CALIFORNIA STATE UNIVERSITY SAN MARCOS
SCHOOL OF EDUCATION

EDMI 543 - Middle Level Mathematics Education
CRN 41264, 3 Units, Fall 2011
Meeting time varies (see schedule)
Woodland Park Middle School, San Marcos

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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 and Objectives
EDMI 543 focuses on developing an understanding of theory, methodology, and assessment of mathematics in integrated and inclusive elementary and middle level classrooms. This course is aligned with the California's SB 2042 Standards.

In this course, we will reflect on what it means to teach mathematics and explore curriculum development, methods, techniques, materials, planning, organization, and assessment in various middle school curricula. Socio-political issues in mathematics education and methods of cross-culture language and academic development will also be 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 the process of becoming a mathematics teacher.

We are expected to: (a) deepen our understanding of the mathematics taught at the middle school level, including such topics as fractions, proportions, statistics, probability, geometry, 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 Prerequisite
* Admission to the Middle Level Credential Program

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.

You are 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

- 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.

Recommended Materials
- Boaler, J., & Humphreys, C. (2005). *Connecting mathematical ideas: Middle school video cases to support teaching and learning*. Portsmouth, NH: Heinemann.
- Driscoll, M. (1999). *Fostering algebraic thinking: A guide for teachers grades 6-10*. Portsmouth, NH: Heinemann.
- Driscoll, M. (2007). *Fostering geometric thinking: A guide for teachers grades 5-10*. Portsmouth, NH: Heinemann.
- Lampert, M. (2001). *Teaching problems and the problems of teaching*. New Haven, CT: Yale University Press.
- Stein, M. K., Smith, M. S., Henningsen, M. A., & Silver, E. A. (2009). *Implementing standards-based mathematics instruction: A casebook for professional development* (2nd ed.) New York: Teachers College Press.

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

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) 750-4905, 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.

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+. 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.

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.

Assignments and Requirements
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. Late assignments may not be accepted. Prepare carefully for class, be ready to discuss readings and assignments thoughtfully and actively participate in all class activities.

Here is a list of the assignments and requirements, followed by descriptions of each of them.

Assignment	Points	Assignment	Points
Participation & professionalism	10	Student interviews	20
Reflection papers/activities	25	Mathematics lesson design	25
Math activity	10	Reflection on math lesson implementation	10

Detailed information about the assignments will be given in class and/or via e-mail. All assignments should be submitted via e-mail when possible. 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.

Participation and Professionalism (10 points) – You are expected to actively participate in in-class and online 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/Activities (25 points) – There are five reflection papers or activities. Detailed information will be given in class and via e-mail.

Mathematics Activity (10 points) – The purpose of this assignment is to provide you with opportunities to (1) experience teaching a math activity in a small group setting, (2) reflect on student learning, (3) set up learning centers in a classroom and rotate students through various activities.

Each group will select a math topic in K-8 curriculum and be responsible for presenting activities from the correspondent chapters in the textbook. Your goal is to engage your peer teacher candidates in advancing their understanding of the key ideas, frameworks, effective teaching strategies, and so on in the chapters.

This assignment has 2 components and will be completed with a small group of 4-5 members.

1. Learning Centers: You will put theory to practice. Each member will select an activity from the chapters to teach to a small group in class. Choose the activities that help the class understand the big ideas in the chapters and that demonstrate various instructional strategies. Each individual activity should take about 7-10 minutes. If the activity in the text is too short or too long, you need to adapt it to fit the time frame. The activity should be planned and/or adapted to show evidence of higher-order thinking (no bingo games!)

2. After the presentation, each member will write a one-page reflection (due 1 week after you have taught your activity). The reflection should describe the effectiveness of your individual math activity. How were your learners able to complete the activity (making content accessible)? What worked and what didn't (student engagement)? In what ways did you modify the activity? What was the level of thinking in the activity? How were you able to assess their understanding? How would you modify the activity next time? *Please submit a copy of your reflection via e-mail.*

Mathematics Activity Assignment Grading Rubric

	Approaching (0-4 points)	Meets (5-8 points) (includes the criteria for Approaching)	Exceeds (9-10 points) (includes the criteria for Approaching & Meets)
Group: Learning Centers	The activities were engaging and timely managed	& showed a variety of instructional strategies	& challenged students to think critically.
Individual: Activity Reflection	Describes what worked and what did not work…	& provides an in-depth analysis of (1) the strengths of your teaching/presentation strategies and (2) the aspects of the math activity that worked well…	& provides an in-depth analysis of (1) the weaknesses of your teaching/presentation strategies and (2) the aspects of the math activity that did not work. What can be done differently to improve the effectiveness of the math activity?

Student Interviews *(20 points)* – Conduct two sets of interviews to assess students' understanding of mathematics. In each set of interviews, you will interview one high performing student and one low performing student. 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 provide you with an opportunity to interact with students. Sample interview questions will be provided, but you are encouraged to use your own invention. For each set of interviews, you will choose a grade-appropriate mathematical topic from the following six areas: (1) number concepts, (2) addition/subtraction, (3) multiplication/division, (4) fraction, (5) measurement/geometry, and (6) algebraic thinking and will submit a reflective report, including the student'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 will share/present your interview findings in class. Student Interview Guidelines will be provided. **Reports should not exceed 3 pages, double spaced.**

Mathematics Lesson Design *(25 points)* – You are required to design a mathematics lesson (approximately 30-40 minutes) and teach it in an elementary school classroom. You will work with other students at your observation school site as a study team (groups of 2 or 3 only) to observe each others' lessons and take observation notes (template will be provided). Together, you will all reflect and discuss the effectiveness of each lesson in detail (see below for discussion ideas). Your teaching performance will not affect your grade; it is more the lesson design, its implementation and your reflection that will be assessed. Once you have taught and reflected on the lesson with your study team, you will share your teaching experience in the 543 class by means of an oral presentation.

During the presentation of your lesson in the 543 class, student work samples should be presented and you may call your teammates up to help you discuss your findings. Study team observation forms and student work samples must be submitted with your lesson design plan. A lesson template and grading rubric will be e-mailed to you. You will sign up to present your lesson design in class and it will be due on the day of your presentation. Note: you are encouraged to submit a draft of your lesson plan for review before the lesson is taught to students.

Reflection on Mathematics Lesson Implementation (10 points) – After you teach your mathematics lesson and reflect on your teaching with your study team, you will complete a 2-page reflection paper. A few prompts for this paper are:
- What went well and what could be done differently? Did students learn what they were supposed to learn? What evidence of learning do you have? What does the evidence tell you?
- How did your teaching strategies enhance student learning? What were the strengths and weaknesses of your teaching strategies? What difficulties in learning did you observe? What did you do to overcome such difficulties? If manipulatives were used, were they effective? Why or why not? If you put students in groups, how did group members interact? If a worksheet was given, how did it help or fail to facilitate learning? If you allowed student presentations, how did students share their ideas? How did other students respond to the presentations?
- Why did you make particular moment-to-moment decisions in your teaching moves? What were the effects of these moves? For example, you planned to encourage Jason to talk, but Cassidy raised a question in the middle of the lesson. You decided at that moment to pursue Cassidy's question instead of asking Jason to share his ideas. Why did you change your mind and take a detour? It is not sufficient to just say that Cassidy's question was important. You need to explain why the question was important and how the class responded to it.

Overall Grading Scale
Final course 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

Computer Use during Class Sessions
You are welcome to use a laptop computer in class when working on class assignments, for example. However, you will need to save checking email or other personal computer use for time outside of class. Most students find it disruptive when they are focusing on class activities or listening to presentations and can hear keyboarding in the classroom. 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.

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

Date	Session, Topics, & Essential Questions	Reading & Assignments
ML theme 1: Learning happens in caring communities		
9/6 Tues. AM	1. BUILDING A MATH LEARNING COMMUNITY • Course introduction; what are characteristics of an effective math classroom?	Syllabus
ML theme 2: Students are the center of our work		
9/7 Wed. PM	2. CHALLENGING STUDENTS WITH RICH MATH TASKS • What are different levels of cognitive demand of math tasks? How can we challenge students using appropriate math tasks?	Van de Walle et al. ch 2
9/12 Mon. AM	3. UNPACKING THE MATH STANDARDS • What are some similarities and differences between NCTM *Principles and Standards for School Mathematics* and CA math framework and standards? • Common Core Standards • Benefits & drawbacks of math standards? **Math Standards presentations**	Van de Walle et al. ch 1 **Reflection 1 due**
9/14 Wed. PM	4. LESSON DESIGN • How do we make decisions about what to teach and how we teach it? How do we provide opportunities for student thinking and interaction? • Planning workshop: Bring ideas & materials	Van de Walle et al. ch 3, 4 **Reflection 2 due**
9/19 Mon. AM	5. ASSESSMENT OF STUDENTS' THINKING IN MATH • How do we assess students' understanding and misunderstanding of mathematics? What are the purposes of different types of assessment strategies? How do we respond when students do not learn? • Planning workshop: Bring ideas & materials	Van de Walle et al. ch 5
9/21 Wed. AM	6. USING MODELS FOR MATH TEACHING & LEARNING How do we provide opportunities for hands-on explorations of math? How can manipulatives help or fail to help children construct math ideas? **Math activities- Group 1 presentation (Fractions)***	Van de Walle et al. ch. 15, 16 **Reflection 3 due**
9/21 Wed. PM	7. USING MODELS FOR MATH TEACHING & LEARNING, cont. **Math activities-Group 2 presentation(Decimals/Percents)***	Van de Walle et al. ch 17

ML theme 3: Teaching is the negotiation among theory, practice and students.		
9/26 Mon. AM	8. MAKING CONNECTIONS • How can we promote students' development of proportional thinking across the math curriculum? What are some models of ratios and proportions? **Math activities- Group 3 presentation (Proportional Reasoning)***	Van de Walle et al. ch 18
9/28 Wed. AM	9. MATH PATTERNS & GENERALIZATION • What factors are involved on the way from arithmetic to algebra? How can we help students make & justify conjectures and generalizations? **Math activities-Group 4 presentation(Algebraic Thinking)***	Van de Walle et al. ch. 14
10/4 Tues. PM	10. LESSON IMPLEMENTATION AND REFLECTION • How do we provide a balanced math curriculum? How do we collect evidence of learning as a means for in-depth reflection on the effectiveness of instructional strategies? **Math activities- Group 5 presentation (Geometry)***	Van de Walle et al. ch. 19, 20 (levels 0 & 1 only) **Student interviews #1 due**
ML theme 4: Empowerment of students is essential to the students' meaningful participation in a democratic society.		
10/5 Wed. PM	11. DIFFERENTIATION • How do we differentiate instruction, activities, assignments, and assessment? What do we do with the students who have not mastered basic math facts? **Lesson plan presentations and reflections**	Small, ch. 1, 2 (chapters will be e-mailed to you) **Reflection 4 due** *** TPA Task 1 is due soon!!! Don't wait until the last minute!!!*
10/11 Tues. AM	12. PROJECT-BASED TEACHING AND LEARNING • How can open-ended math tasks allow students to engage in higher-order thinking? **Lesson plan presentations and reflections**	
10/11 Tues. PM	13. TEACHING MATH EQUITABLY TO ALL STUDENTS • Diversity in the classroom, grouping, RTI, culturally relevant mathematics instruction **Lesson plan presentations and reflections**	Van de Walle et al. ch. 6
10/17 Mon. AM	14. LITERACY IN MATH LEARNING • How can we help students develop math vocabulary? How do we encourage students to read and write about math? How can we help students communicate mathematically? **Lesson plan presentations and reflections**	TBA **Reflection 5 due**
10/19 Wed. AM	15. USING TECHNOLOGY TO ENHANCE TEACHING • Examine technology available in schools. How can we capitalize on the latest technology to enhance the mathematical teaching and learning? Resources for technology. **Lesson plan presentations and reflections**	**Student interviews #2 due**

Notes: * Presentation of M*athematics Activities.* After the presentation, you should submit the reflection within a week. For example, if you conduct an activity on number concepts on 9/21, your paper is due on 9/28 via e-mail.