CALIFORNIA STATE UNIVERSITY SAN MARCOS
COLLEGE OF EDUCATION
EDMS 545 Science Education in Elementary Schools
Fall 2008 Tuesdays 8:00-2:15 (lunch 11:30-12:15)

Instructor: **Dr. Kathy I. Norman** **Office Hours: after each class and by apt. Please call or email to set up a convenient time to meet.**
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COE MISSION STATEMENT

The mission of the College of Education Community is to collaboratively transform public education by preparing thoughtful educators and advancing professional practices. We are committed to diversity, educational equity, and social justice, exemplified through reflective teaching, life-long learning, innovative research, and on-going service. Our practices demonstrate a commitment to student-centered education, diversity, collaboration, professionalism and shared governance. (adopted by COE Governance Community, October 1997)

COURSE PREREQUISITES

Successful completion of prerequisites, admission to the Multiple Subject Credential Program, and successful completion of Semester 1 of the Multiple Subject Credential Program.

COURSE DESCRIPTION

This course is designed to provide a comprehensive overview of the objectives, skills, concepts, experiments, materials, and methods necessary to teach science to elementary school children. A series of team activities will provide you with first-hand experiences in these areas. This course focuses on instructional methods, techniques, materials, lesson planning, curriculum development, organization and assessment in science. The integration of curricular areas is addressed. Methods of cross-cultural language and academic development will be integrated into the course.

REQUIRED TEXTS

- Friedl, A.E. & Koontz, T.Y. (2005). *Teaching Science to Children, An Inquiry Approach, 6th Ed.* NY: McGraw-Hill.
- *Science Framework for California Public Schools.* (2003) Sacramento: California Dept. of Education.
- Lamb, R. *Communication Basics: Overview of Nonviolent Communication*. Center for Nonviolent Communication.
- 2 Large Blue Books
- 1 Laboratory Composition Book
- $1.50 cash for visit to Jack's Pond Nature Center

COURSE OBJECTIVES

1. Demonstrate proficiency with inquiry skills of observing, measuring, inferring, classifying, predicting, verifying predictions, hypothesizing, isolating variables, interpreting data, and experimenting.
2. Identify exemplary materials (curriculum kits, science programs, textbooks, equipment, technology, ancillary materials) appropriate for elementary school children.
3. Demonstrate knowledge and understanding of the California Science Framework, the California Science Content Standards, and the National Science Education Standards.
4. Demonstrate an understanding of the physical, earth and life science concepts included in the K-8 California Science Content Standards, and how to design lessons to teach the concepts.
5. Use of the Learning Cycle model of instruction to teach science in a contemporary manner.
6 Use of technology in elementary science teaching.
7. Demonstrate confidence in leading and performing investigations designed to teach science concepts, science process skills, and scientific attitudes.
8. Use of authentic methods of assessment to evaluate learning of science concepts and processes.

9. Design of an elementary science teaching mini-unit.
10. Practice strategies to include all students in science (linguistically and culturally diverse, students with disabilities and other students with special needs).

COURSE TOPICS

Constructivism & The Learning Cycle Model of Teaching
Concept Mapping
Objectives for Student Learning & Science Concept Definitions
Developing Essential Questions
California Science Content Standards
California Science Framework
Teaching English Language Learners in Science
Infusing Writing Activities in Science Lessons
Science Curriculum Kits and State Approved Texts
Science Process Skills and Scientific Attitudes
Current Issues in Science Education
Infusing Technology into Science Teaching
Authentic Assessments in Science
Science Projects, Student Research, Science Fairs
Safety in the Science Class
Inclusion and Teaching Science to Students with Special Needs
Benchmarks and the National Science Education Standards

STUDENT LEARNING OUTCOMES

Teacher Performance Expectation (TPE) Competencies
Standards of Quality and Effectiveness for Professional Teacher Preparation Programs
California Commission on Teacher Credentialing
The course objectives, assignments, and assessments have been aligned with the CTC standards for the Multiple Subject Credential. This course is designed to help those seeking a California teaching credential to develop the skills, knowledge and attitudes necessary to assist schools and districts in implementing effective programs for all students. The successful candidate will be able to merge theory and practice in order to realize a comprehensive and extensive educational program for all students. You will be required to formally address the following TPEs in this course: TPE 1A Science and TPE 5. To successfully meet these TPEs, you should post a fully developed response on TaskStream by the due date/time indicated on the syllabus. Please attach your artifacts with your responses, and request feedback from me on TaskStream.

****NOTE**: Response drafts for TPE 1A and TPE 5 should be completed by you prior to class session 8 (Oct. 20, 2008) which will be held in a computer lab on campus. During this class session, your instructor will review both of your drafts and give suggestions for improving them if needed. You will be given points for this activity if both of your drafts are reviewed by your instructor during class session 13. Because the TPE assignment is considered a final examination, if you do not post both TPE entries and respective artifacts to TaskStream by 12:00 noon, you will not pass this course.

TPE 1A: Teaching Science in a Multiple Subject Assignment
Candidates for a Multiple Subject Teaching Credential demonstrate the ability to teach the state-adopted academic content standards for students in science (K-8). They balance the focus of instruction between science information, concepts, and investigations. Their explanations, demonstrations, and class activities serve to illustrate science concepts and principles, scientific investigation, and experimentation. Candidates emphasize the importance of accuracy, precision, and estimation.

TPE 5: Student Engagement
Candidates for Teaching Credentials clearly communicate instructional objectives to students. They ensure the active and equitable participation of all students. They ensure that students understand what they are to do during instruction and monitor student progress toward academic goals. If students are

struggling and off-task, candidates examine why and use strategies to re-engage them. Candidates encourage students to share and examine points of view during lessons. They use community resources, student experiences, and applied learning activities to make instruction relevant. They extend the intellectual quality of student thinking by asking stimulating questions and challenging student ideas. Candidates teach students to respond to and frame meaningful questions.

INFUSED COMPETENCES

Authorization to Teach English Learners
This credential program has been specifically designed to prepare teachers for the diversity of languages often encountered in California public school classrooms. The authorization to teach English learners is met through the infusion of content and experiences within the credential program, as well as additional coursework. Students successfully completing this program receive a credential with authorization to teach English learners. (approved by CCTC in SB 2042 Program Standards, August 02))

Special Education
Consistent with the intent to offer a seamless teaching credential in the College of Education, this course will demonstrate the collaborative infusion of special education competencies that reflect inclusive educational practices.

Visual and Performing Arts
This course encourages the infusion of the visual and performing arts in order to prepare our candidates with the skills to integrate the arts in their teaching. The Visual and Performing Arts Content Standards for California Public Schools (http://www.cde.ca.gov/cdepress/standards-pdfs/visual-performing-arts.pdf) describe what every student should know and be able to do in the visual and performing arts, pre-kindergarten through grade 12 in five strands: artistic perception; creative expression; historical and cultural context; aesthetic valuing; and connections, relationships and applications.

Technology
This course infuses technology competences to prepare our candidates to use technologies, emphasizing their use in both teaching practice and student learning.

COURSE POLICIES

COE Attendance Policy
Due to the dynamic and interactive nature of courses in the College of Education, all students are expected to attend all classes and participate actively. Absences and late arrivals/early departures will affect the final grade. At a minimum, students must attend more than 80% of class time, or s/he may not receive a passing grade for the course at the discretion of the instructor. Individual instructors may adopt more stringent attendance requirements. Should the student have extenuating circumstances, s/he should contact the instructor as soon as possible.

For this class, **if you are absent 1 day, your highest possible grade is a B. If you are absent more than 1 day, your highest possible grade is a C**, which means that you will not pass the course. **Late arrivals and early departures** will lower your course grade. For every two times that you are late or leave early, your course grade will be lowered by one letter grade. If you have an emergency or extenuating circumstances, please see the instructor to make arrangements accordingly. Absences do not change assignment due dates. With few exceptions, late assignments will not be accepted.

Technology
Students are expected to demonstrate competency in the use of various forms of technology (i.e. word processing, electronic mail, WebCT6, use of the Internet, and/or multimedia presentations). Specific requirements for course assignments with regard to technology are at the discretion of the instructor. Keep a digital copy of all assignments for use in your teaching portfolio.

You must use your WebCT email account for this class. The best way to contact me is by WebCT email.

Computer Use During Class
You are welcome to use a laptop computer in class when working on class assignments, for example. However, you will need to save checking email or other personal computer use for time outside of class. Most students find it disruptive when they are focusing on class activities or listening to presentations and can hear keyboarding in the classroom. Your kind consideration is greatly appreciated by all!

Electronic Communication Protocol:
Electronic correspondence is a part of your professional interactions. If you need to contact the instructor, e-mail is often the easiest way to do so. It is my intention to respond to all received e-mails in a timely manner. Please be reminded that e-mail and on-line discussions are a very specific form of communication, with their own nuances and etiquette. For instance, electronic messages sent in all upper case (or lower case) letters, major typos, or slang, often communicate more than the sender originally intended. With that said, please be mindful of all e-mail and on-line discussion messages you send to your colleagues, to faculty members in the College of Education, or to persons within the greater educational community. All electronic messages should be crafted with professionalism and care.
Things to consider:

- Would I say in person what this electronic message specifically says?
- How could this message be misconstrued?
- Does this message represent my highest self?
- Am I sending this electronic message to avoid a face-to-face conversation?

In addition, if there is ever a concern with an electronic message sent to you, please talk with the author in person in order to correct any confusion.

CSUSM Academic Honesty Policy
Students will be expected to adhere to standards of academic honesty and integrity, as outlined in the Student Academic Honesty Policy in the CSUSM University Catalog. All written work and oral assignments must be original work. All ideas/materials that are borrowed from other sources must have appropriate references to the original sources. Any quoted material should give credit to the source and be punctuated with quotation marks.

Students are responsible for honest completion of their work including examinations. There will be no tolerance for infractions. If you believe there has been an infraction by someone in the class, please bring it to the instructor's attention. The instructor reserves the right to discipline any student for academic dishonesty in accordance with the general rules and regulations of the university. Disciplinary action may include the lowering of grades and/or the assignment of a failing grade for an exam, assignment, or the class as a whole. Incidents of Academic Dishonesty will be reported to the Dean of Students. Sanctions at the University level may include suspension or expulsion from the University.

Plagiarism
As an educator, it is expected that each student will do his/her own work, and contribute equally to group projects and processes. Plagiarism or cheating is unacceptable under any circumstances. If you are in doubt about whether your work is paraphrased or plagiarized, see the Plagiarism Prevention for Students website http://library.csusm.edu/plagiarism/index.html. If there are questions about academic honesty, please consult the University catalog.

All University Writing Requirement
In keeping with the All-University Writing Requirement, all 3-unit courses must have a writing component of at least 2,500 words (approximately 10 pages), which can be administered in a variety of ways. Writing requirements for this course will be met as described in the assignments.

Person-First Language
Use "person-first" language in all written and oral assignments and discussions (e.g., "student with autism" rather than "autistic student").

Students With Disabilities Requiring Reasonable Accommodations
Students must be approved for services by providing appropriate and recent documentation to the Office of Disabled Student Services (DSS). This office is located in Craven Hall 5205, and can be contacted by phone at (760) 750-4905, or TTY (760) 750-4909. Students authorized by DSS to receive reasonable accommodations should meet with their instructor during office hours or, in order to ensure confidentiality, in a more private setting.

GRADING STANDARDS

A = 93 – 100	A- = 90 – 92	
B+ = 87 – 89	B = 83 – 86	B- = 80 – 82
C+ = 77 – 79	C = 73 – 76	C- = 70 – 72
F = 0 – 69		

A 90-100%: Outstanding work on assignment, excellent syntheses of information and experiences, great insight and application, and excellent writing.
B 80-89%: Completion of assignment in good form with good syntheses and application of information and experiences; writing is good.
C 70-79%: Completion of assignment, adequate effort, adequate synthesis of information, and application of information and experiences, writing is adequate.
D 60-69%: Incomplete assignment, inadequate effort and synthesis of information, writing is less than adequate.

It is expected that students will proofread and edit all their assignments prior to submission. Students will ensure that the text is error-free (grammar, spelling), and ideas are logically and concisely presented. The assignment's grade will be negatively affected as a result of this oversight. Each assignment will be graded approximately 80% on content and context (detail, logic, synthesis of information, depth of analysis, etc.), and 20% on mechanics. All reference/resource citations should use appropriate citation form. Please consult with the American Psychological Association (APA) format in the APA Manual, 5th edition for citation guidance.

You must maintain a B average (3.0 GPA) in your teacher education courses to receive a teaching credential from the State of California. Courses are not accepted if final course grades are below a C+.

Keep digital copies of all assignments for your Credential Program Electronic Portfolio. You will not be assigned a course grade unless all the assignments are turned in.

COMPASSIONATE COMMUNICATION

We will be including a study of Rachel Lamb's booklet Communication Basics: An Overview of Nonviolent Communication. This booklet is published by the Center for Nonviolent Communication. In Nonviolent Communication (also called Compassionate Communication), Marshall Rosenberg presents his approach to communication that centers on compassionate connection. Marshall encourages all individuals, and especially educators, to motivate "by a reverence for life." Rosenberg's Compassionate Communication process offers educators the tools to create exceptional learning environments.

Compassionate Communication (also called Nonviolent Communication) will help you:
- Maximize the individual potential of all students
- Improve trust and connection in your classroom community
- Strengthen student interest, retention and connection to their work
- Find cooperation without using demands
- Improve classroom teamwork, efficiency and results

Marshall B. Rosenberg, Ph.D. is the internationally acclaimed author of *Nonviolent Communication: A Language of Life*, and *Speak Peace in a World of Conflict*. He is the founder and educational director of the Center for Nonviolent Communication (CNVC). He travels throughout the world promoting peace by teaching these remarkably effective communication and conflict resolution skills. See www.cnvc.org resources for additional books and resources on how to use compassionate communication in teaching.

COOPERATIVE LEARNING ROLES FOR SCIENCE GROUP MEMBERS

- Materials Manager
- Reporter
- Recorder
- Timekeeper/Taskmaster
- Lead Investigator

Heterogeneous groups are best. The teacher assigns the group members and the roles; roles are rotated.

ASSIGNMENTS

Each written assignment is expected to have a clear organizational presentation and be free of grammar, punctuation and spelling errors. There will be a reduction in points for the above mentioned errors. Late assignments are not accepted. Prepare carefully for class, and be ready to discuss readings and assignments thoughtfully.

1.	Active Participation and Collaboration (all or nothing credit given)	5%
2.	Reading Journal (Concept Maps and Big Ideas Papers)	10%
3.	California Science Framework and Standards Activity	10%
4.	Leadership of Hands-on Science Lesson Activities	20%
5.	Learning Cycle Lesson Drawings	5%
6.	Learning Cycle Lesson Explanations	5%
7.	Science Exploratorium Lesson Plan/Presentation	10%
8.	Science Unit and Presentation	20%
9.	Course Reflection	5%
10.	Complete Science TPEs during last class	10%

DESCRIPTIONS OF ASSIGNMENTS

1. Active Participation and Collaboration (all or nothing credit) - 5%

Teacher education is a professional preparation program and students will be expected to adhere to standards of dependability, professionalism, and academic honesty (refer to rubric attached to this syllabus). Grading will include a component of "professional demeanor." Students will conduct themselves in ways that are generally expected of those who are entering the education profession, including the following:

- On-time arrival to all class sessions and attendance for the entire class period
- Advance preparation of readings and timely submission of assignments
- A positive attitude at all times
- Active participation in all class discussions and activities
- Respectful interactions with the instructor and other students in all settings
- Carefully considered, culturally aware approaches to solution-finding

Class Discussions and Participation: Students will engage in active learning each class session, and will be expected to actively participate. You may loose points for lack of participation based on the following criteria:

- Do you participate in class discussions productively, sharing your knowledge and understandings?
- Do you interact productively with your peers, taking on a variety of roles (leader, follower, etc.)?
- Do you contribute appropriately to group work—do you "do your share"?
- Are you able to accept others' opinions?
- Are you supportive of others' ideas?
- Do you support your peers during their presentations?
- Can you monitor and adjust your participation to allow for others' ideas as well as your own to be heard?

PCP Rubric: Participation, Collaboration and Professionalism

Students are expected to actively participate, collaborate, and demonstrate professionalism at all times.

	Excellent	Acceptable	Unacceptable	Comments
Attitude Do you show a positive attitude toward class, "the work" and learning?	Always displays a positive attitude. May offer constructive criticism and include alternatives that show initiative.	Sometimes displays a positive attitude. May offer constructive criticism and include alternatives that show initiative.	Seldom has a positive attitude. Often is critical. Does not offer alternative solutions to criticism.	
Participation Do you participate in class discussions productively, sharing your knowledge and understandings?	Attends every class, always on time and well prepared, and never leaves early. Gives closest attention to class activities & speakers.	Attends every class, on time and prepared, and never leaves early. Gives most attention to class activities and speakers.	Is not always ready when class time begins. Doesn't give full attention in class; sometimes talks when others are speaking.	
Professionalism Do you exhibit professional behavior at all times?	Consistently behaves, talks and works in a professional manner, regardless of task/topic.	Most of the time, behaves, talks and works in a professional manner.	Seldom behaves, talks, and works in a professional manner, regardless of task/topic.	
Collaboration Can you monitor and adjust your participation to allow for others' ideas to be heard? Are you supportive of others' ideas and work?	Consistently listens to, shares with, and supports the efforts of others. Tries to keep people working well together.	Most of the time listens to, shares with, and supports the efforts of others, but sometimes is not a good team member.	Rarely listens to, shares with, and supports the efforts of others. Is not always a good team player.	
Contributions Do you contribute to whole class and group work? Do you "do your share"?	Consistently provides useful ideas; always stays focused on the task. Exhibits a lot of effort and valuable contributions.	Most of the time provides useful ideas and stays focused. A satisfactory group member who does what is required.	Rarely provides useful ideas; not always focused. Reluctant to participate. Lets others take charge.	
Disposition toward teaching Do you exhibit a positive disposition towards teaching all students?	Consistently demonstrates concern in learning to teach all children. Always demonstrates strong commitment toward developing (a) an understanding of children, (b) teaching strategies, and (c) knowledge of the CA Standards for the Teaching Profession (CSTP), Teacher Performance Expectations (TPE), and CA Standards.	Most of the time demonstrates concern in learning to teach all children. Often demonstrates commitment toward developing (a) an understanding of children, (b) teaching strategies, and (c) knowledge of the CSTP's, TPE's, and CA Content Standards.	Rarely shows concern in learning to teach all children. Rarely demonstrates commitment toward developing (a) an understanding of children, (b) teaching strategies, and (c) knowledge of the CSTP's, TPE's, and CA Content Standards.	
Leadership Do you interact productively with your peers and show leadership initiative?	Shows strength through leadership in class activities; other students respect you as a leader.	Effectively participates and contributes, but rarely shows leadership qualities.	Does not show leadership in any area of class.	

2. Reading Journal (individual**) - 15%**

The purpose of the journal entries is to help you carry the science content from short term into long term memory and understanding so that you can more easily teach science when you become a classroom teacher. The assigned readings provide an important foundation for your increasing understanding of how to effectively teach science. You will need two large Blue Books. Reading journals (blue books) will be collected each class session and will only receive full points if completed by the date indicated in the schedule. You must use Blue Books, although you may type and staple in your entry. Spiral paper stuck in Blue Books will not be accepted.

Each class session you will be required to complete journal entries for one chapter (your choice of which chapter from the assigned readings). The first journal entry, which will consist of a Big Ideas Paper for one of the chapter readings assigned for Class Session 2, is due by the start of class time. The Big Ideas Paper consists of explaining (a) the key science concepts and (b) 2 teaching applications for one of the chapters assigned for that week (from whichever chapter you choose).Then for the next week (Session 3), you will create a Concept Map (following procedures taught in class) for one of the assigned chapter readings for that week (your choice of which chapter from the assigned readings). For Class Session 4, you will repeat the process for a Big Ideas paper, and the following week you will repeat the process for the Concept Map. This cycle/schedule will continue for the rest of the semester. Every week you will turn in the Blue Book. You will alternate making entries between your Large Blue Books so that while I am grading one, you are writing in the other.

- The Concept Map should include the **15-25 major concepts** discussed in **one** chapter. Do not include information from the investigations, only the science content. The Concept Map must follow the Concept Mapping procedures taught in class.
  Each concept map has a possible total of 14 points.
  a. Most general, inclusive Concept at top……...worth 2 points
  b. Map must show structured hierarchy……..….worth 2 points
  c. 15-25 concepts included……..…...…worth 4 points
  d. 1-2 words (nouns) for Concepts…….....worth 3 points
  e. Verbs or prepositions for Linking Words between Concept……..worth 3 points
  f. NOT mind-mapping or mind-webbing

- The Big Ideas paper should **explain 15-25 key science concepts** (not the investigations) from **one** chapter reading. Be sure to write in complete sentences, not outlines, though the sentences may be bulleted. Your Big Ideas paper is **not** a reflection of your thoughts; it is a summary of the science content.
  Each Big Ideas paper is worth a total of 14 points.
  a. Complete sentences……...worth 4 points
  b. 15-25 Major science concepts included……..……worth 6 points
  c. Two teaching applications –examples of how you would teach concepts….worth 4 points

For both Big Ideas Papers and Concept Maps, **(a) indicate on each page of your Large Blue Book the title of the Chapter you are outlining, (b) write your name and date at the top of each page and (c) number each page.**

3. California Science Framework and Standards Activity - 10%

Purpose of the assignment: To read a portion of the California Science Framework and the Standards for a particular grade. You will write your individual response to the readings. Then you will work with your partner to prepare and do a presentation to the class. It is essential that you do the reading and the write-ups BEFORE you meet with your partner.

3a. Framework summary response: (Individual assignment to do after class) – 3%

- Read the first part of the California Science Framework, up to page 22. This includes Board Policy, the Introduction and Chapters One and Two.
- Think about the reading holistically.
- Type about a page, in your own words, that answers these questions: What were the most important ideas addressed in the reading? How does science teaching differ from instruction in other subjects? What are the most important elements of a strong science instructional program?
  Come to class prepared to discuss the questions and turn in your answers.

3b. Grade level Science standard response: (with 2 others, in-class assignment) – 3%

- Using the standard for your chosen grade, each one of you will pick a line item from physical science, life science, or earth science (All 3 will be represented within each group of 3 students). For each one, come up with a brief description of an activity that children in that grade can do that also addresses one of the Investigation and Experimentation standards for the grade.
- You should end up with three sections, each of which includes a content line (physical, life, or earth science), an Investigation and Experimentation line, and a one or two sentence description of an activity that combines the two. The whole thing should be about a page. Write your name on yours and turn in with your partners'.
- See example next page.

3c. Team preparation and presentation – (with 2 others, In-class assignment) – 4%

Get together with your partners. Look at the activities that you each wrote up for Assignment 2b. Choose one activity.

- With your partner, write up a lesson plan for the activity (with objectives, assessment, and a brief description of the activity}. Put it on chart paper or PowerPoint so it can be easily presented to the class. Make sure you quote the line from the standard on which your lesson plan is based.
- With your partners, come up with a brief overview of the Science Standards for your grade. Don't try to give us every single line of the standard. Summarize it in such a way that we see an overview of what students are supposed to learn in physical, earth, and life science and in investigation and experimentation in that grade.
- Your group will have 5 minutes to present your lesson plan and standards choices. Be prepared to explain why your lesson plan represents really good science for kids.
- Your grade for this assignment will be based on the content and quality of your presentation, and on the level of collaboration with your partners.

Sample Response to Assignment 3b.

Grade Four

Physical Science
1b. Students know how to build a simple compass and use it to detect magnetic effects, including the Earth's magnetic field

Investigation and Experimentation
6f. Follow a set of written instructions for a scientific investigation.

Activity
Following directions from the Internet, the students will work in partner pairs to build compasses, using paper cups, thread, a needle and a magnet. They will observe and record the action of the compass indoors and outdoors, and in proximity to various objects.

Life Science
2c. Students know decomposers; including many fungi, insects, and microorganisms, recycle matter from dead plants and animals.

Investigation and Experimentation

6c. Formulate and justify predictions based on cause-and-effect relationships.

Activity
The students will predict the growth of mold on bread that has no preservatives. They will observe and record the progress of the mold in various circumstances (if the bread is left in the open air, if the bread is in a closed sandwich bag, etc.)

Earth Science
5c. Students know moving water erodes landforms, reshaping the land by taking it away from some places and depositing it as pebbles, sand, silt, and mud in other places (weathering, transport, and deposition).

Investigation and Experimentation
6b. Measure and estimate the weight, length, or volume of objects.

Activity
In groups of four, students will create landforms (using common dirt) on cookie sheets. They will add measured amounts of water to their landforms, and will collect and measure the dirt that runs off.

4. **Leadership of Hands-on Science Lesson Activities** (teams of 3) **- 20%**
NOTE: These are also called Learning Cycle Lessons.
Students will lead hands-on science lessons during class. The lessons should model inquiry instruction, good questioning skills, and be content-understandable and non-judgmental. The lessons should be based on the CA Science Content Standards. Strategies for English language learners, technology integration, and methods for teaching students with disabilities should be included.

You will work in teams of 3 to lead science lessons based on the Learning Cycle Model of Instruction. You will teach these to your classmates. Each lesson will be allocated 35-40 minutes of class time to teach. Your classmates will not role-play elementary students, but will learn the science content and how to teach it. Treat your classmates as teachers, not elementary students.

The lessons should include hands-on lessons, and should emphasize particular science concepts. The Exploration and Application phases of the Learning Cycle require different hands-on science activities using manipulatives. **ALWAYS begin Exploration with students making PREDICTIONS**. Hands-on activities are NOT reading or completing worksheets (though they may require students to read something or complete lab observation sheets). You should take the activities "off of paper" and require students to use the science process skills with science manipulatives. **You need to know and demonstrate the stages of the Learning Cycle, or you will not be given credit for your lesson.**

Be sure you understand the concepts you are emphasizing, and that you can explain them. The lessons should be developmentally appropriate for K-6, and should follow the NSTA Safety Guidelines. **Begin the lesson by writing essential questions about the lesson on the board, for students to consider during the lesson.** These questions should be **higher level questions** (analysis, synthesis or evaluation level) according to Bloom's Taxonomy. Make sure that you include the **3 stages of the Learning Cycle**. **Begin the lesson with students writing their predictions about the outcomes of the activity**. Make sure that science content background and applications to everyday life are addressed. You need to **EXPLAIN** Strategies for English language learners and adaptations for students with disabilities.

Prepare a PowerPoint Presentation to use in your lesson that is a strong overview of all of your lesson plan components. Include standards (content and experimentation/investigation), objectives, definitions of important science concepts in the lesson, assessment/criteria, learning cycle phases, a detailed explanation of the science content, and adaptations/accommodations/applications to everyday life. Additionally, include a list of at least 3 web sites (with short descriptions) that address the science topic and concepts through simulations, graphics and movies. You should have links to these web sites and show at least 3 examples of web sites during the lesson. **Bring at least 3 children's literature books reflecting science concepts to class to showcase.**

Science Lesson Plan Handout: Prepare a handout which includes the information under Lesson Plan Format, making sure you include names at the top and references at the end of the lesson plan.

IMPORTANT NOTE: At least four full days PRIOR to your presentation, email your complete lesson plan and your PowerPoint Presentation to the instructor for review. (Failure to email the completed lesson and PowerPoint to the instructor at least 4 days prior to your presentation will **count 10 points off your grade for this assignment**.) Include your cohort name and # and the date you will present to the class in the email. After I email you back regarding needed changes and you make revisions, email the revised ones to me and I will approve them.

Bring copies of the data sheets for students in the class, and post the lesson plan and data sheets to the WebCT DISCUSSION thread for ***Leadership of Hands-on Science Lesson Activities***

Please email final lesson plan and PowerPoint to knorman@csusm.edu 4 days prior to presenting. On the day of your lesson presentation, please begin the lesson by turning in 1 copy of the rubric completed as a self-evaluation along with 1 paper copy of your lesson plan to the instructor. Failure to do so will result in 10 points off your grade for this assignment.

Lesson Plan Format

Lesson Title: What is the title of your lesson?

Grade Level: What is the grade level?

Student Groupings: How will you group students for instruction?

Materials/Resources/Technology: What does the teacher need? What do the students need?

California Science Content Standard(s): What standards are addressed? Include at least 1 science area (life science, physical science, or earth science) standard and 1 investigation standard.

Lesson Objective(s): What do you want students to be able to do?
Write in complete sentences. Use an action verb and explain how students will demonstrate their new knowledge and understanding. "The students will _____."

Science Concept(s): What are you trying to teach? Do not say "The students will ____." (That is an objective, not a concept.)

Essential Questions (higher level; see Bloom's taxonomy): What are your essential questions for this concept? What leads to the big idea? (be sure these are not lower level fact or info. questions)

Lesson Procedures: Explain the procedures for each. Include what the teacher will do and what the students will do.

The Learning Cycle

a. Exploration (Begin with students making predictions; then have a hands-on SCIENCE activity.)

b. Concept Invention (Make sure students share and discuss data and ideas in the first part of this stage; then teacher introduces new terms and provides further explanations.)

c. Concept Application (Should be a 2nd hands-on SCIENCE activity.)

Accommodations/Adaptations/Applications:

- Strategies for English language learners and explanations (at least 3)
- Adaptations for students with disabilities and explanations (at least 3)
- Applications to everyday life and explanations (at least 3)

Science Content Background: (at least 1 full page) summary of the content background

Web Sites: 3 interactive relevant web sites with descriptions

Children's Literature Books: Title, author, publisher, year of 2 children's books on the topic. BRING BOOKS TO CLASS.

Arts Standards Integration: Explain how you will integrate learning in the Arts. List Arts Standard.

References: Title, author, publisher, year

5. Learning Cycle Lesson Drawings (individual) **- 5%**

In your Lab Book—Reserve the first page in your Lab Book for a **Title Page**, and reserve the next page for your **Table of Contents**. After each Learning Cycle presentation, you will make a drawing illustrating what you learned during the lesson. Number each drawing (Drawing #1, #2, #3, etc.). **At the top of each page, write the date, title and number of the drawing**. **Label the drawing with the title of the lesson**. Be sure to pay attention during the lesson so that you have something to draw and a given drawing illustrates your understanding of the lesson. You must **legibly label** parts of drawings. **Drawings should illustrate the major science concepts** that students were supposed to learn.

Drawings will be assessed based on the following criteria:

- **Does the Drawing illustrate the major science concepts taught in the lesson?**
- **Does the Drawing include legible labels?**
- **Does the Drawing make "sense"? Can one look at it and understand what was taught?**

You must do at least 10 of these total. (We will have more than 10 learning cycle lessons; you can pick the 10 you want to do). Each will count 10 points for your L.C. Lesson Drawings grade.

6. Learning Cycle Lesson Explanations (individual) **- 5%**

In your Lab Book--On the page immediately following each Drawing for a given Learning Cycle presentation, you will write an explanation of the science concepts taught—about ½-1 page in length. Number each Explanation (Explanation #1, #2, #3, etc.). **At the top of each page, write the date, title and number of the Explanation. Label the Explanation with the title of the lesson**. Be sure to pay attention during the lesson so that you have something to explain! Each explanation should be a complete description of the major science concepts that students were to learn during the lesson.

Explanations will be assessed based on the following criteria:

- **Does the Explanation describe the major science concepts taught in the lesson?**
- **Does the Explanation make "sense"? Can one read it and understand what was taught?**
- **Is each Explanation on a separate page from the drawings and the other explanations?**

You must do at least 10 of these total. (We will have more than 10 learning cycle lessons; you can pick the 10 you want to do). Each will count 10 points for your L.C. Lesson Explanations grade.

7. Science Exploratorium Lesson Plan/Presentation (pairs) **10%**

Develop an inquiry activity to teach to elementary students. You will work in pairs on this assignment. You will prepare a hands-on science lesson and poster reflecting a science concept. You will present the lesson at our Elementary School Science Exploratorium. Prior to teaching the lesson, turn it in to your instructor for review.
Be sure you understand the concept(s) you are emphasizing, and that you can explain them. Please ensure that your activities should follow the NSTA Safety Guidelines. The lessons should include hands-on tasks, and should emphasize particular science concepts. The Exploration and Application phases of the Learning Cycle must require different hands-on science activities using manipulatives. Hands-on activities are NOT reading or completing worksheets (though they may require students to read something or complete lab observation sheets). You should take the activities "off of paper" and require students to use the science process skills with science manipulatives.)

Type up a one-page abbreviated Lesson Plan (refer to LP format on the following page) with your names at the top and REFERENCES at the end of the lesson plan.

Prior to the Exploratorium, turn in the completed Self-Evaluation Rubric.

Science Exploratorium Lesson Plan Format

Lesson Title: What is the title of your lesson?

California Science Content Standards addressed

Lesson Objective(s): What do you want students to be able to do?
Write in complete sentences. Use an action verb and explain how students will demonstrate their new knowledge and understanding. "The students will _____."

Science Concept(s): What are you trying to teach?
Do not say "The students will ____." (That is an objective, not a science concept.)

Essential Question(s): What are your essential question(s) for this concept?

Materials/Resources/Technology: What does the teacher need? What do the students need?

Learning Cycle: BRIEFLY explain the procedures for each. Include what the teacher will do and what the students will do.

a. **Exploration** (Begin with students making predictions; then have a hands-on SCIENCE activity.)

b. **Concept Invention** (Make sure students share and discuss data and ideas in the first part of this stage; then teacher introduces new terms and provides further explanations.)

c. **Concept Application** (Should be a 2nd hands-on SCIENCE activity.)

References: Title, author, publisher, year of resources

**NOTE: We will share Exploratorium plans so that all students leave with plans for all lessons, which you may use during student teaching.

Exploratorium Reflection (individual) –
Turn in at class session after the Exploratorium.
Respond to the following

a. How did the children respond? (What did they say and do?)
b. How do the children's actions and responses demonstrate their level of understanding?
c. How did you (or can you) improve upon your lesson to facilitate understanding?

8. Science Curriculum/Presentation (teams of four; each writes one unit) **20%**

The goal of this assignment is for you to develop year-long plans for instruction in science based on the California Science Content Standards, as well as develop skills for teaching in the elementary grades. For this assignment, you will plan a year of science instruction for one grade level, based on the California Science Content Standards. You will divide the Science Content Standards for one grade level into four units. For each unit, you will use the science standards (and their descriptions in the Science Framework) to design enduring understandings, desired outcomes, end-of-unit assessments, and rubrics to use in grading the assessments. For the final part of this assignment you will develop ideas for three learning cycle lessons for each unit, based on the Science Standards, Enduring Understandings, Desired Outcomes and Final Assessments in the units. You will work in a group of four-- the same group for your project in your science course. You will relate the science course project topic to this Science Curriculum Plan.

When you complete this assignment, you will have a curriculum plan for teaching the science standards, units and lessons for teaching science for a full year for one grade level. We will share these, so that everyone leaves with curriculum plans, units and lessons for a full year of teaching science at all grade levels. You may share these with your cooperating teachers and use them in your student teaching.

Year-Long Science Curriculum for Grade ___

Overview of Year-Long Curriculum (Page 1 of Unit):

Units **Authors**

Brief description of each unit.

Unit 1:
Description:

Unit 2:
Description:

Unit 3:
Description:

Unit 4:
Description:

Each Unit (begins on Page 2 of Year-Long Curriculum):

Unit ___ (Unit 1, 2, 3 or 4)

Grade: _____

Unit Title _____

1. **Timeline in weeks** _____

2. **Standards**
   Content (Physical, Life, Earth Science)Standards
   Investigation and Experimentation Standards

3. **Enduring Understandings** (info and processes you hope students remember and understand next year)

4. **Desired Outcomes** (reads like an objective; tell what students can DO after instruction)

5. **Final Summative Assessment over Unit** (end of unit assessment over the whole unit, all standards)

7. **Rubric listing Criteria that you will look for in Final Assessment**

Rubric over Final Assessment

Criteria	Exceeds Expectations	Meets Expectations	Below Expectations	Points Comments
1.				
2.				
3.				
4.				
5.				

7. Ideas for 3 Lessons for each Unit-
Each Lesson should include the following:

Lesson # (1, 2 or 3)

Lesson Title: What is the title of your Lesson?

Content Area: Science

Subject Matter: Life, Science Physical Science or Earth Science?

Time Period for the Learning Experience: *Example: two 30-minute sessions*

Learning Goals/Learning Objectives:

State Science Standards: What standards are addressed? Include at least 1 science area (life science, physical science, or earth science) standard and 1 investigation standard.

Learning Goals based on the Content Standards? What do you want students to be able to do? Write in complete sentences. Use an action verb and explain how students will demonstrate their new knowledge and understanding. "The students will _____."

Science Concept(s): What are you trying to teach? Do not say "The students will ____." (That is an objective, not a concept.)

Essential Questions (higher level; see Bloom's taxonomy): What are your essential questions for this concept? What leads to the big idea? (be sure these are not lower level fact or info. questions)

Materials: What will the teacher need? What will the students need?

Overview of Learning Cycle Procedures.
Briefly tell Instructional Strategies (what teacher does) and Student Activities (what students do).

a. Exploration (2-3 lines)
   (Begin with students making predictions; then have a hands-on SCIENCE activity.)
b. Concept Invention (2-3 lines)
   (Make sure students share and discuss data and ideas in the first part of this stage; then teacher introduces new terms and provides further explanations.)
c. Concept Application (2-3 lines)
   (Should be a 2nd hands-on SCIENCE activity.)

9. Course Reflection (individual) **5%**
Instructions will be given in class. Typed course reflections will be due the last class.

10. **Completion of Science TPEs in Class** (individual) **10%**

This will be the final class activity, completed in a computer lab. You must bring drafts to class and include at least 2 artifacts (evidence, demonstrated through completed assignments you attach to your TPE entry) for EACH TPE.

Science Methods TPE Instructions

TPE 1A: Teaching Science in a Multiple Subject Assignment

Candidates for a Multiple Subject Teaching Credential demonstrate the ability to teach the state-adopted academic content standards for students in science (K-8). They balance the focus of instruction between science information, concepts, and investigations. Their explanations, demonstrations, and class activities serve to illustrate science concepts and principles, scientific investigation, and experimentation. Candidates emphasize the importance of accuracy, precision, and estimation.

TPE 5: Student Engagement

Candidates for Teaching Credentials clearly communicate instructional objectives to students. They ensure the active and equitable participation of all students. They ensure that students understand what they are to do during instruction and monitor student progress toward academic goals. If students are struggling and off-task, candidates examine why and use strategies to re-engage them. Candidates encourage students to share and examine points of view during lessons. They use community resources, student experiences, and applied learning activities to make instruction relevant. They extend the intellectual quality of student thinking by asking stimulating questions and challenging student ideas. Candidates teach students to respond to and frame meaningful questions.

Responses to TPE's: It is important to recognize that the TPEs are threaded throughout the credential program, as a whole, and are addressed multiple times in each course. Each assigned response will relate to course assignments, discussions, field placements, and/or readings that provide a deeper understanding of the specified TPE. As you write, the goal is to describe your learning as it relates to the TPE, to analyze artifacts (assignments) and explain how they are evidence of your learning, and to reflect on the significance of your learning (the "so what") and where you need to go next related to the TPE.

FOR EACH TPE, you must include at least 4 paragraphs:

1st paragraph: Introduction to your response that uses the words of the TPE. DO NOT restate the TPE; instead, introduce your reader to the focus of your response as it relates to the TPE. This is basically an extended thesis statement related to the TPE. You might say things like

Educators……
As a future teacher, I …….
It is important to …….

2nd paragraph: Explain how one attached artifact is evidence of your learning related to the TPE. The key here is "evidence." How does this artifact prove that you have learned something specific related to this TPE? Describe, analyze and reflect on your artifact here.

- Describe your learning, skills and knowledge gained from completing the assignment and artifact as they relate to the TPE.
- Analyze your completion of the assignment and artifact, and explain how your completion of the assignment meets the TPE.
- Reflect on the significance of your learning (the "so what?").

3rd paragraph: Explain how another attached artifact is evidence of your learning related to the TPE. Describe, analyze and reflect on your artifact here.

- Describe your learning, skills and knowledge gained from completing the assignment and artifact as they relate to the TPE.
- Analyze your completion of the assignment and artifact, and explain how your completion of the assignment meets the TPE.
- Reflect on the significance of your learning (the "so what?").

4th paragraph: Have a concluding paragraph about the importance of science and teaching science using the skills and knowledge mentioned in the TPE.

- Summarize your overall learning connected to this TPE. This addresses the "so what?" or "the big picture" of your learning. How does knowing this impact you and students?

- Describe what you still need to learn related to this TPE.

Example:
For TPE 5 (Student Engagement), you might relate it to the investigation you led at the Exploratorium. Your evidence (attachments) might be any 2 of the following:

1. Lesson Plan for Exploratorium
2. Reflection on Exploratorium teaching (Include what you did well, what didn't go so well, and how you can improve.)
3. Self-Assessment Rubric
4. Picture(s) of Your Project
5. Videotape clip of Your Teaching

SB 2042 - AUTHORIZATION TO TEACH ENGLISH LEARNERS COMPETENCIES

PART 1: LANGUAGE STRUCTURE AND FIRST- AND SECOND-LANGUAGE DEVELOPMENT	PART 2: METHODOLOGY OF BILINGUAL, ENGLISH LANGUAGE DEVELOPMENT, AND CONTENT INSTRUCTION	PART 3: CULTURE AND CULTURAL DIVERSITY
I. Language Structure and Use: Universals and Differences (including the structure of English)	**I. Theories and Methods of Bilingual Education**	**I. The Nature of Culture**
A. The sound systems of language (phonology)	**A.** Foundations	**A.** Definitions of culture
B. Word formation (morphology)	**B.** Organizational models: What works for whom?	**B.** Perceptions of culture
C. Syntax	**C.** Instructional strategies	**C.** Intra-group differences (e.g., ethnicity, race, generations, and micro-cultures)
D. Word meaning (semantics)	**II. Theories and Methods for Instruction In and Through English**	**D.** Physical geography and its effects on culture
E. Language in context	**A.** Teacher delivery for <u>both</u> English language development <u>and</u> content instruction	**E.** Cultural congruence
F. Written discourse	**B.** Approaches with a focus on English language development	**II. Manifestations of Culture: Learning About Students**
G. Oral discourse	**C.** Approaches with a focus on content area instruction (specially designed academic instruction delivered in English)	**A.** What teachers should learn about their students
H. Nonverbal communication	**D.** Working with paraprofessionals	**B.** How teachers can learn about their students
I. Language Change		**C.** How teachers can use what they learn about their students (culturally responsive pedagogy)
II. Theories and Factors in First- and Second-Language Development	**III. Language and Content Area Assessment**	**III. Cultural Contact**
A. Historical and current theories and models of language analysis that have implications for second-language development and pedagogy	**A.** Purpose	**A.** Concepts of cultural contact
B. Psychological factors affecting first- and second-language development	**B.** Methods	**B.** Stages of individual cultural contact
C. Socio-cultural factors affecting first- and second-language development	**C.** State mandates	**C.** The dynamics of prejudice
D. Pedagogical factors affecting first- and second-language development	**D.** Limitations of assessment	**D.** Strategies for conflict resolution
E. Political factors affecting first- and second-language development	**E.** Technical concepts	**IV. Cultural Diversity in U.S. and CA**
		A. Historical perspectives
		B. Demography
		C. Migration and immigration

Complete Assignment Checklist

Assignment	**%**	**Individual or Team**	**Documents to Turn In**	**Due Date**
Reading Journal	10	Individual	Blue Books - individual Ch 2-21	Wks 2-8
Framework and Standards Activity	10	Individual PartCtea m	Part a – individuals Part b& c – Teams of 3	Sept. 16-23
Leadership of Hands-On Science Lesson Activities	20	Team	Self-Eval Rubric - team Lesson Plan - team	Varies
Learning Cycle Lesson Drawings	05	Individual	Drawings w Labels - Blue Book/Lab- individual	Oct. 14
Learning Cycle Lesson Explanations	05	Individual	Explanations - Blue Book/Lab- individual	Oct. 14
Science Exploratorium	10	Pairs	Lesson Plan - Pairs Data sheet- Pairs Reflection - individual	Sept.30 Sept. 30 Oct. 14
Science Curriculum Unit Presentations	20	Individual Team	Self-Eval Rubric - indiv Unit – indiv.	Oct. 14 Oct. 14
Course Reflection	05	Individual	Typed Responses individual	Oct. 20
Complete Science TPEs (1A Science and 5)	10	Individual	Taskstream Entries - individual	Oct. 20

Your Full Name _____ **Cohort** _____

SCIENCE EDUCATION GRADESHEET

This will be attached to your Class Folder. Keep your own copy in your Science Notebook.

Attendance
(Present, late or absent—sign your name and indicate if late. For previous classes, indicate if present for whole class or left early)

Class

1 _____
2 _____
3 _____
4 _____
6_____
7 _____
8 _____

Reading Journal (14 points each)

Sept. 9 _____ points	Oct. 7 _____ points
Sept. 16 _____ points	Oct. 14 _____ points
Sept. 23 _____ points	Oct. 21 _____ points
Sept. 30 _____ points	

Assessment of Course Objectives	Percent of Grade	Your Grade	Final Points
1. Participation and Collaboration	5%		
2. Reading Journal	10%		
3. Framework and Standards Activity	10%		
4. Leadership of Hands-on Science Lesson Activities	20%		
5. Learning Cycle Lesson Drawings	5%		
6. Learning Cycle Lesson Explanations	5%		
7. Science Exploratorium Lesson Plan/Presentation	10%		
8. Science Curriculum	20%		
9. Course Reflection	5%		
10. TPE 14 Assessment: Technology	10%		

Final Course Grade _____
Final Letter Grade _____

EDMS 545 COURSE SCHEDULE OF TOPICS AND ASSIGNMENTS: FALL2008

PRELIMINARY SCHEDULE

DATE	COURSE TOPICS & ASSIGNMENTS	CHAPTERS
8/27/08	Possible Outcomes: Your Goals and Course Goals • Orientation to Class: What is Science? What makes a good science teacher? • How do we make decisions about what to teach and how to teach it? • Inquiry Processes in Science and the Learning Cycle Model of Teaching • Concept Mapping • Instructor Led Learning Cycle Lesson • Divide into teams of 3 for Leadership of Hands-on Learning Cycle Lessons • Divide into groups of 4 for Year-Long Curriculum • Text Overview • Writing Learning Objectives, Science Concepts & Essential Questions • Team time for Learning Cycle Lessons • Private Universe: What causes the seasons? Understanding science concepts. • Science Framework Discussion: Do Part A - Framework Summary Response • Each person should bring Friedl text, Science Framework and lab composition book to all classes. • Each person should Download, print and bring California Science Content Standards, Grades K-6 to next class even though they are in the Standards. http://www.cde.ca.gov/be/st/ss/scmain.asp **For next session:** Write Big Ideas Paper on Ch 4, 5 or 6 in Blue Book.	4, 5, 6 Framework 1-22
9/9/08	Turn in Reading Journal • Science Process Skills and Scientific Attitudes • Instructor Led Learning Cycle Lesson on Heat Transfer (in Ch. 5) • Teaching English Language Learners in Science • Team time for Learning Cycle Lessons • Science Framework: Do Part B - Grade level Science Standard Response • Each person should bring Friedl text, Science Framework and lab composition book to all classes. **For next session**: Draw Concept Map on Ch 7, 8 or 9 in Blue Book.	7, 8, 9
9/16/08	Turn in Reading Journal • **Team 1** Learning Cycle Lesson • Team Time for Science Framework and Standards Activity, Part C • Science Framework and Standards Activity Presentations (Part C) • Turn in Framework Summary Response and Grade Level Sci Standard Response • Instructor Led Learning Cycle Lesson on Electricity (in Ch. 7) • Team Time for Learning Cycle Lessons • Work on Science Curriculum Unit: Grade Level Groups • Select Partners for Science Exploratorium (work in pairs) Meet at Jack's Pond Nature Center 12-2:15 • Nature Center Lesson Activities **For next session**: Write Big Ideas Paper on Ch 10, 11 or 12 in Blue Book.	10, 11, 12 Comp. Comm. Booklet
9/23/08	Turn in Reading Journal • **Team 2** Learning Cycle Lesson • Compassionate Communication • Performance Assessments • Developing Criteria for Assessing Learning and Using Rubrics to Show Criteria • Instructor Led Learning Cycle Lesson on Flight (in Ch. 11) • Work on Exploratoriums	13, 14, 15

	• **Team 3** Learning Cycle Lesson • Work on Science Curriculum Unit: Grade Level Groups **For next session**: Draw Concept Map on Ch. 13, 14 or 15 in Blue Book.	
9/30/08	Turn in Reading Journal • Turn in **1 page** Lesson for Science Exploratorium and **1/2-1 page** "Data Sheet" • **Team 4** Learning Cycle Lesson • NSTA Position Statements on Elementary Science and Assessments • Integrating Writing into Science Activities • Instructor Led Learning Cycle Lesson on Geology (Ch. 15) • **Team 5** Learning Cycle Lesson • **Team 6** Learning Cycle Lesson • Work on Science Curriculum Unit: Grade Level Groups **For next session:** Write Big Ideas Paper on Ch 16 or 17 in Blue Book.	16, 17
10/7/08	<u>Go to Discovery Elementary School - Exploratorium</u> • Bring copies of Data Sheets for the elementary children • Upload Exploratorium Lesson Plan and Data Sheet to WebCT Discussion Thread Back to Classroom • Turn in Reading Journal • **Team 7** Learning Cycle Lesson • Inclusion and Teaching Science to Students with Special Needs **For next session:** Draw Concept Map on Ch 18 or 19 in Blue Book. **For Session on 10/20: Prepare drafts of TPE 1A and TPE 5 responses**	18, 19
10/14/08	Turn in Reading Journal • Turn in Exploratorium Reflection; Exploratorium Discussion • Turn in 2 copies of Curriculum Unit/Grade in class • Bring TPEs 1A Science and 5 Student Engagement/Review in class • **Team 8** Learning Cycle Lesson • Science Projects, Student Research, Science Fairs • Safety in the Science Class • Instructor Led Learning Cycle Lesson on Bones (Ch. 21) • Turn in Learning Cycle Lesson Drawings and Explanations • **Team 9** Learning Cycle Lesson • **Curriculum Presentations** • Course Reflection - to turn in next class **For next session:** Write Big Ideas Paper on Ch 20 or 21 in Blue Book.	20, 21
10/20/08 a.m.	<u>Meet in Computer Lab in University Hall</u> • Turn in Reading Journal • Turn in Course Reflection • Turn in final copy of Curriculum Unit/Post to WebCT Discussion • Benchmarks • National Science Education Standards • Curriculum Presentations if not finished on 10/14 • Bring TPE response drafts for TPE 1A Science and TPE 5 Student Engagement. • TPEs must be posted to TaskStream by noon .	