CALIFORNIA STATE UNIVERSITY SAN MARCOS
COLLEGE OF EDUCATION

EDMS 543B – Mathematics Education in Elementary Schools

CRN 40528, Fall 2008
Monday 13:00-15:45, UNIV 370

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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 ongoing service. Our practices demonstrate a commitment to student-centered education, diversity, collaboration, professionalism, and shared governance. (Adopted by the COE Governance Community October, 1997)

Course Description and Objectives
EDMS 543B focuses on how children develop mathematical understanding; children's mathematical thinking, curriculum development; methods, materials, planning, organization and assessment in various elementary school curricula; and curriculum integration. Methods of cross-cultural language and academic development are integrated into the course.

Learning to teach mathematics well is challenging and, therefore, this course will only begin your education in learning how to teach mathematics. This course is but one stage in your process of becoming a mathematics teacher. We are expected to: (a) deepen our understanding of the mathematics taught at the elementary level, including such topics as place value, base systems, number theory, fractions, proportions, statistics, and algebra, (b) develop an understanding of the current issues and practices in mathematics education, (c) develop a familiarity with the NCTM and California learning standards, (d) develop an understanding of children's content specific thinking, (e) learn to teach content specific concepts using effective and appropriate strategies, including the educational use of technology, (f) practice how to teach for mathematical understanding, and (g) develop strategies to create a classroom environment that promotes the investigation and growth of mathematical ideas and to ensure the success of all students in multi-cultural settings.

Course Prerequisites
- Admission to the Integrated Credential Program (ICP)
- Commitment to help children understand and do mathematics

Required Materials
- Van de Walle, J. A. (2007). *Elementary and middle school mathematics: Teaching developmentally* (6th Ed.). Boston: Pearson Education, Inc.
- 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.
- Several other readings may be required and will be available for download.

Recommended Materials
- Carpenter, T. P., Fennema, E., Franke, M. L., Levi, L., & Empson, S. B. (1999). *Children's mathematics: Cognitively guided instruction*. Portsmouth, NH: Heinemann.
- Carpenter, T. P., Franke, M. L., & Levi, L. (2003). *Thinking mathematically: Integrating arithmetic & algebra in elementary school*. Portsmouth, NH: Heinemann.

- Lampert, M. (2001). *Teaching problems and the problems of teaching*. New Haven, CT: Yale University Press.
- Burns, M. (2007). *About teaching mathematics: A K-8 resource* 3rd Ed.). Sausalito, CA: Math Solutions Publications.
- 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

Authorization to Teach English Language Learners
The CSUSM 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 SB2042 Program Standards, August 2002)*

Teacher Performance Expectation (TPE) Competencies
The course objectives, assignments, and assessments have been aligned with the CTC standards for Multiple Subject Credential. This course is designed to help teachers seeking a California teaching credential 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.

California Teacher Performance Assessment (CalTPA)
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 provided at the website provided:
http://lynx.csusm.edu/coe/CalTPA/CalTPAdocuments.asp

Requirements
Participation and Professionalism (10 points) – You are expected to actively participate in discussions, group work, presentations, and hands-on activities throughout the course. A positive professional disposition includes a willingness to consider and discuss new ideas objectively, curiosity, perseverance, and seriousness about improving one's self as a teacher. It can also include a sense of humor and social intelligence (e.g., the tact and ability to make others feel comfortable and to contribute).

Reflection Papers (30 points) – You need to write six reflection papers. The first paper consists of questions about your prior experience with mathematics. The other five papers are your reflections on class readings and pressing issues in mathematics education. You are encouraged to make connections with your teaching/learning experience and your field experience (e.g., your observation of elementary school classroom activities). You can also raise questions for discussion and/or discuss how you might specifically apply what you learned from the articles as a teacher in the classroom. Do not repeat verbatim from the readings.

Mathematics Lesson Plan (30 points) – The purpose of this assignment is to help you learn how to design effective mathematical activities and lessons and to provide an opportunity for you to practice teaching mathematics. Working in small groups of 3-4 members, your team will design one standard-based lesson (approximately 40 minutes) that you will present in an elementary school class. While the lesson plan is group work, each of you needs to implement the lesson at the school you are observing. In addition, you need to videotape your teaching of the lesson and reflect on the effectiveness of the lesson. A draft of the lesson should be submitted for review before the lesson is taught to students. The write-up of the lesson is worth 25 points, and a reflection on its implementation is worth 5 points. Your teaching performance will not affect your grade. Refer to the lesson plan grading rubric.

Small Group Mathematics Learning Activity (10 points). The class will form groups of 4-5 members, and each group will be assigned a mathematical area in the elementary school curriculum (see the course schedule below). Each group member needs to design a 10-minute learning activity in the assigned area and to conduct the activity in a small group setting in the EDMS 543 class. In addition, you need to write a detailed description of the learning activity and provide teaching tips. Post your activity on the class WebCT, where a collection of approximately 25 learning activities will be available for your future teaching.

Student Interviews (20 points) – You need to conduct two interviews to assess students' understanding of mathematics. Sample interview questions are provided, but you are encouraged to use your own invention. You need to choose two mathematical topics from the following six areas: (1) number concepts, (2) addition/subtraction, (3) multiplication/division, (4) fraction, (5) measurement/geometry, and (6) algebra. The purpose is to get you to begin thinking about students' mathematical understanding, to learn how to effectively pose questions and interpret the meaning of students' responses, and to provide you with an opportunity to interact with students. For each interview, you need to submit a 3-page report. Please also include the child's written work (if available). You can work with a peer in the interviewing process, but each needs to write his/her own report. In addition, you may need to share/present your interview findings in class.

Detailed information about the assignments will be given in class. You need to submit the assignments (except children's work) at the course WebCT. You are responsible for ensuring that assignments are submitted correctly and on time. Late assignments will receive a reduction in points unless *prior arrangements* have been made with the instructor.

The grade on a late assignment will be deducted 1 point per day unless *prior arrangements* have been made with the instructor.

Grading Scale

Grades will be based on the following grading scale:

A = 93% - 100%	A- = 90% - 92%	B+ = 87% - 89%	B = 83% - 86%
B- = 80% - 82%	C+ = 77% - 79%	C = 73% - 76%	C- = 70% - 72%
D = 60% - 69%	F = below 60		

CSUSM Writing Requirement

The CSUSM writing requirement of 2500 words is met through the completion of course assignments. Therefore, all writing will be looked at for content, organization, grammar, spelling, and format.

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.

Tentative Schedule

Please note that modifications may occur at the discretion of the instructor.

Date	Session/Topic	Assignment to be completed BEFORE Class Session
8/25/08	1. Introduction to mathematics education	
9/2/08	Labor Day. No class, but complete Reflection 1.	Van de Walle ch. 2 **Reflection 1 due**
9/8/08	2. (a) Developing children's math understanding (b) Problem solving	Van de Walle ch. 3. 4
9/15/08	3. (a) Lesson design (b) Assessment for school mathematics (c) Literacy in mathematics learning	Van de Walle ch. 5, 6 Article 1: *Why study vocabulary in math class?* (Murray, 2004) **Reflection 2 due**
9/22/08	4. Measurement & Geometry	Van de Walle ch. 20, 21 **Measurement/Geo interview due***
9/29/08	5. Cognitively Guided Instruction (CGI)	Van de Walle ch. 10 **Reflection 3 due**
10/6/08	6. Number concepts (Group 1 presentation**)	Van de Walle ch. 9, 11 **Number concepts interview due***
10/13/08	7. Place value (Group 2 presentation**)	Van de Walle ch. 12 **Add/sub interview due*** **Reflection 4 due**
10/20/08	8. Whole-number computation (Group 3 presentation**)	Van de Walle ch. 13 **Mult/div interview due***
10/27/08	9. Fractions (Group 4 presentation**)	Van de Walle ch. 16, 17 **Reflection 5 due**
11/3/08	10. Rational numbers: Decimals & percents	Van de Walle ch. 18 **Fractions interview due***
11/10/08	11. Algebraic thinking I	Van de Walle ch. 15 **Algebra interview due***
11/17/08	12. Algebraic thinking II (Group 5 presentation**)	Article 2: *Making conjectures about mathematics* (Carpenter, Franke, & Levi, 2003) **Reflection 6 due**
11/24/08	13. Lesson plan presentations	
12/1/08	14. Wrap-up	**Lesson plan due** **Reflection on participation & professionalism due**

Notes:

* You just need to choose two of these six topics for student interviews. The due dates vary. If you choose to do an interview on addition/subtraction, then your paper is due on 10/13. If you want to do an interview on algebra, then your paper is due on 11/10.

** Presentation of *small group mathematics learning activities.* After the presentation, you should submit this assignment within a week. For example, if you present an activity on number concepts on 10/6, the description and teaching tips are due on 10/13.

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.

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