

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

**EDMS 543 – Mathematics Education in Elementary Schools
3 Units, CRN 41600, Fall 2012
Friday 9:00-3:15 p.m., San Marcos Elementary**

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School of Education Mission Statement

The mission of the School 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

EDMS 543 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. **Prerequisite:** Admission to the Multiple Subject Credential Program.

Notice from the CSUSM Faculty

The California Faculty Association is in the midst of difficult contract negotiations with the CSU administration. In response to the CSU's stance, it is possible that the faculty union will call for a one-day strike or other work stoppage. When a decision for such action has been reached, you will be informed about the decision and of any disruption to the posted schedule.

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.

- Primary Emphases:

- TPE 1a—Subject Specific Pedagogical Skills for MS Teaching (Mathematics)
- TPA 2—Monitoring Student Learning during Instruction

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, SoE (School of Education) 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 SoE website at <http://www.csusm.edu/education/CalTPA/CalTPA.html>

Assessment of Professional Dispositions

Assessing a candidate's dispositions within a professional preparation program is recognition that teaching and working with learners of all ages requires not only specific content knowledge and pedagogical skills, but positive attitudes about multiple dimensions of the profession. The School of Education has identified six dispositions – social justice and equity, collaboration, critical thinking, professional ethics, reflective teaching and learning, and life-long learning—and developed an assessment rubric. For each dispositional element, there are three levels of performance - *unacceptable*, *initial target*, and *advanced target*. The description and rubric for the three levels of performance offer measurable behaviors and examples.

The assessment is designed to provide candidates with ongoing feedback for their growth in professional dispositions and includes a self-assessment by the candidate. The dispositions and rubric are presented, explained and assessed in one or more designated courses in each program as well as in clinical practice. Based upon assessment feedback candidates will compose a reflection that becomes part of the candidate's Teaching Performance Expectation portfolio. Candidates are expected to meet the level of *initial target* during the program.

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. For this class please use APA Manual, 6th edition—see a guide at <http://owl.english.purdue.edu/owl/section/2/10/>.

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 4300, and can be contacted by phone at (760) 750-4300, 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.

Computer/Cell Phone Use during Class Sessions

You are encouraged to use a laptop computer in class when working on class assignments. However, you will need to save checking email or other personal computer use for time outside of class. Please refrain from texting in class. Most students find it disruptive when they are focusing on class activities or listening to presentations. Your kind consideration is greatly appreciated by all!

Person-First Language

Use "person-first" language in all written and oral assignments and discussions (e.g., "student with autism" rather than "autistic student"). Disabilities are not persons and they do not define persons, so do not replace person-nouns with disability-nouns. Further, emphasize the person, not the disability, by putting the person-noun first.

Attendance Policy

Due to the dynamic and interactive nature of courses in the School 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*).

Teacher education is a professional preparation program. Therefore, for this course: Students missing more than one class session cannot earn an A or A-. Students missing more than two class sessions cannot earn a B or B+. Students missing more than three classes cannot earn a C+. **In an 8 week course,**

one day is equivalent to 2 class sessions/days. So, missing 1 entire day will constitute 2 absences for the course. Arriving late or leaving early by more than 20 minutes counts as an absence. Notifying the instructor does not constitute an excuse. All assignments must be turned in on due date even in case of an absence.

Course Objectives

1. Students will deepen their understanding of the mathematics taught at the elementary level, including such topics as place value, base systems, number theory, fractions, proportions, statistics, and algebra.
2. Students will develop an understanding of the current issues and practices in mathematics education.
3. Students will develop a familiarity with the NCTM, Common Core, and California mathematics standards.
4. Students will develop an understanding of children's content specific thinking.
5. Students will learn to teach content specific concepts using effective and appropriate strategies, including the educational use of technology.
6. Students will practice how to teach for mathematical understanding.
7. Students will understand the nature, purposes, and application of mathematics assessment and its relationship with teaching and learning.
8. Students will 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 multicultural settings.

Required Materials

- Van de Walle, J. A., Karp, K. M., & Bay-Williams, J. M. (2010). *Elementary and middle school mathematics: Teaching developmentally* (7th ed.). Boston: Allyn & Bacon.
- 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.
- Common Core State Standards Initiative (2010). *Common Core Standards*. The standards should be downloaded from <http://www.corestandards.org/> and are available for mathematics and ELA.

You are also required to access the following Web sites and materials for this course:

- 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://www.nctm.org/standards/content.aspx?id=16909>
- Star Test Blueprints for Standards Items (grades 2-7) <http://www.cde.ca.gov/ta/tg/sr/documents/math1105.doc>

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.

- Small, M. (2012). *Good Questions: Great Ways to Differentiate Mathematics Instruction*, (2nd Ed.). New York, NY: Teachers College.

Assignments and Requirements

Teacher education is a professional preparation program. It is expected students will come to class prepared to discuss the readings, submit required assignments, and participate in class activities. Students are expected to adhere to academic honesty and integrity, standards of dependability, confidentiality and writing achievement. Because it is important for teachers to be able to effectively communicate their ideas to students, parents, colleagues, and administrators, each written assignment is expected to have a clear organizational presentation and be free of grammar, punctuation, or spelling errors. There will be a reduction in points for the above mentioned errors. It is expected that work will be turned in on time; late assignments will be accepted only under extenuating circumstances and could receive penalty points. Prepare carefully for class, be ready to discuss readings and assignments thoughtfully and actively participate in all class activities.

Assignment	Points	Due Date
Reading Responses	20	Ongoing
Self Reflection	5	September 7, 2012
Math standards presentation	5	September 14, 2012
Mathematics Learning Activity (MLA)	20	
Mathematical Lesson Design	20	October 5, 2012
Assessment of Problem Solving	10	October 12, 2012
Clinical Student Interview	10	October 19, 2012
Professional Dispositions/Participation	10	Ongoing

Overall Grading Scale:

Final course grades will be based on the following grading scale:

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

EDMS 543 Course Schedule, Fall 2012

(Modifications may occur at the discretion of the instructor. Always bring your book and a computer to class.)

Date	Sessions and Topics	Readings & Assignments
<u>Session 1</u> 8/ 31	<ul style="list-style-type: none"> ❖ Course overview ❖ Building a math learning community ❖ Thinking critically about math <ul style="list-style-type: none"> • Different levels of cognitive demand • Challenging students using appropriate questions ❖ Chapter 2 Reading Response 	<p><u>Read:</u></p> <ul style="list-style-type: none"> • Article on CC: <u>Less is More</u> • Van de Walle et al. ch 1, 2
<u>Session 2</u> 9/7	<ul style="list-style-type: none"> ❖ Teaching through problem solving <ul style="list-style-type: none"> • How to teach topics in an inquiry-based environment • Why it is essential to student understanding ❖ Unpacking the math standards <ul style="list-style-type: none"> • National and California standards • Common Core Standards ❖ MLA sign-up ❖ Plan time for math standards activity 	<p><u>Read:</u></p> <ul style="list-style-type: none"> • Van de Walle et al. ch 3,4 <p><u>Submit:</u></p> <ul style="list-style-type: none"> • Self Reflection • Chapter 3 Reading Responses • Chapter 4 Reading Response (must do one for each chapter)
<u>Session 3</u> 9/14	<ul style="list-style-type: none"> ❖ Math Standards presentations ❖ Assessment of students' thinking in math <ul style="list-style-type: none"> • Types of assessment strategies • How you can use the data to inform instruction ❖ Differentiation <ul style="list-style-type: none"> • Various ability level differentiation • Learning style differentiation 	<p><u>Read:</u></p> <ul style="list-style-type: none"> • Van de Walle et al. ch 5 • Article on CC: Effective Use of Multiple-Choice Tests • Small, ch. 1, 2 (CC) <p><u>Submit:</u></p> <ul style="list-style-type: none"> • Chapter 5 Reading Response • Math Standards Activity
<u>Session 4</u> 9/21	<ul style="list-style-type: none"> ❖ Cognitively Guided Instruction (CGI). <ul style="list-style-type: none"> • Types of math problems • How students solve problems • How we help develop number sense ❖ Evaluating Student Thinking <ul style="list-style-type: none"> • Analysis of how students think and implications for instruction ❖ Planning workshop: Lesson Design ❖ MLA- Group 1 presentation 	<p><u>Read:</u></p> <ul style="list-style-type: none"> • Van de Walle et al.ch. 8,9 <p><u>Submit:</u></p> <ul style="list-style-type: none"> • Assessment Handbook "Chapter" (Session 3 in-class assignment) • Differentiated Mathematics Instruction Model (Session 3 in-class assignment) • Chapter 8-9 Reading Response • Group 1 MLA

<p><u>Session 5</u> 9/28</p>	<ul style="list-style-type: none"> ❖ Understanding Misconceptions <ul style="list-style-type: none"> • Common mistakes made and why ❖ Teaching Conceptually <ul style="list-style-type: none"> • How to help students understand why we use the rules we do when doing mathematical operations ❖ Planning workshop: Lesson Design ❖ MLA- Groups 2 and 3 presentation 	<p><u>Read:</u></p> <ul style="list-style-type: none"> • Van de Walle et al. ch. 10-12 <p><u>Submit:</u></p> <ul style="list-style-type: none"> • Chapter 10-12 Reading Response • Group 2 and 3 MLA
<p><u>Session 6</u> 10/5</p>	<ul style="list-style-type: none"> ❖ Making sense of fractions conceptually <ul style="list-style-type: none"> • How to help students understand why we use the rules we do when doing operations with fractions ❖ The meaning of the equal sign: pathway to algebra ❖ MLA- Groups 4 and 5 presentation 	<p><u>Read:</u></p> <ul style="list-style-type: none"> • Van de Walle et al. ch. 14, 15, 16 <p><u>Submit:</u></p> <ul style="list-style-type: none"> • Chapter 14 Reading Response • Chapter 15-16 Reading Response • Groups 4 and 5 MLA • Equal Sign Survey Data • Lesson Design
<p><u>Session 7</u> 10/12</p>	<ul style="list-style-type: none"> ❖ Presentations ❖ Literacy in Math Learning <ul style="list-style-type: none"> • Developing math vocabulary • Performance Tasks 	<p><u>Read:</u></p> <ul style="list-style-type: none"> • Van de Walle et al. ch. 19, 20 (levels 0 & 1 only) <p><u>Submit:</u></p> <ul style="list-style-type: none"> • Assessment of Problem Solving
<p><u>Session 8</u> 10/19</p>	<ul style="list-style-type: none"> ❖ Technology in the classroom <ul style="list-style-type: none"> • How to use technology to enhance mathematics instruction ❖ Closure <ul style="list-style-type: none"> • Presentations • Review and reflect 	<p><u>Submit:</u></p> <ul style="list-style-type: none"> • MLA Video • Chapter 19-20 Reading Response • Final Reading Response (in-class assignment) • Clinical Student Interview

Assignments

Detailed information about the assignments will be given in class and via Cougar Courses. All assignments should be submitted through Cougar Courses when possible. You are responsible for ensuring that assignments are submitted correctly and on time. Late assignments will receive a reduction in points.

➤ **Reading Responses (20 points)**

To focus your reading, help you remember the content, and assist you with meaningful class participation, you will submit reading responses based the assigned chapters. Further details will be given in class and the response activity choices will be available on Cougar Courses.

➤ **Math Standards Activity (5 points)**

In a group, you will analyze the Common Core Standards in both your grade level and the Standards for Mathematical Practice. You will then present your findings to the class. Requirements for the activity will be discussed in class.

➤ **Self Reflection (5 points)**

Given prompts, you will write a paper about yourself. Detailed information will be given in class and via Cougar Courses.

➤ **Mathematical Learning Activity (MLA) (20 points)**

○ **MLA—Small group activity (10 points)**

You will work with a group to select math topics in K-5 curriculum and be responsible for presenting activities from the correspondent chapters in the textbook. Each member of your group will plan/design a 7-10 minute learning activity in the assigned topic and then teach the activity in our EDMS 543 class (see course schedule) in a learning center type format. The activity you select **MUST** engage students in relational learning and critical thinking (NO Bingo games!).

○ **MLA—Individual activity (10 points)**

You will implement and videotape your MLA to the students (may range from a small group to entire class) in your practicum class. Be prepared to discuss modifications made to your activity based on your “experience” teaching it in the 543 class. You will review the video and submit a reflection on student learning.

➤ **Mathematics Lesson Design (20 points)**

You will design a problem-based math lesson which incorporates ELA standards as well. You will work with classmates, whose practicum is in your same grade level, in lesson planning. A lesson template and grading rubric will be available on Cougar Courses.

➤ **Assessment of Problem Solving (10 points)**

You will analyze and sort students' solution strategies to a math problem based on the effectiveness of strategies or levels of understanding. You will then write a report summarizing the students' understanding and problem solving skills, your rationale for your categorization, and implications for instruction. More information will be given in class and via Cougar Courses.

➤ **Clinical Student Interview (10 points)**

You will separately interview one high performing student and one low performing student from the same class. The purpose is to gain insight into students' mathematical thinking and understanding, to evaluate the similarities and differences between the mathematical thinking of students, to learn how to effectively pose questions and interpret the meaning of students' responses, and to determine how to best support these students in improving their math abilities. Sample interview questions will be provided, but you are encouraged to use your own invention with instructor approval.

➤ **Professional Dispositions/Participation (10 points)**

Students are expected to adhere to a professional code of ethics including: being in class on time and prepared with assignments and readings; actively participating in small and large group discussions and tasks; using computers during class time for note-taking or directed tasks; being respectful to peers and instructors; refraining from texting or checking e-mail during class; demonstrating willingness to help all students succeed. 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).