

**CALIFORNIA STATE UNIVERSITY SAN MARCOS  
COLLEGE OF EDUCATION**

EDSS 543B – Spring 2011  
**SECONDARY MATHEMATICS EDUCATION – Sem. 2**  
University Hall Room 273  
Monday 5:30 pm – 8:15 pm

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**College of Education 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*).

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**Course Description**

Focuses on developing an understanding of theory, methodology, and assessment of Mathematics in integrated and secondary classrooms, Part B. *This course is aligned with California's SB 2042 Standards.*

**Prerequisites**

Admission to the Single Subject Credential Program.

**Unique Requirements**

Observation and participation in the public schools.

**Student Learning Outcomes**

**Objectives**

Learning to teach mathematics is difficult, and thus you must expect that this course, in concurrence with your clinical practice, will only begin your education in learning how to teach mathematics. Furthermore, this course is intentionally focused on developing professionals in the field of secondary mathematics education. The course is but one stage in what I hope will be a continuing evolution for you as a mathematics teacher; learning to teach mathematics well will be the work of your career.

Specifically, the foci of this course is to: (1) develop an understanding of the current practices in mathematics, best practices in teaching mathematics, and the ways in which these practices intersect and conflict; (2) learning to teach content-specific concepts, algebraic thinking in particular, using effective, appropriate, and equitable strategies; and (3) practicing how to teach for mathematical understanding.

Enfolded into this course will be learning about children's mathematical ways of thinking and operating, creating a classroom environment that promotes the investigation and growth of mathematical ideas, developing strategies to ensure the success of all students in multi-cultural, heterogeneous settings, consideration of curriculum development, and the ongoing formation of a personal theory of mathematics teaching and learning grounded in work for social justice.

### **Teacher Performance Expectation (TPE) Competencies**

The course objectives, assignments, and assessments have been aligned with the CTC standards for Single Subject Credential (Mathematics). This course is designed to help teachers seeking the California Single Subject Credential (Mathematics) to develop the skills, knowledge, and attitudes necessary to assist schools and district 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.

The following TPEs are given primary emphases:

- TPE 1b Subject Specific Pedagogical Skills for Single Subject Teaching (Mathematics)
- TPE 2 Monitoring Student Learning During Instruction

The following TPEs are given secondary emphases:

- TPE 3 Interpretation and use of assessments
- TPE 4 Making content accessible
- TPE 5 Student engagement
- TPE 6c Developmentally appropriate practices in grades 9-12
- TPE 6d Developmentally appropriate teaching practices for special education: teaching the special education population in the general education environment
- 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
- TPE 14 Educational technology in teaching and learning
- TPE 15 Social justice and equity

### **California Teacher Performance Assessment (TPA)**

Beginning July 1, 2008 all California credential candidates must successfully complete a state-approved system of teacher performance assessment (TPA), to be embedded in the credential program of preparation. At CSUSM this assessment system is called the CalTPA or the TPA for short.

To assist your successful completion of the TPA a series of informational seminars are offered over the course of the program. TPA related questions and logistical concerns are to be addressed during the seminars. Your attendance to TPA seminars will greatly contribute to your success on the assessment.

Additionally, COE classes use common pedagogical language, lesson plans (lesson designs), and unit plans (unit designs) in order to support and ensure your success on the TPA and more importantly in your credential program.

The CalTPA Candidate Handbook, TPA seminar schedule, and other TPA support materials can be found on the COE website: <http://www.csusm.edu/coe/ClinicalPractice/HandbookSS.html>

### **Students with Disabilities Requiring Reasonable Accommodations**

Students with disabilities who require reasonable accommodations must be approved for services by providing appropriate and recent documentation to the Office of Disable 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.

### **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*)

## **Course Requirements**

### **Required Texts**

Abbot, E. A. (1992). *Flatland: A romance of many dimensions*. Dover. (Originally published in 1884.)

Cohen, E. G. (1994). *Designing groupwork: Strategies for the heterogeneous classroom*. New York: Teachers College Press. [purchased for fall 2010]

- Driscoll, M. J. (2007). *Fostering geometric thinking: A guide for teachers, grades 5-10*. Portsmouth, N.H.: Heinemann.
- Fendel, D. M., Resek, D., Alper, L., & Fraser, S. (1997). *Interactive Mathematics Program Year 3: The Orchard Hideout Teacher's Guide*. Berkeley: Key Curriculum Press. [purchase by phone, view online <http://www.keypress.com/x5480.xml>]
- National Council of Teachers of Mathematics (2009). *Focus in high school mathematics: Reasoning and sense-making*. Reston, VA: Author. [purchased for fall 2010]

\*\*\*Several other readings are required and will be made available for download.

### **Recommended Texts**

- Boaler, J. (2008). *What's math got to do with it?: Helping children learn to love their most hated subject—and why it's important for America*. New York: Viking.
- California Department of Education (2005). *Mathematics framework for California public schools: Kindergarten through grade twelve*. Sacramento, CA: Author. This document can be found at <http://www.cde.ca.gov/ci/ma/cf/index.asp>.
- Carr, J., Carroll, C., Cremer, S., Gale, M., Lagunoff, R., Sexton, U. (2009). *Making mathematics accessible to English learners*. San Francisco: WestEd.
- National Council of Teachers of Mathematics (2000). *Principles and standards for school mathematics*. Reston, VA: Author. An overview of this document can be found at <http://standards.nctm.org/> (NCTM members have free and full access).
- STAR Test Blueprints for Standards Items: <http://www.cde.ca.gov/ta/tg/sr/blueprints.asp>

### **Key Assignments**

- 1. Weekly Homework (30%)** – Each week, teacher candidates will be assigned to read, respond to readings, and prepare some mathematical investigation. Each of these are assigned to prepare students for classroom discussion and activity during the next course session. As such, it is critical that they are completed on time. The specifics of each weekly assignment will be provided in class. Work is to be submitted online in the Cougar Course; in addition, responses are to be brought to class in hard copy.
- 2. PBL Unit Project (30%)** – Working individually, with a partner or small teams, and as a full community, students will propose and develop a Project-Based Learning unit in conjunction with a teacher from High Tech High – North County (HTHNC). This project will emerge, develop, and flow in an organic manner, one that is very reflective of the real work of a professional learning community that may exist within the mathematics department of a school site. Each student will be responsible for full participation in the activities to develop the unit, and for the development of approximately 2-3 one-day lesson scripts. The lesson scripts that will be developed include defining the mathematical task for that lesson, as well as a homework assignment that prepares students for the lesson, or follows up the lesson (to be decided).
- 3. Student Interview (15%)** – In the early stages of the HTHNC Project, students will design prompts and/or a task in order to conduct a clinical interview with a student from one of the project classrooms. This interview protocol will be designed to inquire into the student's geometric ways of thinking. The purposes of this activity are to begin thinking about students' mathematical understanding, to learn how to effectively pose questions and interpret the meaning of students' answers, and to provide you with an opportunity to interact with students about mathematics.
- 4. Classroom Observations (15%)** – During the HTHNC Project, students will observe the cooperating teacher's classroom 3 times. Data will be collected and reflected upon. This data will inform changes to the observed lesson plans.
- 5. Personalized Project (10%)** – This final assignment is intended to encourage the study of a topic in mathematics education of personal interest. Students will share their learnings with classmates in a semester-concluding "Ignite"-style <http://ignite.oreilly.com> presentation. Some students will center this project based upon their experiences at the Greater San Diego Math Council annual meeting, taking place in San Diego, 4-5 February 2011.

### **Grading Standards**

Course grades will be based on the following grading scale:

A	.....	Excellent	.....	90	–	100%
B	.....	Above Average	.....	80	–	89%
C	.....	Average	.....	70	–	79%
D	.....	Below Average	.....	60	–	69%
F	.....	Failing	.....	less than		60%

I assign grades to individual assignments based on the following interpretation:

- B ..... achieves expectations/purpose of the assignment;
- A ..... and impresses in some manner;
- C ..... falls short of the assignment expectations in some way.

Please remember that a *B* is not for *Bad*.

Unless *prior arrangements* have been agreed to with the instructor, work submitted late, but within one week of the due date will be reduced by one letter grade, and work received over one week late will receive no credit.

### **College of Education 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. 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. (*Adopted by the COE Governance Community, December, 1997.*)

*Attendance and Participation:* Due to the fast paced and highly interactive nature of the course, regular attendance and full participation are expected. Learning is difficult. It is even more difficult, if not impossible, if one is not present for and engaged in the process. Therefore, the above COE Attendance Policy is amplified as follows:

- Missing more than one class meeting will result in the reduction of one letter grade.
- Arriving late or leaving early on more than two occasions will result in the reduction of one letter grade.

You are expected to inform the instructor *prior* to an absence.

### **All-University Writing Requirement**

All CSU students must demonstrate competency in writing skills as a requirement for graduation. At California State University San Marcos, students complete the graduation writing assessment through the All-University Writing Requirement. This requirement mandates that every course at the University must have a writing component of at least 2,500 words (approximately 10 pages). The assignments for this course meet this requirement.

### **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 presentation 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. Consult the University catalog for further questions about academic honesty.

*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>. When relying on supporting documents authored by others, cite them clearly and completely using American Psychological Association (APA) manual, 6<sup>th</sup> edition.

**Schedule – Tentative**

<b>Date</b>	<b>Topic*</b>	<b>Assignment to be completed BEFORE Class Session**</b>
Session 1 24 jan 11	Course Introduction Problem-Based Mathematics; Project-Based Mathematics Geometric Thinking	
Session 2 31 jan 11	Present Project, Stage I, to Vahid; begin to refine Introduce <i>Complex Instruction</i> Introduce the idea of <i>Cognitive Demand</i> of Tasks	<b>3. Interview</b>
Session 3 7 feb 11	Project (PBL at HTHNC) Work Complex Instruction	
Session 4 14 feb 11	Project (PBL at HTHNC) Work Complex Instruction	
Session 5 21 feb 11	Planning for Project (or Problem) Based Learning	
Session 6 28 feb 11	Teaching to Engage Mathematics Learners (the L-E-S model)	
Session 7 7 mar 11	Strategies for Differentiation & Language Learners	
Session 8 14 mar 11	Learning & Knowing Teaching <i>Angle</i>	
Session 9 4 apr 11	Reflections on HTHNC Project & New Teacher Panel	
Session 10 9 may 11	Reflections on Student Teaching & Mathematics Education	<b>5. Personalized Project</b>

\*This schedule is an *approximation*. Given the nature of this course, we will likely be altering the scheduled topics and possibly times and dates in order to accommodate student interest, observe and teach in mathematics classrooms, and take advantage of professional development opportunities.