

**University of California, Irvine
Department of Physical Sciences**

PS 106

**California Teach 3 (CaT3): High School Science and Mathematics Teaching
Fall 2007**

**Fridays: 9/28, 10/12, 10/26, 11/2, 11/9 & 11/16
Room HICF 100P**

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Office Hours: After class or by appointment

Units: 2 units

Catalog Description:

Capstone of a series of three seminars for students interested in becoming secondary math or science teachers. Meets 6 times for students to understand effective, research-based teaching strategies. Includes an opportunity to experience teaching in a High School. Pass/Not Pass or letter grade.

Goals and Objectives:

PS 106 refines students' knowledge of the teaching and learning of science and mathematics in high school classrooms and it provides students with opportunities to determine which level they might be interested in teaching. Students will be placed in an high school in a local school district and will observe and assist an high school mentor teacher teaching science or mathematics. The accompanying seminar course will take students into greater understanding of the theory and practice of designing and delivering excellent science and mathematics instruction at the high school classroom level. Students will be introduced to inquiry based learning practices, national and California standards, reading and learning differences in children, and the cognitive ability of high school students as it relates to the introduction of concepts, curricular planning, classroom management and learning assessment.

CaT3 - Course Objectives:

- Recognize elements of high school culture and how it affects teaching and learning in the classroom.
- Note how the high school curricula in science and mathematics builds upon the concepts taught at the elementary and middle school level and how these concepts prepare students for high school science and mathematics.
- Learn professional expectations for observation, participation, teaching during field work assignments in secondary public school classrooms.
- Develop a philosophy and plan for classroom management.
- Become more familiar with the CTCC Teaching Performance Expectations.
- Apply the relevant educational theory to classroom practices.
- Develop knowledge and skill in reflection on practice.

- Learn effective and appropriate grading and assessment principles, systems, procedures and instruments.
- Develop an understanding of and sensitivity to students from diverse cultural, linguistic and socio-economic backgrounds, including students with special needs and evaluate teaching methods that address the variety of ways students learn and make sense of new information.
- Become familiar with national and state standards in science and mathematics at the high school level and learn how to maximize the interrelatedness of curriculum, textbook adoption, standards, and assessments.
- Develop and present a lesson using research-based pedagogies.
- Formally, through course requirements, reflect in writing on their progress as teachers and as learners and on teaching and learning practices they are experiencing in their undergraduate classes.
- Critically observe both teaching and learning in science and mathematics, paying particular attention to the role of misconceptions and sense-making as students learn new information.
- Learn how to assess if students are learning the material.
- Recognize why a deep understanding of the science and math subject matter is essential for understanding how students learn, particularly in making sense of the rich variety of ways individuals may approach the same problem.

In addition, PS 106 provides multiple and systematic opportunities for candidates to practice competencies for CTCC Teaching Performance Expectations (TPEs):

TPE 1: Specific pedagogical skills for subject matter instruction.

TPE 2: Monitoring students learning during instruction.

TPE 3: Interpretation and use of assessments.

TPE 4: Making content accessible.

TPE 5: Student engagement.

TPE 6: Developmentally appropriate teaching practices.

TPE 7: Teaching English Learners.

TPE 8: Learning about students.

TPE 9: Instructional planning.

TPE 10: Instructional time.

TPE 11: Social Environment

TPE 13: Professional Growth.

Required Text: None

Course Assignments:

- Analysis of the California Standards for the Teaching Profession & Teacher Performance Expectations **Due 10/12**
- Presentation of Draft Lesson Plan **Due 10/26**
- Classroom Management Plan **Due 11/9**
- PCOP Analysis **Due 11/30**
- Final Lesson Plan **Due 12/7**
- Lesson Reflection **Due 12/7**
- Final Journal **Due 12/11**
- Completion of 20 hours of field work **Due 12/11**

Grading Policy:

This course may be taken for a letter grade or as pass/no pass .

Course Grading: Each assignment will be worth the points indicated below. Assignments will lose 1 point for each day they are late.

Analysis of the California Standards for the Teaching Profession - 10 points
Presentation of Draft Lesson Plan - 15 points
Classroom Management Plan - 15 points
PCOP Analysis - 10 points
Final Lesson Plan and Reflection - 20 points
Final Journal- 10 points
Attendance/ Participation- 60 points
20 hours of field work- 60 points

Your course grade will then be determined by the sum of your 8 scores on the following scale:

A: 180 points or higher
B: 160-179 points
C: 140-159 points
D: 120-139 points
F: 119 points or less or missing more than 1 class

Pass: 120 points or higher
No Pass: 119 points or less or missing more than 1 class

Attendance:

Your on-time attendance and participation in all of our class sessions is critical to both your success and the growth of all of your classmates. There really is no “making up” a missed class day. If you do have a medical or other emergency that forces you to miss a class, however, we will work with you individually on an appropriate assignment to substitute for the lost time.

Students who miss all or significant parts of a 2nd class will need to repeat the course. Lateness will result in deductions from your score for participation. Participation grades are based on active engagement in each seminar discussion.

Course Schedule:

Date	Topic	Assignment Due
9/28	TPE's 1 & 8 Learning Styles; Cognitive Development of Students (S) Hands-on Math or Science (S/T)	
10/5	No Class Meeting	
10/12	TPE's 2, 3 & 9 Lesson Design; Assessment (S) ; Math or science investigation (S/T)	CSTP/TPE Analysis
10/19	No Class Meeting	
10/26	TPE's 9 & 13 Power Point Presentations of Lessons & Peer Review (S)	Presentation of Lesson
11/2	TPE's 10 & 11 Classroom Management & Social Environment (S); Math/Science Investigation (S)	
11/9	TPE's 4, 5, 6 & 7 Understanding How People Learn (T); Math or Science Investigation (K/T)	Classroom Management Plan
11/16	TPE's 1, 2, 4, 5, 6, 7, 8, 9, 10, 11 & 13 Reflecting Upon the PCOP (S); K-12 Math or Science Vertical Content (K/T)	
11/23	Holiday: No Class	
11/30	No Class Meeting	PCOP Reflection
12/7	No Class Meeting	Final Lesson Plan & Reflection
12/11	Finals: No Class Meeting	Final Journal & Hours Log