CALIFORNIA STATE UNIVERSITY SAN MARCOS
COLLEGE OF EDUCATION
EDMS 545B Science Education in Elementary Schools
Fall 2007 Monday 1:00-3:45 UH460

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

Semesters 1-3 of Integrated Bachelor of Arts and Multiple Subject Credential Program and consent of Program Coordiantor.

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 and 1 Laboratory Composition Book

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 the Learning Cycle model of instruction to teach science in a contemporary manner.
6 Use 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 authentic methods of assessment to evaluate learning of science concepts and processes.
9. Design 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 TPE5. To successfully meet these TPEs, you should respond on TaskStream, attach your evidence, and request feedback from me on TaskStream.
**NOTE: Entries for TPE 1A and TPE 5 will be completed during the last class session. You will turn in a printed copy during the class as a final exam grade. If you do not turn in the printed copy AND post the TPE entries during the last class, you will receive a zero on "Complete Science TPEs."

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.

COURSE POLICIES

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.

Technology
You must use your university email account for this class. Periodically I will send reminders and handouts to you on email. I will respond to emails within 48 hours Monday through Friday. You are welcome to use a laptop computer in class. However, you will need to save checking email or other personal use for time outside of class.

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.

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 class grade. If you have an emergency, see the instructor for the Emergency Absence Policy. Absences do not change assignment due dates. Late assignments will not be accepted.

Late Work
Complete all assignments on time. No late work will be accepted.

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. 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
n 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").

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.

Use of 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. All assignments will be submitted online, and some will be submitted in hard copy as well. Details will be given in class.

Visual and Performing Arts
This course infuses 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.

GRADING STANDARDS

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

It is expected that students will proofread and edit 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 citations, where appropriate, will use American Psychological Association (APA) format. Consult 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+.

Exemplary "A" Students

1. Demonstrate serious commitment to their learning, making full use of the learning opportunities available and searching out the implications of their learning for future use.
2. Complete all assignments thoroughly, thoughtfully and timely.
3. Make insightful connections between assignments and their developing overall understanding of science concepts; continually questioning and examining assumptions in a genuine spirit of inquiry.
4. Attends every class, always timely, and shows high level achievement of course goals.
5. Display a "can do" attitude, give 100%, and works to help others learn too.
6. Contributes a great deal to class environment, showing respect and concern for all members.

"B" Students

1. Completes all assignments, all on time, and demonstrates the ability to summarize, analyze, and/or reflect at fairly high levels, showing consistent improvement over time.
2. Completes all of the reading assignments and develops thoughtful and fairly thorough responses.
3. Produces work that is close to professional level in terms of both content and writing, working to develop a strong command of writing, speaking, planning and presenting.
4. Develops presentations demonstrating significant learning.
5. Presents confidently and intelligently, demonstrating effective teaching skills.
6. Attends every class meeting and is regularly engaged during class.
7. Contributes to the positive environment of the class by respecting all members.

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. Note the Description of Exemplary Students on page 18.

1.	Participation, Professionalism and Disposition	5%
2.	Reading Accountability Journal	25%
3.	Framework Summary Response	5%
4.	Leadership of Hands-on Science Activities	10%
5.	Learning Cycle Lesson Drawings	5%
6.	Learning Cycle Lesson Explanations	5%
7.	Science Exploratorium Lesson Plan/Presentation	10%
8.	Science Curriculum/Presentation	20%
9.	Course Reflection	5%
10.	Complete Science TPEs during last class	10%

DESCRIPTIONS OF ASSIGNMENTS

1. Participation, Professionalism and Disposition to Teach 5%

Interact professionally and collaborate responsibly with your colleagues and professor. Teacher education is a professional preparation program and students will be expected to adhere to standards of dependability, professionalism, and academic honesty.

You are expected to arrive on time (1:00 p.m.), stay for the whole class (until 3:45 p.m.), and attend all class sessions. If you are late to one or more classes, depart early from one or more classes, or miss a class, your course grade will be lowered. Please note the Attendance policy in 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
- Advance preparation of readings and timely submission of assignments
- Respectful participation with instructor and other students in all settings
- Carefully considered, culturally aware approaches to solution-finding

The following Attributes of Highly Effective Teachers will be used as criteria defining your participation, professionalism and disposition.

a. **General classroom attendance, promptness, and participation**: is on time; respects time boundaries (breaks, etc.); regularly attends class; and actively participates.

b. **Attention to classroom discussion protocols**: respects time limitations; recognizes and respects the perspectives of fellow classmates; gives wait time; listens actively; uses non-interruptive skills; mediates disagreements by working to understand others' perspectives & finding common ground; and genuinely encourages all to participate.

c. **Social and cooperative skills (as illustrated in cooperative projects)**: assumes responsibility of one's roles; is open to consensus and mediation; effectively communicates ideas; communicates in respectful manner in online discussion (as noted in electronic communication protocol); attends group meetings; is dependable; respects others' ideas; expects quality work from self and colleagues; manages time effectively; uses organizational skills and leadership skills; is assertive but not aggressive; uses reflection as a means of evaluation; and motivates and offers positive reinforcement to others.

d. **Attention to assignments**: meets time deadlines; produces quality products; responds cooperatively to constructive criticism; uses rubrics or other stipulated criteria to shape an assignment; and prioritizes tasks and performs/supervises several tasks at once.

e. General classroom demeanor: is professional, creative, kind, sensitive, respectful, has a sense of humor**;** is supportive of fellow classmates and instructors**;** recognizes others' perspectives as valid and works to include all "voices" in the classroom**;** is aware of & responsive to issues & behaviors that might marginalize colleagues in the classroom; does not conduct personal business during class time; uses personal computer appropriately, clearly taking notes when warranted; and computer is closed during discussions so that eye contact can be maintained.

f. **Flexibility**: is responsive when reasonable adjustments to the syllabus, curriculum, schedule, and school site assignments become necessary (common to the educational arena); can work through frustrations by problem-solving with others and not letting emotional responses dominate or impair thinking; "bounces" back easily; and can work calmly under stress.

g. **Openness to and enthusiasm for learning**: can engage with a variety of educational ideas with an open mind and a sense of exploration; demonstrates passion for and metacognition of learning across the curriculum and within discipline areas; and takes advantage of learning opportunities and seeks out additional opportunities for learning.

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, regardless of task/topic.	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 Accountability Journal Entries for Chapters (individual**) 25%**

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 accountability journals (blue books) will be collected at every other class session and will only receive full points if completed by the date indicated in the schedule. You must use Blue Books; though you may type and staple in your entry. Spiral paper stuck in Blue Books will not be accepted.

Each class session you will be asked to complete journal entries for 2 chapters. You will do a Concept Map (following procedures taught in class) for one of the chapters, and you will do a Big Ideas paper explaining (a) the key science concepts and (b) teaching applications for the other chapter. You may choose which chapter to prepare a Concept Map for and which chapter to do a Big Ideas paper.

Do the Reading Accountability Journal entries in a Blue Book. Every other week you will turn in the Blue Book. During that week, you will write in your other Blue Book and turn it in the following week.

- The Concept Map must include the 15-25 major concepts discussed in the 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 counts 5 points.
    a. Most general, inclusive Concept at top — counts 1 point
    b. Map must show hierarchy — counts 1 point
    c. 1-2 words (nouns) for Concepts — counts 1 point
    d. Verbs or prepositions for Linking Words between Concepts — counts 1 point
    e. Should be some Crosslinking across the Map — counts 1 point
    f. NOT mind-mapping or mind-webbing

- The Big Ideas paper should **(1) explain 15-25 key science concepts** (not the investigations) and **(2) briefly list 2 ways you can teach some of the concepts in your class**. 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 and 2 ways you might teach two or more concepts. Each Big Ideas paper counts 5 points.
    a. Complete sentences — counts 1 point
    b. Major science concepts included — counts 2 points
    c. 2 ways to teach concepts included — counts 2 points

Title each page with the title of the Chapter in the book. Put your name and date at the top of each page.

3. Framework Summary Response (individual) **5%**

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.

4. Leadership of Hands-on Science Activities (team) **10%**

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 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. The presentation should include a detailed explanation of the science content, as well as a list and definitions of science concepts important to the lesson. 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 examples during the lesson. **Bring the Children's literature books to class to show.**

Science Lesson Plan Handout

- Prepare a handout which includes the information under Lesson Plan Format, making sure you include:
  - team members' names at the top
  - references at the bottom.

IMPORTANT NOTE: At least four full days PRIOR to your team's 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 approve them, you should make copies of the lesson to bring for classmates on the day of the presentation. You may email them to classmates if you are able to do so 2 days prior to the lesson, provided that you bring extras for students who may forget to bring them.

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 team evaluation along with one paper copy of your lesson plan to the instructor. Failure to do any of the above 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

Team completes prior to presenting as a self-evaluation. Turn in with lesson plan before you present.

RUBRIC FOR HANDS-ON SCIENCE LESSONS

Title of Lesson: _____

Names: _____

Activity	Criteria/ Quality of Work	Score
Materials 5pts	Materials were provided so that all students could easily participate - 5 pts. Materials were provided so that some students could easily participate - 3 pts. Materials were provided so that a few students could easily participate - 1 pt. Materials were not provided so that students could easily participate - 0 pt. (5 points maximum)	
Standards Objectives Concept(s) 5pts	You included the California Content Standards, Lesson Objectives and a Statement of the Science Content. (5 points maximum)	
Essential Questions 5pts	You included 2 essential questions in the lesson, asking about the "big idea." These were not simple knowledge or application questions, but questions relating the lesson to the big idea (5 points maximum)	
Concept Exploration 10pts	1) All students participated in a developmentally appropriate hands-on science activity, made observations, and collected data. Predictions were made at beginning 2) Are children provided with hands-on activities (sometimes problem solving) prior to being introduced to the new ideas? 3) Do the exploration activities elicit children ideas relative to those activities? 4) Are the exploration activities clear lead-in's to the introduction of the idea? That is, do the exploration activities provide the experiences children need to meaningfully grasp the new idea when that new idea is presented? 5) Is there a likelihood that the children will come up with the key idea as a consequence of the exploration activities? (2 points for each of the above)	
Concept Invention 10pts	1) Students shared their observations, data and explanations. Teacher provided further explanations and terminology, and tied it all together. 2) When the new idea or skill is introduced, does the teacher directly relate the presentation to what children have experienced in the exploration activity? 3) Does the teacher attempt to elicit the key idea from the children before presenting that idea? 4) Is there an attempt by the teacher to check on children's understanding of the newly presented concept or skill? 5) Is there an attempt by the teacher to give children an example of what the concept is not? (2 points for each of the above)	

Science Content Background 10 pts	Your team provided a thorough explanation of the science content background in the PP presentation - 10 pts. Your team provided a short explanation of the science content background - 6 pts. Your team provided an incomplete explanation of the science content background - 2 pts. Your team provided a poor explanation of the science content background - 0 pts. (10 points maximum)	
Relevant Web Sites 10 pts	Your PP presentation and lesson plan included 3 web sites with descriptions and links to the sites.	
Concept Application 10 pts	1) Are hands-on activities used in the application/elaboration stage? 2) Are there explicit attempts to offer children corrective and confirmatory feedback? 3) Will any new element (refinement) be added to broaden and deepen children's understanding or skill? 4) Can the application/elaboration activities serve as exploration activities for a new idea? (2.5 points for each)	
Strategies for English language learners 5 pts	3 strategies for English language learners are explained	
Applications to real life 5 points	3 applications to everyday life are described	
Adaptations for Students with Disabilities 5 points	3 adaptations to meet the needs of students with disabilities are included (separate from other strategies)	
Arts 5pts	You integrated one or more arts standards in a meaningful way – 5 pts. Arts included, but did not include standards – 3 pts. Little relation to the arts – 1 pt.	
Handout 10 pts	Handout included everything listed for lesson plan (1 points off for each missing item)	
Presentation 5 pts	Your team is **ready to present on time**, has all materials ready and all handouts copied, and will stay within the time allocated. You will keep students on-task and not waste time - 5 pts. Your team accomplished some of the items listed - 3 pts. Your team accomplished few of the items listed - 1 pts. Your team did not accomplish any of the items listed - 0 pts. **(5 points maximum)**	
	TOTAL POINTS/100	

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

In Lab Book—Save the first 3 pages in your Lab Book for a Title Page and 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, put the date and number of the drawing. Title the drawing with the title of the lesson. Be sure to pay attention during the lesson so that you have something to draw and so that your drawing illustrates your understanding of the lesson. You must **label** parts of drawings. **Drawings should illustrate the major science concepts** that students were supposed to learn. Drawings will be assessed based on criteria:

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

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

In Lab Book--On the page immediately after each Drawing, you will write an explanation of the science concepts taught, ½-1 page in length. Number each Explanation (Explanation #1, #2, #3, etc.). At the top of each page, put the date and number of the Explanation. Title 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 these 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 should have Drawings and Explanations for all team-lead lessons except for the one you present.

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

Develop an inquiry activity to teach to elementary students. You may work in pairs on this assignment. You will prepare a hands-on science lesson and poster about a science concept. You will present the lesson at our Elementary School Science Exploratorium. Be sure you understand the concept(s) you are emphasizing, and that you can explain them. Prior to teaching the lesson, turn it in to your instructor for review. The lessons should include hands-on lessons, 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 a 1 page abbreviated Lesson Plan with your names at the top and REFERENCES at the bottom. Prior to the Exploratorium, turn in the completed self-evaluation Rubric.

Lesson Plan Format

Lesson Title: What is the title of your lesson?

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?

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

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.)

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.

Pair completes prior to presenting as a self-evaluation. Turn in the day of Exploratorium before it starts..

RUBRIC FOR ACTIVITY, POSTER AND PRESENTATION-Science Exploratorium

Score	Criteria	Quality of Work		
		Excellent	**Acceptable**	**Unacceptable**
_____	Visual Display	3-sided visual display shows great creativity and is thought-provoking. Graphically demonstrates concept. Max of 10 points	3 sided visual display shows creativity and thoughtfulness; has graphics or pictures. 5 points	Visual display is present, but required little imagination or creativity. 0 points
_____	Timing	You can easily adjust your teaching to the time allocated. Your project allows for great flexibility. Max of 10 points	You can adjust somewhat to the time allotted. Your project allows for some flexibility. 5 points	You cannot easily adjust your teaching to the time allocated. Your project allows for little flexibility. 0 points
_____	Student Data Sheet	You have copies of data sheet for all students. Max of 10 points	You have data sheets, but not for all students. 5 points	You will not require students to keep data. 0 points
_____	Materials	You have necessary materials for all students to participate in hands-on lesson. Max of 10 points	You have necessary materials for some students to participate in hands-on lesson. 5 points	You have materials for demonstrations only. 0 points
_____	Your Understanding	It is obvious that you have a complete and thorough understanding of the science content. Max of 20 points	You do not have a complete understanding of the science content. 10 points	You have misconceptions about the science content. 0 points
_____	Your lesson	Learning Cycle Lesson is (a) hands-on, (b) developmentally appropriate, & (c) feasible for all students. Max of 20 points	Two of the 3 characteristics are present. 10 points	Teacher does a hands-on activity for students. 0 points
_____	Dress & Professionalism	Your clothing, accessories and manners, as well as your behaviors, demonstrate the highest level of professionalism. Max of 20 points	Your clothing, accessories and manners, as well as your behaviors, demonstrate professionalism. 10 points	Your clothing and behaviors are not that of a professional, and you do not represent CSUSM in the best possible manner (no jeans, shorts, short tops, short pants, hats, gum, cell phone) 0 points

Total points _____

8. Science Curriculum/Presentation (team) **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 five 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 create 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 with partners of your choosing; you will work in 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

Grade: _____
Unit Title _____
1. Timeline in weeks _____
2. Standards

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

3. Enduring Understandings (what you hope students remember and understand next year)

4. Desired Outcomes (what students can DO after instruction)

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

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

Rubric over Final Assessment

Criteria	Exceeds Expectations	Meets Expectations	Below Expectations	Points Comments

7. Ideas for 3 Lessons for each Unit-

Each Lesson should include:

1. Title
2. Standard numbers
3. Ideas for
   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.)

Team completes as a self-evaluation. Turn in 1 copy per team with Science Curriculum.

Rubric for Year-Long Science Curriculum **Page 1 of 2**

Your names: _____ **Grade:** _____

Each Unit counts 20 points. (5 units total)

	Unit 1	**Unit 2**	**Unit 3**	**Unit 4**	**Unit 5**
Unit Titles					
Unit Timeline in weeks (1 pt each unit)					
Content Standards for each unit (1 pt each unit)					
Invest./Exper. Standards/unit (1 pt each unit)					
Enduring Understandings (3 points each unit)					
Desired Outcomes (3 points each unit)					
Final Summative Assessment (2 points each unit)					
Rubric over final Assessment listing criteria (3 points/unit)					
Lessons for each Unit: Lesson 1 (2 points each unit) 1. Title 2. Standard numbers 3. Learning Cycle Stages a. Exploration b. Concept Invention c. Concept Application					
Lesson 2 (2 points each unit) 1. Title 2. Standard numbers 3. Learning Cycle Stages a. Exploration b. Concept Invention c. Concept Application					
Lesson 1 (2 points each unit) 1. Title 2. Standard numbers 3. Learning Cycle Stages a. Exploration b. Concept Invention c. Concept Application					

For full points-be sure to describe units in the Presentation and lead the class in one mini-lesson from unit.

Page 2 of Rubric for Year-Long Science Curriculum

Checklist:

1. Did you include a listing of complete Content and Investigation and Experimentation Standards? _____
   Content (Physical, Life, Earth Science)Standards
   Investigation and Experimentation Standards

2. Are your Enduring Understandings what you hope students remember and understand next year?_____

3. Are your Desired Outcomes what students can DO after instruction? _____

4. Is your Summative Assessment a final cumulative assessment over the whole unit, enduring understandings, desired outcomes, and all standards? _____

5. Does your rubric have a list of Criteria that you will look for in the Final Assessment, with levels of achievement (such as exceeds, meets, does not meet expectations)? _____

6. Do you have 3 lessons in each unit? _____

7. Did you include the standards in each lesson? (be sure to include at least standard numbers) _____

8. Did you include the 3 stages of the Learning Cycle? _____

9. Did you begin your Explorations with students making predictions? _____

10. Did your Explorations all have a hands-on science activity? _____

11. Did you begin each Concept Invention with students sharing and discussing data and ideas? _____

12. Did you include teacher introducing new terms and providing further explanations during the second part of Concept Invention? _____

13. Did you include a 2nd hands-on science activity in each Concept Application? _____

NOTE: For your presentation, go over major components, describe each unit, and lead the class in 1 mini-lesson (using science materials).

9. Course Reflection (individual) **5%**

Instructions will be given in class. Typed course reflections will be due the last class.

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

This will be the final class activity, completed in a computer lab. Bring a printer card to class, and turn in a printout of your TPE responses to the instructor, prior to leaving, for your grade. You must 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 where you need to go next related to the TPE (extension or “beyond” the 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

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.

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.

BLOOM'S HIERARCHY

Knowledge	• observation and recall of information • knowledge of dates, events, places • knowledge of major ideas • mastery of subject matter • Question Cues: list, define, tell, describe, identify, show, label, collect, examine, tabulate, quote, name, who, when, where, etc.
Comprehension	• understanding information • grasp meaning • translate knowledge into new context • interpret facts, compare, contrast • order, group, infer causes • predict consequences • Question Cues: summarize, describe, interpret, contrast, predict, associate, distinguish, estimate, differentiate, discuss, extend
Application	• use information • use methods, concepts, theories in new situations • solve problems using required skills or knowledge • Questions Cues: apply, demonstrate, calculate, complete, illustrate, show, solve, examine, modify, relate, change, classify, experiment, discover
Analysis	• seeing patterns • organization of parts • recognition of hidden meanings • identification of components • Question Cues: analyze, separate, order, explain, connect, classify, arrange, divide, compare, select, explain, infer
Synthesis	• use old ideas to create new ones • generalize from given facts • relate knowledge from several areas • predict, draw conclusions • Question Cues: combine, integrate, modify, rearrange, substitute, plan, create, design, invent, what if?, compose, formulate, prepare, generalize, rewrite
Evaluation	• compare and discriminate between ideas • assess value of theories, presentations • make choices based on reasoned argument • verify value of evidence • recognize subjectivity • Question Cues: assess, decide, rank, grade, test, measure, recommend, convince, select, judge, explain, discriminate, support, conclude, compare, summarize

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

EDMS 545 SCIENCE EDUCATION FALL 2007
ICP CLASS: MONDAYS 1:00-3:45

Reading

Class 1 – Aug. 27 — Ch. 1-2
- Possible Outcomes: Your Goals and Course Goals
- Orientation to Class; index card IDs
- Participation, Professionalism and Dispositions
- Concept Mapping
- The Learning Cycle Model of Instruction
- Learning Cycle Lesson
- Text Overview

Sept. 3 – Labor Day Holiday

Class 2 – Sept. 10 — Ch. 3-4
- Writing Objectives for Student Learning
- Writing Science Concept Definitions and Essential Questions
- Learning Cycle Lesson
- Team time for Learning Cycle Lessons
- Private Universe: What causes the seasons? Understanding science concepts.

Class 3 – Sept. 17 — Ch.5-6
- Turn in Reading Accountability Concept Map Journal Entry for Ch. 4 — Comp.
- Science Process Skills and Scientific Attitudes — Communic.
- Science Content Standards Overview and Activity — Booklet
- **Team 1** Learning Cycle Lesson (Select topic from Ch. 4)
- Divide into Grade Level Groups for Science Curriculum
- **Each person** should **Bring Science Framework to next Class**
- ***Each person** should **Download, print and bring** California Science Content Standards, Grades K-6, from http://www.cde.ca.gov/be/st/ss/scmain.asp **to next class**

Class 4 – Sept. 24 — Ch.7-8
- Begin Science Curriculum: Grade Level Groups — Framwk 1-22
- Teaching English Language Learners in Science
- **Team 2** Learning Cycle Lesson (Select topic from Ch. 5-6)
- Team time for Learning Cycle Lessons
- Communication Basics: An Overview of Nonviolent Communication
- Begin Framework Summary Response
- **Each person** should **Bring Science Framework** & **Science Content Standards** to all **classes.**

Class 5 – Oct. 1 — Ch.9-10
- Turn in Reading Accountability Journal Entries for Ch.5-8
- Work on Science Curriculum: Grade Level Groups
- Performance Assessments
- Developing Criteria for Assessing Learning and Using Rubrics to Show Criteria
- **Team 3** Learning Cycle Lesson (Select topic from Ch. 7-8)
- Team time for Learning Cycle Lessons

Class 6 – Oct. 8 — Ch.11-12
- Discuss and Turn in Framework Summary Response
- NSTA Position Statements on Elementary Science and Assessments
- Integrating Writing into Science Activities
- Work on Science Curriculum: Grade Level Groups
- **Team 4** Learning Cycle Lesson (Select topic from Ch. 9-10)

Class 7 – Oct. 15 — Ch. 13-14

Turn in Reading Accountability Journal Entries for Ch.9-12
Select Partners for Science Exploratorium (work in pairs)
Nature Center Lesson Activities

Class 8 – Oct. 22 — Ch.15-16

Mid-Class Check
Work on Science Curriculum: Grade Level Groups
Team 5 Learning Cycle Lesson (Select topic from Ch. 11-14)
Inclusion and Teaching Science to Students with Special Needs
Science Exploratorium Planning time

Class 9 – Oct. 29 — Ch.17-18

Turn in Reading Accountability Journal Entries for Ch. 13-16
Work on Science Curriculum: Grade Level Groups
Team 6 Learning Cycle Lesson (Select topic from Ch. 15-16)
Science Exploratorium Planning time

Class 10 – Nov. 5 — Ch. 19-20

Science Projects, Student Research, Science Fairs
Safety in the Science Class
Team 7 Learning Cycle Lesson (Select topic from Ch. 17-18)
Complete Exploratorium Lesson Plans

Nov. 12 – Veterans Day Holiday

Class 11 – Nov. 19 — Ch. 21

Turn in **1 page** Lesson for Science Exploratorium and **1/2-1 page** "Data Sheet"
Turn in Reading Accountability Journal Entries for Ch. 17-20
Benchmarks
National Science Education Standards
Team 8 Learning Cycle Lesson (Select topic from Ch. 19-20)
Finalize Exploratoriums
Begin Course Reflection

Class 12 – Nov. 26 – meet at Elementary School

Turn in Reading Accountability Journal Entries for Ch. 17-20
Turn in Science Curriculum with all students' names and email 1 copy to knorman@csusm.edu
Turn in Learning Cycle Lesson Drawings and Explanations
Science Exploratorium at Elementary School
Bring copies of Data Sheets for the elementary children
Also bring copies of your Lesson Plan and extra copies of Data Sheets for students in our class

Class 13 – Dec. 3

Turn in Reading Accountability Journal Entry for Ch. 21
Turn in Course Reflection
Discuss Exploratorium
Complete TPEs in class.
TPEs should be completed on Taskstream during this class time, though you may bring a draft to class to be better prepared. You will turn in a printout of your responses to TPE 1A Science and TPE 5 Student Engagement, printed on computer lab printer prior to leaving. You will need to bring a printer card to class to print it out. This may not be emailed.
Do course evaluation.

Dec. 5 - Final Presentations of Projects and Year-Long Science Curriculum

Assignment Checklist

Assignment	%	Individual or Team	Documents to Turn In	Due Date
Reading Accountability Journal	25	Individual	Blue Books - individual Ch 2-21	Every Other Week
Framework Summary Response	05	Individual	Typed Response – individual	Oct. 8
Leadership of Hands-On Science Lesson	10	Team	Self-Eval Rubric - team Lesson Plan - team	varies
Learning Cycle Lesson Drawings	05	Individual	Drawings w Labels - Blue Book/Lab- individual	Nov. 26
Learning Cycle Lesson Explanations	05	Individual	Drawings w Labels - Blue Book/Lab- individual	Nov. 26
Science Exploratorium	10	Pairs	Self-Eval Rubric - pairs Lesson Plan & data sheet- pairs	Nov. 26
Science Curriculum	20	Team	Self-Eval Rubric - team Curriculum – team Also email 1 copy/team	Nov. 26
Course Reflection	05	Individual	Typed Responses	Dec. 3
Complete Science TPEs in class	10	Individual	Typed Responses Internet Taskstream Entries - individual	Dec. 3

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 _____	8 _____
Sept. 3 Labor Day	9 _____
2 _____	10 _____
3 _____	Nov. 12 Veteran's Day
4 _____	11 _____
5 _____	12 _____
6 _____	13 _____
7 _____	Final Presentations _____

Reading Accountabilities (5 points each)

Ch. 4 _____ point	Ch. 10 _____ point	Ch. 16 _____ point
Ch. 5 _____ point	Ch. 11 _____ point	Ch. 17 _____ point
Ch. 6 _____ point	Ch. 12 _____ point	Ch. 18 _____ point
Ch. 7 _____ point	Ch. 13 _____ point	Ch. 19 _____ point
Ch. 8 _____ point	Ch. 14 _____ point	Ch. 20 _____ point
Ch. 9 _____ point	Ch. 15 _____ point	Ch. 21 _____ point

Assessment of Course Objectives	Percent of Grade	Your Grade	Final Points
1. Participation, Professionalism and Disposition	5%		
2. Reading Accountability Journal	25%		
3. Framework Summary Response	5%		
4. Leadership of Hands-on Science Activities	10%		
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. Complete Science TPEs during last class	10%		

Final Course Grade _____
Final Letter Grade _____

EDMS 545 Elementary Science Education
Syllabus Contract

I have read and understand the course requirements of EDMS 545 as specified in the course syllabus. I have provided a copy of this contract to the course instructor.

Date_____

Student Signature:

_____

Print Name of Student:

_____