

**California State University San Marcos  
College of Education**

**EDMS 545 - Elementary Science Education  
Fall 2004  
8:00-2:15**

**Instructor: Patricia Beal**  
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**Office hours: Arranged before and after class**

**Required Textbooks:**

*Teaching Children Science. An Inquiry Approach*  
By Alfred E. Friedl. NY: McGraw-Hill.

*California Science Framework*

**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 group 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 in to the course.

**COURSE OBJECTIVES**

By the end of this course, students should be able to

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 student learning of science concepts and processes.
9. Design a 3-lesson elementary science teaching unit .
10. Practice strategies to include all students in science (linguistically and culturally diverse, students with disabilities and other students with special needs).

**\*\*You must go to ACD 202 to activate your CSUSM e-mail account, or provide another email address.**

## 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 ongoing service. Our practices demonstrate a commitment to student centered education, diversity, collaboration, professionalism, and shared governance.

## INFUSED COMPETENCIES

### CLAD

In 1992, the College of Education voted to infuse Cross-cultural, Language and Academic Development (CLAD) competencies across the curriculum. The CLAD competencies are attached to the syllabus and the competencies covered in this course are highlighted.

### 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.

### Technology

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

## COURSE REQUIREMENTS

**COE Attendance Policy:** “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.”

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. If you miss more than 20% of the class you may not receive a passing grade for the course. Absences do not change assignment due dates. Late assignments will receive a 10% reduction in points for each day late. After one week, late assignments will receive no credit.

## TOPICS OUTLINE

The Learning Cycle Model of Teaching  
Learning Cycle Science Lesson demonstrations  
Writing Objectives and Explanations of Science Concepts  
CA Science Content Standards Grades K-8  
California Science Framework  
SDAIE Strategies 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

## COURSE ASSIGNMENTS

1. Reading Responses (*due for each chapter, turned in at end of 2<sup>nd</sup>, 4<sup>th</sup>, 6<sup>th</sup>, and 8<sup>th</sup> weeks*)
2. Leadership of Hands-on Science Lessons (*beginning 3<sup>rd</sup> week; instructor models during weeks 1 & 2*)
3. Science Instruction Case Study (*6<sup>th</sup> week*)
4. Science Practicum with School Age Children (*7<sup>th</sup> week*)
5. Science Teaching Unit with Learning Cycle Lessons (*8<sup>th</sup> week*)

## ASSIGNMENT DESCRIPTIONS

### 1. READING RESPONSES (ONE PER CHAPTER, DUE 2<sup>ND</sup>, 4<sup>TH</sup>, 6<sup>TH</sup>, AND 8<sup>TH</sup> WEEK)

Students will be assigned readings and should present their responses to each chapter in one of the following forms:

- A. A Big Ideas paper explaining the key science concepts and example activities
- B. A visual or symbolic representation of the key science concepts
- C. A graphic organizer that demonstrates the key science concepts and their relationships to one another (samples will be provided in class)

The responses should be 1-2 pages and typed. They will be checked off for completion each due date. Representative samples will be examined for closer reading.

### PRIMARY TEACHING PERFORMANCE EXPECTATIONS

TPE 1A: Subject-Specific Pedagogical Skills for Multiple Subject Teaching Assignments

TPE 4: Making Content Accessible

TPE 5: Student Engagement

TPE 6: Developmentally Appropriate Teaching Practices

TPE 6A: Developmentally Appropriate Practices in Grades K-3

TPE 6B: Developmentally Appropriate Practices in Grades 4-8

### 2. LEADERSHIP OF HANDS-ON SCIENCE LESSONS – Critical Assessment Task (CATs)

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 California content standards. SDAIE strategies, technology integration, and methods for teaching students with disabilities should all be included and pointed out during the lesson.

You will work in groups of 4 people to lead science lessons based on the Learning Cycle Model of Instruction. You will teach these to your classmates. Each lesson will be allocated 30-40 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 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.

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.

Make sure that you include the 3 stages of the Learning Cycle.

Make sure that science content background and applications to everyday life are addressed.

You need to explain SDAIE strategies and adaptations for students with disabilities.

Prepare a Powerpoint Computer 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 10 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. \*\*You need to email the presentation to the instructor 2 days prior to your presentation.

Each group will prepare a handout which includes the 3 stages of the learning cycle, SDAIE strategies, adaptations for students with disabilities, a 1-2 page summary of the science content background, a list of science concepts taught (with definitions), a list of 10 relevant web sites (with descriptions), and applications to everyday life. Bring copies of the activity (for everyone) with (a) group members' names at the top and (b) reference at the bottom.. \*On the first line, write out the science concept(s) you are teaching in a complete sentence. Do not say "The students will \_\_\_\_." (That is an objective, not a science concept.)\*

Each group will prepare an evaluation instrument to be used by (a) the instructor, (b) 5 class members not in the group, (c) group members (each will complete one copy). The evaluation instruments should have the group members' names, title and science topic at the top. The instructor's copy should include a description of each person's role in researching and presenting.

### **PRIMARY TEACHING PERFORMANCE EXPECTATIONS**

TPE 1A: Subject-Specific Pedagogical Skills for Multiple Subject Teaching Assignments

TPE 2: Monitoring Student Learning During Instruction

TPE 4: Making Content Accessible

TPE 5: Student Engagement

TPE 6: Developmentally Appropriate Teaching Practices

TPE 6A: Developmentally Appropriate Practices in Grades K-3

TPE 6B: Developmentally Appropriate Practices in Grades 4-8

TPE 9: Instructional Planning

TPE 10: Instructional Time

TPE 13: Professional Growth

### **SECONDARY TEACHING PERFORMANCE EXPECTATION**

TPE 7: Teaching English Learners

### **3. SCIENCE INSTRUCTION CASE STUDY**

Students will develop a case study of science instruction involving input from classroom observations, a K-8 teacher or teachers and K-8 students. It will include 5 parts: your observations, teacher interview, student surveys, chart comparison, and case study paper. Carefully read A-F below.

#### **Observations of Science Lessons**

- A. Ask an elementary teacher if you can observe 2-3 science lessons in his or her class. Then answer the following:
1. How would you define science instruction in this classroom?
  2. What are the characteristics of science instruction?
  3. What do the students do during science instruction?
  4. What materials are used?
  5. How often do the students engage in hands-on activities?
  6. Do they each participate and have a role?
  7. How is the classroom organized for science instruction?
  8. What science materials are in the classroom?
  9. What evidence is there of science?
  10. Do you see writing infused within the science lessons? If so, what are some examples?
  11. Are their children in the class who are learning English? What differences and similarities exist for children who are learning English?

Feel free to add more descriptive information in regard to science instruction.

B After you have answered the above questions find time to interview the teacher..  
Ask the teacher to answer the Teacher Survey. Please inform the teacher that the school and district will not be identified, only the grade level. Please do not put the teacher's name on the survey.

### Teacher Survey

1. How do children learn science?
2. How do you organize instruction so that children learn concepts related to the California science standards?
3. What are the different activities that you do during science instruction?
4. How do you group the students during science activities?
5. How often do you teach science?
6. How often do the children participate in hands-on science activities?
7. Do you integrate writing activities into science lessons? What are some examples?
8. What is the easiest thing about teaching science?
9. What is the most difficult thing about teaching science?
10. If you could design the ideal science program, what would be the characteristics of the program?
11. How do you organize instruction for science in two languages or in a language other than English? What challenges does this present for you?
12. How do you adapt instruction for students with special needs? Are there particular techniques or issues related to science teaching and students with special needs?

Feel free to include other questions during the interview. If possible, take a portable tape recorder to record the responses for later transcription, as it is easy to miss some things when you are taking notes. Be sure to ask the teacher if she or he minds if you use the tape recorder, and do not use it if the teacher is hesitant.

- C. Ask the teacher if you can hand out the Student Survey to the students in the class. Do **not** have the students put their names on the surveys. Feel free to include other questions on the survey, but do not make it too long for the student to answer. This survey will work with third graders and up; you can try it with second graders but I would suggest reading the questions aloud one at a time for them. If you are working with K, 1 or 2 use the following alternative strategy: Choose approximately 6 students (if you are in a bilingual class choose 3 who have English as their native language and 3 with Spanish or whatever other language is spoken in the class). Interview each student using the survey questions. Record the answers, if possible, and transcribe the taped interviews. Be flexible and adapt the survey to the level of the students.

### Student Survey

Please answer the following questions.

Grade level: \_\_\_\_\_ Are you a Boy  Girl  ?

What language(s) do you speak? English  Spanish  Other

1. What happens during science in your class? How does your teacher teach you science?
2. How often do you do hands-on science activities in class?
3. What sorts of science activities do you do in class?
4. Do you work in groups to do science activities? If so, what do you do in the groups? Does each person have a job to do?
5. Do you have science materials to use during science activities? What sorts of materials do you use?
6. What are some of the science topics you have studied this year in science class?
7. Do you like science time? What do you like best about it?
8. Are you a good student in science? What helps you learn best?

- D. Examine the three sets of data (your observations, those of the teacher and students) for matches and mismatches. Create a grid to organize the data:

**Comparison Chart**

	<b>My Observations</b>	<b>Teacher Interview</b>	<b>Student Surveys</b>
<b>How is science taught?</b>			
<b>How does the teacher teach science?</b>			
<b>Do the students participate in hands-on science activities?</b>			
<b>Adaptations and Accommodations</b>			

- E. Using the data you have collected and the match/mismatch chart, type a 2-3 page CASE STUDY PAPER of the science instruction.
- F. Turn in the following. Staple all together in the following order with the Case Study paper on top.
1. Your 2-3 page Case Study Paper.
  2. Your own answers to questions (in A above) as you observed in the classroom
  3. Teacher Interview questions (B above) and answers
  4. Student Surveys (C above) with student answers
  5. Comparison Chart of your observations, teacher interview answers and student survey answers.
- Please turn in two copies of anything you wish returned to you.

**PRIMARY TEACHING PERFORMANCE EXPECTATIONS**

- TPE 1A: Subject-Specific Pedagogical Skills for Multiple Subject Teaching Assignments
  - Teaching Science in a Multiple Subject Assignment
- TPE 2: Monitoring Student Learning During Instruction
- TPE 6: Developmentally Appropriate Teaching Practices
  - TPE 6A: Developmentally Appropriate Practices in Grades K-3
  - TPE 6B: Developmentally Appropriate Practices in Grades 4-8
- TPE 10: Instructional Time
- TPE 11: Social Environment

**SECONDARY TEACHING PERFORMANCE EXPECTATION**

- TPE 8: Learning about Students

#### 4. SCIENCE PRACTICUM WITH SCHOOL AGE CHILDREN – Critical Assessment Task (CATs)

Develop an inquiry activity to teach to elementary students.

You will prepare a hands-on science lesson and poster about a science concept. You will present the lesson at our Elementary School Science Exposition. Be sure you understand the concept(s) you are emphasizing, and that you can explain it. The activity should be developmentally appropriate, and should follow the NSTA Safety Guidelines. Prior to teaching the lesson, turn it in to your instructor for review. After teaching the lesson, turn in a copy of your Lesson and your Reflection. 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.)

Turn in the following:

1. Type the lesson.
2. Include your name at the top of the page and references at the bottom of the page.
3. Science Concept you are teaching. Write it out in a complete sentence. Do not say “The students will \_\_\_\_\_.” (That is an objective, not a science concept.)
4. California Science Content Standards and Investigation Standards addressed
5. 1-3 Learning Objectives
6. Exploration Activity
7. Concept Invention
8. Concept Application Activity
9. The Reflection (answer the following):
  - How did the children respond? (What did they say and do?)
  - How do the children’s actions and responses demonstrate their level of understanding.
  - How did you (or can you) improve upon your lesson to facilitate understanding?

#### **PRIMARY TEACHING PERFORMANCE EXPECTATIONS**

TPE 1A: Subject-Specific Pedagogical Skills for Multiple Subject Teaching Assignments

Teaching Science in a Multiple Subject Assignment

TPE 2: Monitoring Student Learning During Instruction

TPE 4: Making Content Accessible

TPE 5: Student Engagement

TPE 6: Developmentally Appropriate Teaching Practices

TPE 6A: Developmentally Appropriate Practices in Grades K-3

TPE 6B: Developmentally Appropriate Practices in Grades 4-8

TPE 13: Professional Growth

#### **SECONDARY TEACHING PERFORMANCE EXPECTATION**

TPE 8: Learning about Students

TPE 12: Professional, Legal, and Ethical Obligations

## 5. SCIENCE TEACHING UNIT – Critical Assessment Task (CATs)

You will create a typed unit on a specific science topic. You must bring a stamped, self-addressed manila envelope in order to receive a final grade. (You may work in pairs on this assignment.)

1. Unit Plan (1 page-include title, grade level, goals for unit, Calif. Science Content Standards addresses, and one-two line descriptions of each learning cycle lesson)
2. 4 Learning Cycle Lesson Plans *Adapt from Commercial Lessons!*

For each lesson, include the following:

*Do not re-invent activities.*

- a. Topic
  - b. Science Concept you are teaching. Write out the science concept(s) you are teaching in a complete sentence. Do not say “The students will \_\_\_\_.” (That is an objective, not a science concept.)
  - c. California Science Content Standards and Investigation Standards addressed
  - c. Objectives (1-2) (use behavioral objectives with action verbs—i.e., The students will \_\_\_\_)
  - d. Exploration Activity- explain what students will do and what teacher will do
  - e. Concept Invention --explain what students will do and what teacher will do
  - f. Concept Application Activity- explain what students will do and what teacher will do
  - g. Authentic Assessment
  - h. Rubric for Assessment
  - i. SDAIE Strategies and explanation of how used
  - j. Adaptations for Students With Disabilities and explanation of how used
  - k. 3 Ways to Integrate Technology and Explanation of how used
3. Science Content Background (3-5 pages—typed pages)
  4. List and short descriptions of 10 Web Sites (with short descriptions) that address the science topic and concepts through simulations, graphics and movies.
  5. References

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.

### PRIMARY TEACHING PERFORMANCE EXPECTATIONS

TPE 1A: Subject-Specific Pedagogical Skills for Multiple Subject Teaching Assignments  
Teaching Reading-Language Arts in a Multiple Subject Assignment  
Teaching Science in a Multiple Subject Assignment

TPE 4: Making Content Accessible

TPE 5: Student Engagement

TPE 6: Developmentally Appropriate Teaching Practices

TPE 6A: Developmentally Appropriate Practices in Grades K-3

TPE 6B: Developmentally Appropriate Practices in Grades 4-8

TPE 9: Instructional Planning

TPE 10: Instructional Time

TPE 13: Professional Growth

### SECONDARY TEACHING PERFORMANCE EXPECTATION

TPE 3: Interpretation and Use of Assessments

TPE 7: Teaching English Learners

## CRITERIA FOR GRADING ASSIGNMENT

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

**Late assignments will be penalized by a 10-point reduction each day they are late.**

## COURSE GRADES

### *An "A" student is one who:*

- completes all assignments on time and demonstrates the ability to summarize, analyze, and/or reflect at high levels.
- varies sources of information for assignments, demonstrating high degree of effort in pursuing varied perspectives around important educational issues.
- completes all the reading assignments and develops thoughtful and thorough responses.
- produces work that reveals a strong commitment to self-discovery and learning.
- produces work at a high professional level in terms of both writing and content.
- develops a high quality presentation, demonstrating significant learning around a contemporary issue.
- presents confidently and intelligently, demonstrating effective teaching skills.
- completes assignments in/out of class with a focus on learning and exploration, pushing him/herself to better understand the profession through quality work.
- attends almost every class meeting and is fully engaged during class.
- pushes him/herself to new understandings by participating in discussions, sharing his/her opinions, and valuing others' perspectives.
- contributes to the positive environment of the class by respecting all members.

### *A "B" student is one who:*

- completes all or almost all assignments, all or most on time, and demonstrates the ability to summarize, analyze, and/or reflect at fairly high levels, showing consistent improvement over time.
- varies sources of information for assignments, demonstrating high degree of effort in pursuing varied perspectives around important educational issues.
- completes all or most of the reading assignments and develops thoughtful and fairly thorough responses.
- produces work that reveals a commitment to self-discovery and learning.
- 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.
- develops presentations, demonstrating significant learning
- presents confidently and intelligently, demonstrating effective teaching skills.
- completes assignments in/out of class with a focus on learning and exploration, pushing him/herself to better understand the profession through quality work.
- attends almost every class meeting and is regularly engaged during class.
- pushes him/herself to new understandings by participating in discussions, sharing his/her opinions, and valuing others' perspectives.
- contributes to the positive environment of the class by respecting all members.

### *A "C" student is one who:*

- completes or attempts most of the assignments, mostly on time, and demonstrates the ability to do some quality summarizing, analysis, and reflection, showing improvement over time.

- varies sources of information for assignments, demonstrating effort in pursuing varied perspectives around important educational issues.
- completes most of the reading assignments and develops thoughtful and sometimes thorough responses.
- produces work that reveals a commitment to some self-discovery and learning.
- produces work that is not yet at a professional level in terms of both writing and content.
- develops a quality presentation, demonstrating learning around a contemporary issue.
- presents confidently and intelligently, demonstrating some effective teaching skills.
- completes assignments in/out of class with a focus on learning and exploration, pushing him/herself a little to better understand the profession.
- attends most class meetings and is often engaged during class.
- pushes him/herself to some new understandings by participating to a moderate degree in discussions, sharing his/her opinions, and valuing others' perspectives.
- contributes to the positive environment of the class by respecting all members.

A “D” student is one who doesn’t meet all of the minimal standards of a “C” student; “F” is earned by someone who hasn’t completed significant portions of the required work and fails to meet the “C” student standards.

### **JOURNALS**

*Science*

*Science and Children*

*Science Education*

*Science News*

*Science Scope*

*The Science Teacher*

*School Science and Math*

*Innovations in Science and Technology Education*

*Journal of Research in Science Teaching*

*American Biology Teacher*

*Physics Teacher*

*Journal of Chemical Education*

### **EISENHOWER NATIONAL CLEARINGHOUSE**

Visit <http://enc.org> to see the new web site

The Eisenhower National Clearinghouse (ENC) has recently launched an all-new web site, ENC Online, at <http://enc.org>. ENC, which was established by the U.S. Department of Education, provides K-12 math and science educators with information about teaching materials, innovative ideas, and professional development.

The content on ENC Online has been organized into four major categories. They are Curriculum Resources, Web Links, Professional Resources, and Topics. Through Curriculum Resources, teachers can locate teaching or professional development materials using subject words, grade level, cost, and type of material to meet their specific needs.

Teachers have said that the Digital Dozen, a monthly selection of exemplary math and science web sites, is one of their favorite features on the site. It is now found in the Web Links area. (Teacher can now also choose to have Digital Dozen delivered to their email boxes when registering with ENC.) Web Links also includes links to sites offering lesson plans, arranged by math or science topics.

The Professional Resources area is intended to become a part of a teacher's professional support system. A Timesavers section found within the Professional Resources area offers a collection of the most popular professional resources in one place for quick linking and use. Standards and state frameworks are also found under Professional Resources, as are federally funded resources, professional development strategies, and research articles.

ENC has always created projects and publications on relevant topics for teachers. The Topics area arranges hundreds of articles, teacher interviews, and selected curriculum resources and web sites thematically. Key education issues addressed in the Topics area include inquiry and problem solving, integrating educational technology, equity, and assessment. These areas include the materials developed for ENC Focus, our quarterly magazine for math and science educators.

Lastly, visitors will find news and timely information about workshops, student contests, awards and grants, and other developments in math and science education.

**Teaching Performance Expectations  
Standards of Quality and Effectiveness for Professional Teacher Preparation Programs  
California Commission on Teacher Credentialing September 6, 2001**

**A. MAKING SUBJECT MATTER COMPREHENSIBLE TO STUDENTS**

**TPE 1A: Subject-Specific Pedagogical Skills for Multiple Subject Teaching Assignments - 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,

**B. ASSESSING STUDENT LEARNING**

**TPE 2: Monitoring Student Learning During Instruction** - Candidates for a Teaching Credential use progress monitoring at key points during instruction to determine whether students are progressing adequately toward achieving the state-adopted academic content standards for students. They pace instruction and re-teach content based on evidence gathered using assessment strategies such as questioning students and examining student work and products. Candidates anticipate, check for, and address common student misconceptions and misunderstandings.

**TPE 3: Interpretation and Use of Assessments**

Candidates for a Teaching Credential understand and use a variety of informal and formal, as well as formative and summative assessments, to determine students' progress and plan instruction. They know about and can appropriately implement the state-adopted student assessment program. Candidates understand the purposes and uses of different types of diagnostic instruments, including entry level, progress-monitoring and summative assessments. They use multiple measures, including information from families, to assess student knowledge, skills, and behaviors. They know when and how to use specialized assessments based on students' needs. Candidates know about and can appropriately use informal classroom assessments and analyze student work. They teach students how to use self-assessment strategies. Candidates provide guidance and time for students to practice these strategies.

Candidates understand how to familiarize students with the format of standardized tests. They know how to appropriately administer standardized tests, including when to make accommodations for students with special needs. They know how to accurately interpret assessment results of individuals and groups in order to develop and modify instruction. Candidates interpret assessment data to identify the level of proficiency of English language learners in English as well as in the students' primary language. They give students specific, timely feedback on their learning, and maintain accurate records summarizing student achievement. They are able to explain, to students and to their families, student academic and behavioral strengths, areas for academic growth, promotion and retention policies, and how a grade or progress report is derived. Candidates can clearly explain to families how to help students achieve the curriculum Standards of Quality and Effectiveness for Professional Teacher Preparation Programs

**C. ENGAGING AND SUPPORTING STUDENTS IN LEARNING**

**TPE 4: Making Content Accessible**

Candidates for Teaching Credentials incorporate specific strategies, teaching/instructional activities, procedures and experiences that address state-adopted academic content standards for students in order to provide a balanced and comprehensive curriculum. They use instructional materials to reinforce state-adopted academic content standards for students and they prioritize and sequence essential skills and strategies in a logical, coherent manner relative to students' current level of achievement. They vary instructional strategies according to purpose and lesson content. To meet student academic learning needs, candidates explain content clearly and reinforce content in multiple ways,

such as the use of written and oral presentation, manipulatives, physical models, visual and performing arts, diagrams, non-verbal communication, and computer technology. They provide opportunities and adequate time for students to practice and apply what they have learned. They distinguish between conversational and academic language, and develop student skills in using and understanding academic language. They teach students strategies to read and comprehend a variety of texts and a variety of information sources, in the subject(s) taught. They model active listening in the classroom. Candidates encourage student creativity and imagination. They motivate students and encourage student effort. When students do not understand content, they take additional steps to foster access and comprehension for all learners. Candidates balance instruction by adjusting lesson designs relative to students' current level of achievement.

### **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.

### **TPE 6: Developmentally Appropriate Teaching Practices**

Background information for TPE 6: TPEs describe knowledge, skills, and abilities for all credential candidates, and they underscore the importance of generically-effective strategies for teaching a broad range of students. The purpose of TPE 6 is to establish additional expectations that are of greatest importance in teaching students at distinct stages of child and adolescent development. It is not the intent of TPE 6 to describe practices that are appropriate or effective only at one developmental level. Standards of Quality and Effectiveness for Professional Teacher Preparation Programs. This TPE describes professional practices that are most commonly used and needed for students in each major phase of schooling, grades K-3, 4-8, and 9-12. 2

#### **TPE 6A: Developmentally Appropriate Practices in Grades K-3**

During teaching assignments in Grades K-3, candidates for a Multiple Subject Teaching Credential understand how to create a structured day with opportunities for movement. They design academic activities that suit the attention span of young learners. Their instructional activities connect with the children's immediate world; draw on key content from more than one subject area; and include hands-on experiences and manipulatives that help students learn. Candidates teach and model norms of social interactions (e.g., consideration, cooperation, responsibility, empathy). They understand that some children hold naïve understandings of the world around them. Candidates provide educational experiences that help students develop more realistic expectations and understandings of their environment. They know how to make special plans for students who require extra help in exercising self-control among their peers or who have exceptional needs or abilities.

#### **TPE 6B: Developmentally Appropriate Practices in Grades 4-8**

During teaching assignments in Grades 4-8, candidates for a teaching credential build on students' command of basic skills and understandings while providing intensive support for students who lack basic skills as defined in state-adopted academic content standards for students. They teach from grade-level texts. Candidates design learning activities to extend students' concrete thinking and foster abstract reasoning and problem-solving skills. They help students develop learning strategies to cope with increasingly challenging academic curriculum. They assist students, as needed, in developing and practicing strategies for managing time and completing assignments. Candidates develop students' skills for working in groups to maximize learning. They build on peer relationships and support students in trying new roles and responsibilities in the classroom. They support students' taking of intellectual risks such as sharing ideas that may include errors. Candidates distinguish between misbehavior and over-enthusiasm, and they respond appropriately to students who are testing limits and students who alternatively assume and reject responsibility.

### **TPE 7: Teaching English Learners**

Candidates for a Teaching Credential know and can apply pedagogical theories, principles, and instructional practices for comprehensive instruction of English learners. They know and can apply theories, principles, and instructional practices for English Language Development leading to comprehensive literacy in English. They are

familiar with the philosophy, design, goals, and characteristics of programs for English language development, including structured English immersion. They implement an instructional program that facilitates English language development, including reading, writing, listening and speaking skills, that logically progresses to the grade level reading/language arts program for English speakers. They draw upon information about students' backgrounds and prior learning, including students' assessed levels of literacy in English and their first languages, as well as their proficiency in English, to provide instruction differentiated to students' language abilities. They understand how and when to collaborate with specialists and para-educators to support English language development. Based on appropriate assessment information, candidates select instructional materials and strategies, including activities in the area of visual and performing arts, to develop students' abilities to comprehend and produce English. They use English that extends students' current level of development yet is still comprehensible. They know how to analyze student errors in oral and written language in order to understand how to plan differentiated instruction. Candidates for a Teaching Credential know and apply pedagogical theories, principles and practices for the development of academic language, comprehension, and knowledge in the subjects of the core curriculum. They use systematic instructional strategies, including contextualizing key concepts, to make grade-appropriate or advanced curriculum content comprehensible to English learners. They allow students to express meaning in a variety of ways, including in their first language, and, if available, manage first language support such as para-educators, peers, and books.<sup>3</sup> They use questioning strategies that model or represent familiar English grammatical constructions. They make learning strategies explicit.

Candidates understand how cognitive, pedagogical, and individual factors affect students' language acquisition. They take these factors into account in planning lessons for English language development and for academic content.

Teachers are not expected to speak the students' primary language, unless they hold an appropriate credential and teach in a bilingual classroom. The expectation is that they understand how to use available resources in the primary language, including students' primary language skills, to support their learning of English and curriculum content. •Standards of Quality and Effectiveness for Professional Teacher Preparation Programs

## **D. PLANNING INSTRUCTION AND DESIGNING LEARNING EXPERIENCES FOR STUDENTS**

### **TPE 8: Learning about Students**

Candidates for a Teaching Credential draw upon an understanding of patterns of child and adolescent development to understand their students. Using formal and informal methods, they assess students' prior mastery of academic language abilities, content knowledge, and skills, and maximize learning opportunities for all students. Through interpersonal interactions, they learn about students' abilities, ideas, interests and aspirations. They encourage parents to become involved and support their efforts to improve student learning. They understand how multiple factors, including gender and health, can influence students' behavior, and understand the connections between students' health and their ability to learn. Based on assessment data, classroom observation, reflection and consultation, they identify students needing specialized instruction, including students whose physical disabilities, learning disabilities, or health status require instructional adaptations, and students who are gifted.

### **TPE 9: Instructional Planning**

Candidates for a Teaching Credential plan instruction that is comprehensive in relation to the subject matter to be taught and in accordance with state-adopted academic content standards for students. They establish clear long-term and short-term goals for student learning, based on state and local standards for student achievement as well as on students' current levels of achievement. They use explicit teaching methods such as direct instruction and inquiry to help students meet or exceed grade level expectations. They plan how to explain content clearly and make abstract concepts concrete and meaningful. They understand the purposes, strengths and limitations of a variety of instructional strategies, including examining student work, and they improve their successive uses of the strategies based on experience and reflection. They sequence instruction so the content to be taught connects to preceding and subsequent content. In planning lessons, they select or adapt instructional strategies, grouping strategies, and instructional material to meet student learning goals and needs. Candidates connect the content to be learned with students' linguistic and cultural backgrounds, experiences, interests, and developmental learning needs to ensure that instruction is comprehensible and meaningful. To accommodate varied student needs, they plan differentiated instruction. When support personnel, such as aides and volunteers are available, they plan how to use them to help

students reach instructional goals. •Standards of Quality and Effectiveness for Professional Teacher Preparation Programs.

## **E. CREATING AND MAINTAINING EFFECTIVE ENVIRONMENTS FOR STUDENT LEARNING**

### **TPE 10: Instructional Time**

Candidates for a Teaching Credential allocate instructional time to maximize student achievement in relation to state-adopted academic content standards for students, instructional goals and scheduled academic tasks. They establish procedures for routine tasks and manage transitions to maximize instructional time. Based on reflection and consultation, they adjust the use of instructional time to optimize the learning opportunities and outcomes for all students.

### **TPE 11: Social Environment**

Candidates for a Teaching Credential develop and maintain clear expectations for academic and social behavior. The candidates promote student effort and engagement and create a positive climate for learning. They know how to write and implement a student discipline plan. They know how to establish rapport with all students and their families for supporting academic and personal success through caring, respect, and fairness. Candidates respond appropriately to sensitive issues and classroom discussions. They help students learn to work responsibly with others and independently. Based on observations of students and consultation with other teachers, the candidate recognizes how well the social environment maximizes academic achievement for all students and makes necessary changes. •

## **F. DEVELOPING AS A PROFESSIONAL EDUCATOR**

### **TPE 12: Professional, Legal, and Ethical Obligations**

Candidates for a Teaching Credential take responsibility for student academic learning outcomes. They are aware of their own personal values and biases and recognize ways in which these values and biases affect the teaching and learning of students. They resist racism and acts of intolerance. Candidates appropriately manage their professional time spent in teaching responsibilities to ensure that academic goals are met.

Candidates for a Teaching Credential understand and honor legal and professional obligations to protect the privacy, health, and safety of students, families, and other school professionals. They are aware of and act in accordance with ethical considerations and they model ethical behaviors for students. Candidates understand and honor all laws relating to professional misconduct and moral fitness.

### **TPE 13: Professional Growth**

Candidates for a Teaching Credential evaluate their own teaching practices and subject matter knowledge in light of information about the state-adopted academic content standards for students and student learning. They improve their teaching practices by soliciting feedback and engaging in cycles of planning, teaching, reflecting, discerning problems, and applying new strategies. Candidates use reflection and feedback to formulate and prioritize goals for increasing their subject matter knowledge and teaching effectiveness.

**CLASS CALENDAR WITH ASSIGNMENTS WILL BE DISTRIBUTED AT THE FIRST CLASS.**