minerals
4	1/26	Igneous Activity & Rocks		Rocks, Part 1
5	2/2	Sedimentary Environments & Rocks Lesson plans due	Ch. 2 - 4	Rocks, Part 2
6	2/9	Lecture Midterm Exam Metamorphic Environments & Rocks	Ch. 2 & 6	Rocks, Part 2
7	2/16	Earthquakes extra credit EQ kits due	Ch. 6	Earthquakes
8	2/23	Geologic Time	Ch. 8	Geologic Time
9	3/1	Oceans	Ch 9 &10	Presentations
10	3/8	Weather - all other extra credit due	Ch. 11 - 14	Activity Final Exam
11	3/15	Lecture Final Exam - Saturday, March 15 from 8:00-10:30 a.m.		

REQUIREMENTS

Exams (100 points each) - There are a total of three exams scheduled between the lecture and activity portions of the class: two equally weighted exams are scheduled for the lecture (one midterm and one final) and one exam is scheduled for the activity (one final). Each exam is worth 100 points. **Make-up exams will be given only to those who can verify a valid excuse for missing an exam.** The make-up will be given at a time that is mutually agreeable to both the student and myself, but must be arranged prior to the initial exam. **Failure to take the make-up exam within two weeks of the original exam date will result in the missed exam counting in as a zero.** In addition, the exam question sheet must be returned to me after the exam and after the exam review. Failure to do so will result in a ten (10)-point reduction in the student's grade for that exam.

Earth Science Lesson Plan & Presentation (100 points) – Each student will participate in a group presentation to be given to the class during the semester. The assignment is to develop a relevant age-appropriate unit of study that addresses one of more of the major content areas of Earth Science; this will include preparing a lesson plan and a 10 - 15 minute presentation for your unit of study. Guidelines for these presentation are outlined on the attached pages. Presentations are due on the 9th week of the quarter. **Late submissions will not be accepted**

Activities (20 points per lab) – Students will participate in a variety of activity experiments/exercises designed to introduce you to various aspects of Earth Science. In addition, students are required to create a "Science Notebook Entry" to be submitted with the any activity worksheets. All work is due the following week at the beginning of class unless otherwise noted. Students are encouraged to work together in completing the activity work. However, each student should be sure to understand the techniques and concepts involved because midterm and final exam test problems will be very similar to activity problems. You will be required to keep all of your activities in a "Science Notebook" which will be checked weekly. Guidelines for the Science Notebooks are outlined on the attached pages. Activities are due the following week. **Late submissions will not be accepted. Failure to take the make-up assignment within one week of the original assignment date OR before the last week of class will result in the missed exam/assignment counting in as a zero.**

Class Attendance: Students are expected to attend each class session and to arrive on time. It will be difficult to make up missed class sessions. However, if you miss a class session of valid reasons (illness), it will up to you to make arrangements to complete the lab exercise. You will receive 2 points per lecture session and 2 points per activity session for attendance; each tardy is worth 1 point, and each unexcused absence is worth 0 points.

Internet Access - Internet access is suggested for this class because much of the course content will be posted on the class web site, www.calstatela.edu/faculty/sleyva. Access at home or work is fine as long as you can view the web pages regularly and have a reasonably fast connection. If you don't have access at home or work, you can get free access through an account here at Cal State LA. To get a computer account at Cal State LA, go to the Academic Technology Support (ATS) Office in (basement) King Hall D140. You will need identification and proof of registration.

METHODS OF EVALUATION	Points	Total	% of
Lecture Exams	2 tests @ 100 points each	200	33.3%
Activity Exams	1 test @ 100 points each	100	16.7%
Activities	7 activities @ 20 points each	140	23.3%
Lesson Plan & Presentation	100 points	100	16.7%
Attendance	2 points per class session	60	10.0%
		600	100%

Grade	Points
A = >90%	> 540.0 points
B = 80 - 89%	480.0 - 539.9 points
C = 70 - 79%	420.0 - 479.9 points
D = 60 - 69%	360.0 - 419.9 points
F = < 60%	< 360.0 points

You may do up to 15 points of extra credit work to raise your total points earned. **All extra credit with the exception of the EQ kit is due the last day of class - not the day of the final!** Your grade is based on your percentage score out of 600 points. Grades will be assigned using + and - (i.e., B+, B or B-). Your grades will be available on the class website, www.calstatela.edu/faculty/sleyva/grades/index.html.

IMPORTANT POLICIES (a.k.a. the “fine print”)

- **Statement of Reasonable Accommodation:**
 - The Department of Geological Sciences faculty members fully support the Americans with Disabilities Act (ADA). The members of the faculty will provide reasonable accommodation to any student with a disability who is registered with the Office of Students with Disabilities (OSD) who needs and requests accommodation. The faculty may wish to contact the OSD to verify the presence of a disability and confirm that accommodation is necessary. The OSD will arrange and provide for the accommodation.
 - Reasonable accommodation may involve allowing a student to use an interpreter, note taker, or reader; accommodation may be needed during class sessions and for administration of examinations. The intent of the ADA in requiring consideration of reasonable accommodation is not to give a particular student an unfair advantage over other students, but simply to allow a student with disability to have an equal opportunity to be successful.
- **Student Conduct:**
 - Student conduct is viewed as a serious matter by the faculty members of the Department of Geological Sciences. The Department faculty members assume that all students will conduct themselves as mature citizens of the campus community and will conduct themselves in a manner congruent with university policies and regulations. Inappropriate conduct is subject to discipline as provided for in Title 5, California Code of Regulations (see student conduct: rights and responsibilities, and student discipline, CSULA General Catalog). Academic honesty is expected of all students in the Department, in accordance with University policy. There are established university reporting procedures if a student is suspected of committing an academically dishonest act.
 - The University has a clearly defined policy on Academic Honesty. This policy will be enforced in this class. **Cheating and plagiarizing will not be tolerated.** Students caught plagiarizing and/or cheating will be subject to the consequences and set forth in the University Catalog, Appendix D - Academic Honesty. You can access it online at: <http://catalog.calstatela.edu>
- **Make-up exams:** Make-up exams will be given only to those who can verify a valid excuse for missing a quiz. The make-up will given at a time that is mutually agreeable to both the student and myself. **Failure to take the make-up exam within two weeks of the original exam date will result in the missed exam counting in as a zero.**
- **Grading:**
 - University policy allows a grade of incomplete to be given only to those who have been sick, injured, or have a similar valid excuse. A grade of “incomplete” will not be given after poor performance in the course.
 - If you are repeating any Cal State L.A. course in order to remove a D or an F from your transcript, you must file an **academic renewal petition** in Administration 101 no later than the last day to add a class. Instructions for doing this may be found under **"Academic Renewal"** in your Schedule of Classes.
 - University policy requires that all students shall be graded in *exactly* the same fashion. What does this mean? You may not ask for extra assignments or to repeat an exam to improve your grade, or additional assignments after the course is completed.
- **Avoid the hassles.** Take the Writing Proficiency Examination (WPE) after you have completed your English Composition and prior to the completion of 135 units in order to avoid a registration hold. The dates for the WPE are published in the Schedule of Classes. Enroll by registering in UNIV 400 and paying the \$15 exam fee. Do it now!!!

Student Presentations

Scoring:

- | | |
|---|------------------------|
| Good (all criteria met or exceeded) | = full points |
| Fair (most criteria met, a few mistakes) | = ½ of possible points |
| Poor (few criteria met, lots of mistakes) | = ¼ of possible points |
| None (not done) | = no points |

	Points possible
Lesson Plan (see attached sheet)	25 points
Accuracy of content (30 points)	
Understanding of material being presented	10 points
Quality of research	5 points
Accuracy of material being presented	5 points
Addresses State Standards	10 points
Quality of presentation (25 points)	
Quality of images, props and text	5 points
Logical flow of ideas	5 points
Stays within time limits (-½ point for each minute over/under)	5 points
Delivery (speaks clearly, not rushed, pronounces words correctly)	5 points
Material relevant to topic	5 points
"Self Grades" - see attached evaluations (10 points)	10 points
Class Evaluations (Average of all evaluations - 10 points)	10 points
	Total: 100

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Student Presentation Co-Evaluation

Name of Evaluee: _____ Role: _____

Presentation: _____

On a scale of 1 to 5 (1 is the worst, 5 is the best), rate the following:

_____ Participation (to what extent did the individual participate?)

_____ Quality of involvement (how valuable was the person's involvement in the project?)

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_____ Quality of involvement (how valuable was the person's involvement in the project?)

Science Lesson Plan (25 points possible)

You will need to develop a relevant age-appropriate unit of study that addresses one or more of the major content areas of Earth Science. The lesson plan should include the following: Materials used; who the unit is directed to (grade level); content standard(s) addressed; adaptations and/or modifications for special education classes, higher/lower level learners, English Language Learner (ELL), Gifted and Talented Education (GATE) students, etc; references; uses of technology; charts and graphs (if needed); evaluation criteria and scoring. The lesson plan is due the day of the LECTURE MIDTERM. Late submissions will not be accepted

	Points Awarded
Typing and margin instructions followed	
10 to 12 point Arial or Times Roman (or similar) font	3 points
1 ½ line spacing	
1" margins on all sides	
Format (15 points total)	
Materials used	1 point
Who the unit is directed to (grade level)	1 point
Content standard(s) addressed	2 points
Description of Activity	
Originality	5 points
Accuracy of content	
Understanding of material	
Logical flow of ideas	
Development of ideas	
Adaptations and/or modifications for:	
Special education classes	2 points
Higher/lower level learners	
English Language Learner (ELL)	
Gifted and Talented Education (GATE) students	
References	5 points
Uses of technology	2 points
Evaluation criteria and scoring	2 points
Spell check / Typos	2 points
Total possible points	25 points

Science Notebooks

One of the goals of this class is to help prepare you to teach an elementary school science class. The labs and Science Activity presentation are designed to guide you in how to prepare an appropriate lesson plan and/or activities for your students.

After each activity session you should write up a short report that you can use as a reference in the future. THESE REPORTS ARE TO BE SUBMITTED WITH YOUR ACTIVITIES! Reports should be typed in a traditional 10 or 12 point font, 1 ½ line spacing and 1 inch margins on all sides. After the reports and activities have been graded, place the reports with the appropriate activity pages in a 3-ring binder. I will check the notebooks twice - at the activity midterm and activity final. Part of your grade for each activity will be based on the quality and neatness of your notebook and its contents. You will receive 10 points for the activity, and 10 points for the report for a total of 20 points. Any copies of the presentation lesson plans provided to you by your fellow students should also be included.

Your Report needs to include the following:

Introduction

Introduce the topic (ie, minerals) and related learning activities (what we did in the activity). What is this activity about? What are your goals for studying this topic - OTHER than to pass this class?

Standards

Place the topic and related activities in the context of the Science Standards for California Public Schools. In particular, identify specific standards from both content and investigation/experimentation for each grade level from K-6 that are addressed by the topic and related learning activities. You might include a table that looks something like this:

Grade Level	Content Standard	Investigation/Experimentation Standard
3	1c, 1f, 3d, 4c	6a, 6d

Teaching Points

Discuss or outline briefly the concepts you will need to cover with your students prior to teaching this activity. What do they need to know beforehand?

Resources needed

List any materials or resources needed to perform this activity. Be thorough. What did we do in class? Other resources?

The Activity

Provide a detailed description of what was done in the activity. The goal is to be able to re-create this activity at a later date. Also include examples of your original coursework (i.e. lecture notes, sketches, investigative results, literature reviews, descriptions of in-class activities, etc.). Number each item and write the Item No. in the upper right-hand corner of the first page. Refer to the items, as needed, using these Item Numbers. For example, "We used grain size to separate the igneous rock samples into two groups: volcanic and plutonic. Item 1 contains the results." [Item 1 is a table you created showing two groups of rocks by name. One group is under the heading Volcanic (glassy or fine-grained). The other group is under the heading Plutonic (coarse-grained).]

Misconceptions

Describing any misconceptions (yours or your students) that might arise in association with the topics covered in the activity and your strategy for recognizing and addressing them.

Content Integration

Describe a strategy for connecting the topic with topics from other units (i.e. English, Reading, Math, Geography, etc.) Connections with southern California history and geography are particularly easy to find, but don't forget to look for and describe connections to other content areas.

Adaptations and Modifications

How can you adapt this activity to the following students?

1. Special education classes
2. Higher/lower level learners
3. English Language Learner (ELL)
4. Gifted and Talented Education (GATE) students

Follow-up activities

Follow-up activities act to reinforce the concepts learned by the student. What type of activities could be used to further enhance the learning experience? Be creative!

Reflection and Evaluation Questions

1. What is the focus of this activity? In other words, why do this?
2. What are the applications to your classroom?
3. What are the applications to the real world?
4. List 3 or 4 ideas that you most want to remember
5. What information and strategies were particularly relevant?
6. What worked? What didn't?
7. If you were able to modify the training in any way, what would you do?