

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

EDMS 543B – Mathematics Education in Elementary Schools

CRN 20139, Spring 2009
Monday 13:00-15:45, UNIV 257

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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, (g) understand the nature, purposes, and application of mathematics assessment and its relationship with teaching and learning, 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> or you can purchase a hard copy.
- 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://www.csusm.edu/coe/CalTPA/ProgramMaterialsTPA.html>

Requirements

Participation and Professionalism (5 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 (10 points) – You need to write three reflection papers. The first paper (4 points) consists of questions about your prior experience with mathematics. The other two papers (3 points each) are your reflections on class readings, activities, and/or pressing issues in mathematics education. See the class WebCT for the instruction for each of these papers.

CA Mathematics Standards Oral Presentation (5 points) – Using the *Mathematics Framework for California Public Schools K-12*, you and your designated group will be assigned one grade level of standards from *The California Mathematics Content Standards* as a topic for exploration (note that this is chapter 2 of the *Mathematics Framework for California Public Schools K-12*). Give an oral presentation of the mathematical strand and standards for which you are responsible, including one relevant example of how **one of the standards in that strand** could be addressed. Since children’s learning with understanding is the focus of this course, it is important that your cohorts are presented with examples that promote student understanding and conceptual development. See the class WebCT for the detailed instruction and grading rubric for this assignment.

Mathematics Lesson Design (55 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. If teaching in an elementary classroom is not possible, another option is to implement your lesson plan in the 543B class. You are encouraged to submit a draft of the lesson for review before the lesson is taught to students. Your teaching performance will not affect your grade. Refer to the lesson design grading rubric and other guidelines at the class WebCT.

Mathematics Learning Center Activity (5 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, on the discussion board, where a collection of approximately 24 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. 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. See the Student Interview Guidelines and a sample interview report at WebCT.

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
1/26/09	1. Introduction to math education	
2/2/09	2. (a) Developing children's math understanding (b) Problem solving	Van de Walle ch. 3, 4 Reflection 1 due
2/9/09	3. (a) Assessment for school math (b) CA math framework & standards Math Standards oral presentations	Van de Walle ch. 6
2/16/09	4. (a) Measurement & geometry (b) Communication in math classrooms	Van de Walle ch. 20 Measurement/Geo interview due*
2/23/09	5. Cognitively Guided Instruction (CGI)	Van de Walle ch. 10
3/2/09	6. Number concepts (Group 1 presentation**)	Van de Walle ch. 9, 11 Number concepts interview due*
3/9/09	7. (a) Number concepts & place value (Group 2 presentation**) (b) Lesson design	Van de Walle ch. 12, 5 Add/sub interview due*
3/16/09	8. Whole-number computation (Group 3 presentation**) Lesson plan workshop (30 min)	Van de Walle ch. 13 Mult/div interview due*
3/23/09	9. Fractions (Group 4 presentation**) Lesson plan workshop (30 min)	Van de Walle ch. 16, 17 Fractions interview due*
3/30/09	10. Spring Break. No class.	
4/6/09	11. (a) Rational numbers: Decimals & percents (b) TBA	Van de Walle ch. 18 Reflection 2 due
4/13/09	12. Algebraic thinking I (Group 5 presentation**)	Van de Walle ch. 15 Algebra interview due*
4/20/09	13. Algebraic thinking II Lesson plan presentations	Van de Walle ch. 15
4/27/09	14. Lesson plan presentations	Lesson design due
5/4/09	15. Wrap-up	Reflection 3 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 3/9. If you want to do an interview on algebra, then your paper is due on 4/13.

** Presentation of *Mathematics Learning Center Activities*. After the presentation, you should submit this assignment within a week. For example, if you present an activity on number concepts on 3/2, the description (including some teaching tips) is due on 3/9.

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).*

If you miss two sessions, you will not receive a grade of A. If you miss three sessions, your highest possible grade is a B. If you miss four sessions, your highest possible grade is a C+. If you miss more than four sessions, you will receive a grade lower than a C+, which is considered to be unsatisfactory in a credential program. Please discuss with me any extenuating circumstances that will cause you to miss class *prior* to your absence. Attendance will be taken at each class session.

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.