

CALIFORNIA STATE UNIVERSITY, SAN MARCOS
COLLEGE OF EDUCATION

EDSS 543B – Spring 2008
SECONDARY MATHEMATICS EDUCATION
University Hall Room 271
Monday 4:00 pm – 7:45 pm

Professor: Brian R. Lawler

Office: 319 University Hall

Course WebCT: Access from <http://webct6.csusm.edu>

Office hours: Mon 3:00 pm – 4:00 pm, Tue 4:00 pm – 5:00 pm, & by appointment

Office phone: (760) 750-4260

Email: blawler@csusm.edu

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*).

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 and completion of Part A of the course, or permission of the instructor.

Unique Requirements

Observation and participation in the public schools.

Student Learning Outcomes

Objectives

Learning to teach mathematics well is difficult and, therefore, you must expect that this course will only begin your education in learning how to teach mathematics. This course is but one stage in what I hope will be a continuing evolution of you as a mathematics teacher.

More specifically, the focus of this course will be on (1) developing 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 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 settings, consideration of curriculum development, and the ongoing formation of a personal theory of mathematics teaching and learning grounded in work for social justice.

Upon completion of this course, the teacher candidate will be able to demonstrate knowledge, understanding, appreciation, and practical skills for applying:

- Problem-based approaches to teaching mathematics;
- Lessons derived from student contexts, with emphasis on fairness or social justice;

- Tools to analyze and assess student mathematical understanding;
- Structures to support equitable mathematical learning in heterogeneous classrooms, especially group activity, student-to-student interaction, the design of rich tasks, and the maintenance of high cognitive demand;
- Observation and reflection as an integral part of practice; and
- A personal agenda for continued growth as a professional and leader in mathematics education.

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

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.)
[\$3.99]

California Department of Education (2005). *Mathematics framework for California public schools: Kindergarten through grade twelve*. Sacramento, CA: Author. [<http://www.cde.ca.gov/ci/ma/cf/index.asp>]

Cohen, E. G. (1994). *Designing groupwork: Strategies for the heterogeneous classroom*. New York: Teachers College Press. [\$19.95]

Driscoll, M. J. (2007). *Fostering geometric thinking: A guide for teachers, grades 5-10*. Portsmouth, N.H.: Heinemann. [\$24.50]

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>, \$24.95]

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 full access).]

STAR Test Blueprints for Standards Items: [<http://www.cde.ca.gov/ta/tg/sr/blueprints.asp>]

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

Additional Required Materials

Electronic or Paper method to complete and possibly submit work during class (including gridded paper); Graphing calculator, or equivalent technology, for use during class; and WebCT access

Course Assignments

Flatland Lesson (5%) – Working in small groups, teacher candidates will design a lesson (likely to last more than one day) based upon the book *Flatland*. This project will involve two main components, an overview of the entire lesson and a sample one-day lesson plan. The lesson plan will be submitted utilizing the 4-column design, and will reflect the intentions of the *Thinking Through a Lesson Protocol*. In this assignment, you will begin to move beyond the simple borders of the 4-column design in order to appropriately respond to the prompts of the *Thinking Through a Lesson Protocol*.

Mathematics and Social Justice Lesson (5%) – Working individually, teacher candidates will locate and share a sample mathematics lesson embedded in a theme of social justice. You will compose an appropriate introduction to and overview of the lesson (which may be designed to last more than one day). You will also construct a lesson plan, based upon the 4-column format, for one day of this lesson. This one-day lesson plan should exhibit thoughtful consideration of the questions posed in the *Thinking Through a Lesson Protocol*. This lesson overview and specific lesson plan will be shared with your classmates. As a result, each of us will have several lessons available in our resources.

Interview (20%) – In a small group, teacher candidates will design prompts and/or a task to interview a student, grades 6-10. This interview protocol will be designed to further understand something about the student's geometric ways of thinking. Each of you will carry out an actual student-interview based on this protocol. You will return to your group to analyze the students' replies. The purpose of this activity is to get you 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.

Orchard Hideout Portfolio (10%) – Teacher candidates will complete a portfolio of their mathematical investigation into the unit problem posed in *Orchard Hideout*. The format will match the structure assigned high school students at the conclusion of the unit.

Lesson Design (35%) – Working in small groups, teacher candidates will first compile resources on a predetermined mathematical topic (15%) and then design a lesson that you will present in a secondary class (20%). The purpose of this activity is to help you learn how to design effective mathematical activities, to provide you with an opportunity to begin compiling (and sharing) mathematical resources, and to provide an opportunity for you to practice teaching mathematics.

Problem of the Week (5%) – During the semester, teacher candidates will investigate 4 open-ended mathematical problems. Each of you will be asked to initiate and lead some classroom discussion (10-15 min.) of the problem by sharing your thinking about the task. At the end of the course, you will each select one problem to formally write-up using the 5-stage *Standard POW Write-Up* format.

Reading Reflection Portfolio (20%) – Teacher candidates will write weekly in conjunction with assigned readings and activities. These do not need to be highly formal or polished, and lengths will vary—expect between one to three pages, double spaced, each week. The emphasis should be on your thought processes, reactions, reflections, and connections. At the conclusion of the semester, these will be

assembled into a portfolio that includes a cover letter and table of contents, orienting the reader to 3 responses in particular that point to the important components of the course, for the portfolio's author.

Grading Standards

Grades will be based on the following grading scale:

A	90 – 100%
B	80 – 89%
C	70 – 79%
D	60 – 69%
F	Below 60%

Late submission of any assignment will be worth 50% of its maximum value, unless *prior arrangements* have been agreed to with the instructor.

Note: Students must maintain a B average in the credential program and obtain a grade of no lower than C+ in any individual course in order to receive credit for that course.

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.*)

Course Attendance Policy: excessive absences (non-extenuating circumstances) will result in the following grade reductions: absent more than 1 class => one grade lower; absent more than 1, up to 2 full classes => two grades lower; absent more than 2 classes => non-passage of course. Please discuss with me any extenuating circumstances that will cause you to miss class *prior* to your 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 writing requirement for this course will be met through weekly writings, student interview reflections, the creation of a lesson plan and mathematical resources, and the curriculum analysis assignment.

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.

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.

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.

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.

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.

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

Schedule

Date	Topic*	Assignment to be completed BEFORE Class Session**
Session 1 1/28/08	Problem-Based Curriculum Technology – <i>Geometer's Sketchpad</i> Teaching & Learning Geometry	Read syllabus
Session 2 2/04/08	Interdisciplinary Connections – <i>Flatland</i> Problem-Based Curriculum Teaching & Learning Geometry Technology – <i>Geometer's Sketchpad</i>	
Session 3 2/11/08	Problem-Based Curriculum Teaching & Learning Geometry Designing Groupwork Equity, Social Justice, and Mathematics Education	<i>Flatland</i> Project [group]
Session 4 2/18/08	Problem-Based Curriculum Teaching & Learning Geometry Designing Groupwork – Cognitive Demand	Interview Protocol Sample Social Justice Lesson
Session 5 2/25/08	Problem-Based Curriculum Designing Groupwork – Status Treatment Designing Groupwork – Structures	Lesson Design [concept & resources]
Session 6 3/03/08	Problem-Based Curriculum Assessment in Mathematics Education	Interview [group]
Session 7 3/10/08	Teaching & Learning Probability & Statistics Assessment in Mathematics Education	<i>Orchard Hideout</i> Portfolio
Session 8 3/17/08	Equity, Social Justice, and Mathematics Education Professional Role of Teacher Reform in Mathematics Education	POW Write-up Lesson Design & Implementation [group] Reading Reflection Portfolio [3/31/08]

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

**These assignments will be clarified, and possibly modified, as the semester progresses.