

**EDUC 100B – Spring 2016**  
**CAL TEACH 2 MATHEMATICS SEMINAR**  
**Tuesday 4:00 p.m. – 5:45 p.m.**  
**Thimann Labs 391**

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[http://calteach.ucsc.edu/People\\_/Instructors/Ow.html](http://calteach.ucsc.edu/People_/Instructors/Ow.html)

**COURSE DESCRIPTION:**

This course is open only to students in the Cal Teach Program. In this quarter, students continue to write and share classroom observations, plan lessons, and discuss readings in mathematics education. The purpose of the course is to deepen the internship experience by providing opportunities to explore the content standards, multiple strategies for teaching and learning, and classroom management. Students prepare and teach a lesson as their final project for the course. The focus is on issues in teaching mathematics. In particular we will explore and practice the following:

- Strategies that promote active engagement of all students
- Questioning techniques that discourage “blurting” and ensure participation by all
- Providing a forum for increased mathematical discourse among students
- Using multiple representations of problems to deepen understanding
- Providing access to all, including English Language Learners and students with special needs

**COURSE GRADING POLICY**

**1. Attendance and Participation in Seminar:**

10% Attendance/Involvement in Seminar

15% Mini-lesson

15% Written summary and reflection on readings (due at each seminar meeting)

**2. Observations and Reflections:**

25% Classroom observations, with written reflections (due at each seminar meeting)

**3. Active Participation in the Observation Classroom:**

10% Determined by Classroom Activities Log entries and host teacher evaluation

**4. Content Standard Planning/Teaching Project:**

25% See description on the following page.

**COURSE REQUIREMENTS:**

**1. Attendance and Participation in Seminar:**

- Attend weekly seminar meetings.
- Complete assigned readings.
- Write a short summary and your reflections on the readings. These must be prepared before class begins. Show me that you completed the reading and spent some time thinking about what you read. Ask questions. Think about this as your chance to prepare for our class discussion.
- Participate fully in class discussions of the readings.
- Participate fully in class activities. We will continue your CaT 1 tradition of student presentations of mini-lessons each week, beginning in Week 2 and continuing through Week 9. **Use the mini-lesson to try out some of the techniques or strategies you’ve learned.**

As this is a seminar, **attendance of all students is essential.** Please contact me if you must miss a seminar.

## 2. Observations and Reflections:

- Conduct observations in placements arranged by Cal Teach coordinators. You must complete 27 hours of observations during the quarter. Beginning week 3 you will be expected to turn in a written observation and reflection. During week 1 we will make a list of areas to focus your observation. It is expected that you will do a formal observation and reflect on what you saw and experienced. This is where your voice and opinions should be heard. What did you like? What would you do differently? What surprised you? This should be written as a formal paper, including a thesis, body paragraphs, and a conclusion. The UCSC writing rubric will be used to evaluate your writing. Please include the date, the school, course name and grade level of the class observed. In addition, number your observation. Seven observations are required. They are to be turned in weekly.

## 3. Active Participation in the Observation Classroom:

- Get involved in the observation classroom early in the quarter. Talk with your host teacher and consider the following options to help you to get to know the students and to enhance your experience in the classroom:
  - Ask your host teacher for a seating chart.
  - Work with students individually who may need extra help.
  - Work with small groups of students.
  - Lead a warm-up activity.
  - Update the Classroom Activities Log after each classroom visit.

Note: Your last day for work in the classroom will vary by district. Check with your host teacher to be sure of the date that applies to you. You should, in any case, be finished with observations and have your **paperwork turned in by June 5th**. Any extension of that date would require prior approval by Gretchen Andreasen or Lea Evans. As our last class meeting is June 2nd, I will appreciate your effort to turn in your paperwork by that date.

## 4. Planning/Teaching Final Project:

A requirement for CaT 2 interns is that you actually teach a class! You will coordinate with your host teacher to plan and teach a lesson. You will find the rubric for how I will score your project on my website. You will also find a form called "Host Teacher Evaluation of Intern Lesson" on the website. Give this to the teacher before you present your lesson.

- Meet with your host teacher to decide on a lesson.
- Create a lesson plan with specific objectives. Incorporate some of the strategies you will learn this quarter.
- In your plan, note how you will check for understanding as the lesson progresses.
- Create a worksheet or activity for use during the lesson. This may be a group assignment.
- Create an **individual** assessment to determine how well each student has met the objectives. This may be given at the end of the lesson or on a subsequent day. It need not be long, but should clearly address the objectives of the lesson.
- Compile and analyze the results of student performance on the assessment.
- Submit a written report that includes the components listed above, as well as your host teacher's written comments.

**Week No.      REQUIRED READINGS/BIBLIOGRAPHY (see website if direct link is not provided.)**

**1. The “Rule of Four”.**

Cleaves, Wendy Pelletier (Vol. 13, No. 8, April 2008). “Promoting Mathematics Accessibility through Multiple Representations...Jigsaws”. *Mathematics Teaching in the Middle School*, pp. 446 – 452.

**2. Friedlander, Alex and Arcavi, Abraham (April, 2012) “Practicing Algebraic Skills...A Conceptual Approach” *Mathematics Teacher*, pp. 609 – 614.**

**3. *Teaching Tips to Promote Active Learning, Class Participation and Effective Teaching*, adapted from “Student Participation/Active Learning”, University of the Sciences in Philadelphia.**

**4. Lesson Design. [http://members.tripod.com/teaching\\_is\\_reaching/lesson\\_design.htm](http://members.tripod.com/teaching_is_reaching/lesson_design.htm)**

Lesson Plan Template (Revised), UCSC Education Dept.

**5. **Math:** Santa Cruz, Rafaela M. (January/February 2009). “Giving Voice to English Language Learners in Mathematics”, *NCTM News Bulletin*.**

Santa Cruz, Rafaela M. and Sanchez-Gutierrez, Ivette (March 2009). “Supporting Writing Skills in English Language Learners”, *NCTM News Bulletin*.

<http://www.nctm.org/news/content.aspx?id=2147483746>

Hoffert, Sharon B. (September, 2009) “Mathematics: The Universal Language?”, *Mathematics Teacher*, pp. 130-138.

**6. Johnson, David R. (1994). “Motivating Through Good Questioning Techniques”. Chapter 2 in *Motivation Counts, Teaching Techniques That Work*. Dale Seymour Publications.**

**7. Instructional Strategies to Increase Accessibility, p.1.**

<http://www2.edc.org/accessmath/resources/StrategiestoConsider.pdf>

Guiding Questions for Accessibility Strategies, p. 1

<http://www2.edc.org/accessmath/resources/GuidingQuestions.pdf>

Accessibility Strategies for Mathematics, Pp. 1 – 7.

<http://www2.edc.org/accessmath/resources/strategiestoolist.pdf>

Powell, Beth (March, 2010) “Support in the Classroom for Students with Learning Disabilities in Mathematics”. *The California Mathematics Council Communicator*, p. 32.

**8. **Math:** Vazquez, Lorna Thomas (August 2008). “A, E, I, O, U and Always Y...A Simple Technique for Improving Communication and Assessment in the Mathematics Classroom”, *Mathematics Teacher*, pp. 16 – 23.**

**Week 1      March 29, 2016**

**Main Topic: Using Multiple Representations to Deepen Understanding of Mathematics**

<b>IN CLASS</b>	<b>OUTSIDE CLASS Preparation for next meeting</b>
<ul style="list-style-type: none"><li>• Introductions</li><li>• Discuss course syllabus, Cal Teach Intern Activity Timesheet/Log, and Writing Rubric.</li><li>• Develop Mini-Lesson Rubric</li><li>• Discuss format for Observations</li></ul>	<p><b>Reading #1:</b></p> <ul style="list-style-type: none"><li>• “Rule of Four”</li><li>• “Promoting Mathematics Accessibility through Multiple Representations...Jigsaws”</li></ul> <p><b>Reading Reflection</b></p>

**Week 2      April 5, 2016**

**Main Topic: Common Core State Standards – Helping Students To Develop Expertise and Deep Understanding in Mathematics**

<b>IN CLASS</b>	<b>OUTSIDE CLASS Preparation for next meeting</b>
<ul style="list-style-type: none"><li>• Discuss Reading #1 and your observations</li><li>• Model Mini-Lesson</li><li>• Share exemplary observation reflections</li><li>• Class Activity: Discussion of Common Core Standards for Mathematical Practice and Content</li><li>• Watch videos on student engagement and discuss techniques.</li></ul>	<p><b>Reading #2:</b></p> <ul style="list-style-type: none"><li>• <i>Practicing Algebraic Skills...A Conceptual Approach</i></li><li>• Refer to pp. 6-8 of the Common Core State Standards for Mathematical Practice in the website given below. <a href="http://www.corestandards.org/assets/CCSSI_Math%20Standards.pdf">http://www.corestandards.org/assets/CCSSI_Math%20Standards.pdf</a></li></ul> <p><b>Reading Reflection</b></p> <p><b>Observation #1</b></p>

**Week 3      April 12, 2016**

**Main Topic: Increasing Student Engagement and Active Participation**

<b>IN CLASS</b>	<b>OUTSIDE CLASS Preparation for next meeting</b>
<ul style="list-style-type: none"><li>• Discuss Reading #2 and your observations</li><li>• Student Mini-Lesson (using one or more techniques from the readings or discussions).</li><li>• Class Activity: In groups discuss techniques to present different math topics</li><li>• Watch videos on student engagement and discuss techniques.</li></ul>	<p><b>Reading #3:</b></p> <ul style="list-style-type: none"><li>• <i>Teaching Tips to Promote Active Learning, Class Participation and Effective Teaching</i></li></ul> <p><b>Reading Reflection</b></p> <p><b>Observation #2</b></p>

**Week 4          April 19, 2016**  
**Main Topic: Lesson Planning/Design**

IN CLASS	OUTSIDE CLASS Preparation for next meeting
<ul style="list-style-type: none"> <li>• Discuss Reading #3 and your observations</li> <li>• Student Mini-Lessons (using one or more techniques from the readings or discussions).</li> <li>• Look at examples of exemplary final lesson plan projects. Discuss the different parts of a lesson plan.</li> <li>• Class Activity: Prior Knowledge</li> </ul>	<p><b>Reading #4:</b></p> <ul style="list-style-type: none"> <li>• <i>Lesson Design</i></li> </ul> <p><b>Reading Reflection</b></p> <p><b>Assignment:</b> Use the Lesson Plan Template (Revised) (online), to prepare a draft of your lesson plan. Include strategies or teaching tips that you have learned in the readings.</p> <p><b>Observation #3</b></p>

**Week 5          April 26, 2016**  
**Main Topic: Activities Designed to Build Language Skills of English Language Learners (ELL's)**

IN CLASS	OUTSIDE CLASS Preparation for next meeting
<ul style="list-style-type: none"> <li>• Discuss Reading #4 and your observations</li> <li>• Student Mini-Lessons (using one or more techniques from the readings or discussions)</li> <li>• Class Activity: Collaborative Lesson Planning</li> <li>• Watch videos on student engagement and discuss techniques.</li> </ul>	<p><b>Reading #5:</b></p> <ul style="list-style-type: none"> <li>• <i>"Giving Voice to ELLs in Mathematics"</i>(online)</li> <li>• <i>"Supporting Writing Skills in ELLs"</i>(online)</li> <li>• <i>Mathematics: the Universal Language?</i></li> </ul> <p><b>Reading Reflection</b></p> <p><b>Observation #4</b></p>

**Week 6          May 3, 2016**  
**Main Topic: Questioning Techniques**

IN CLASS	OUTSIDE CLASS Preparation for next meeting
<ul style="list-style-type: none"> <li>• Discuss Reading #5 and your observations</li> <li>• Student Mini-Lessons (using one or more techniques from the readings or discussions).</li> <li>• Class Activity: Peer review of lesson plans</li> <li>• Watch videos on student engagement and discuss techniques.</li> </ul>	<p><b>Reading #6:</b></p> <ul style="list-style-type: none"> <li>• <i>"Motivating Through Good Questioning Techniques"</i></li> </ul> <p><b>Reading Reflection</b></p> <p><b>Observation #5</b></p>

**Week 7 May 10, 2016**

**Main Topic: Equity: Meeting the Needs of ALL Students...Culturally Diverse, Special Ed, ADD, ADHD, Dyslexic, Other?**

IN CLASS	OUTSIDE CLASS Preparation for next meeting
<ul style="list-style-type: none"> <li>• Discuss Reading #6 and your observations</li> <li>• Student Mini-Lessons (using one or more techniques from the readings or discussions).</li> <li>• Class Activity: In groups discuss techniques to present different math topics.</li> <li>• Watch videos on student engagement and discuss techniques.</li> </ul>	<p><b>Reading #7:</b></p> <ul style="list-style-type: none"> <li>• <i>Instructional Strategies to Increase Accessibility</i>, (online)</li> <li>• <i>Guiding Questions for Accessibility Strategies</i> (online)</li> <li>• <i>Accessibility Strategies for Mathematics</i> (online)</li> <li>• <i>Support in the Classroom for Students with Learning Disabilities in Mathematics</i> (online)</li> </ul> <p><b>Reading Reflection</b></p> <p><b>Observation #6</b></p>

**Week 8 May 17, 2016**

**Main Topic: Improving Communication and Assessment**

IN CLASS	OUTSIDE CLASS Preparation for next meeting
<ul style="list-style-type: none"> <li>• Discuss Reading #7 and your observations</li> <li>• Student Mini-Lessons (using one or more techniques from the readings or discussions).</li> <li>• Class Activity: In groups discuss techniques to present different math topics.</li> <li>• Watch videos on student engagement and discuss techniques.</li> </ul>	<p><b>Reading #8:</b></p> <ul style="list-style-type: none"> <li>• <i>“A, E, I, O, U and Always Y...A Simple Technique for Improving Communication and Assessment in the Mathematics Classroom”</i></li> </ul> <p><b>Reading Reflection</b></p> <p><b>Observation #7</b></p>

**Week 9 May 24, 2016**

**Main Topic: Common Core Standards**

IN CLASS	OUTSIDE CLASS Preparation for next meeting
<ul style="list-style-type: none"> <li>• Discuss Reading #8 and your observations</li> <li>• Student Mini-Lessons (using one or more techniques from the readings or discussions).</li> <li>• Begin Content Standard Planning/Teaching Project Presentations</li> </ul>	<p><b>Finish Planning/Teaching Final Project</b></p>

**Week 10 May 31, 2016**

**Main Topic: Content Standard Lesson Presentations**

IN CLASS	
<ul style="list-style-type: none"> <li>• Content Standard Lesson Planning/Teaching Project Presentations</li> </ul>	<p><b>* Turn in Planning/Teaching Final Project</b></p>

