

San José State University
Department of Elementary Education
**EDTE 233, MATHEMATICS SEMINAR: COMMON CORE
GRADES 4-8**
Fall 2013-Spring 2014

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Office Hours:	7:00pm - 8:00pm (TBA)
Class Days/Time:	Monthly Evening Seminar, 4:00pm - 6:45pm
Classroom:	TBA

Course Description

This course focuses on supporting teachers in their implementation of 4th -8th grade Common Core content standards and mathematical practices. The course is designed for practicing teachers. Coursework will emphasize the development of mathematical knowledge and the use of “high leverage” mathematical practices in classroom teaching (Ball, 2011). The purpose of this course is to support teachers’ implementation of Common Core mathematics standards and practices within their specific district contexts.

This course is offered as a hybrid course providing monthly evening seminars September through June, and on-line components in which teachers will study specific lesson sequences to be utilized in their classrooms. This course focuses primarily in the Common Core domains of algebraic thinking, measurement, geometry, statistics, and probability. A companion course EDTE 232 (recommended but not required), designed to develop teachers’ mathematical knowledge for teaching Common Core standards and practices in the domains of number and operations, proportional reasoning, and algebraic thinking is offered in the summer preceding this course.

Within the context of the rigorous content and mathematical practices outlined by Common Core standards, this course emphasizes the critical need for teachers to enhance all students’ access to and interest in mathematics, enabling all students to learn mathematics well. Consequently, a primary goal of this course help teachers translate their mathematical knowledge into classroom practice – practice that enhances student access, understanding, and productive disposition (Kilpatrick, Swafford & Findell, 2001) towards learning and doing mathematics.

Consequently, two key features of effective mathematics teaching will be embedded throughout the course: developing students' academic language within mathematics and addressing the social-emotional dimensions of teaching and learning mathematics.

Language is an essential tool enabling students to both learn and do mathematics. In this course we will focus on simultaneous teaching of mathematics content and the language of mathematics. Practical strategies for teaching vocabulary in context, using language frames, structuring group and paired work and efficiently using manipulative materials will be addressed for their potential to foster conceptual understanding and the use of academic language in mathematics.

Finally, mathematics, and how it is taught, has the power to shape students' self-efficacy, resiliency, and beliefs about themselves and their intelligence. In no other subject is the interaction of social-emotional factors so tied to learning and disposition to learn. In this course we will examine the social and emotional dimensions of teaching and learning mathematics and develop strategies to enhance students' productive disposition towards learning and doing mathematics.

Course Goals and Student Learning Objectives

- 1) Students will demonstrate both conceptual understanding and the ability to teach essential Common Core content and mathematical practices for students' in 4th through 8th grade.
- 2) Students will demonstrate the ability to strategically integrate pedagogical strategies, curricular activities, and management systems introduced in class with the existing mathematics programs used in their district.
- 3) Students will demonstrate the ability to design and implement mathematics lessons reflecting a variety of pedagogical strategies and designed to enhance access to learning in academically and linguistically diverse classrooms.
- 4) Students will develop classroom organizational systems and instructional plans to foster cooperative skills, organize and maintain efficient use of manipulatives, and enhance meaningful communication in the mathematics classroom. Specific emphasis will be placed on materials, methods, and instructional strategies that provide second language learners with access to grade appropriate mathematics content while fostering the development of both oral and written English language skills.
- 5) Students will demonstrate the ability to use pedagogical strategies that foster the development of social and emotional learning skills within the context of teaching and learning mathematics. Specifically, students will learn to 1) foster self-awareness and resiliency when faced with challenging mathematics tasks 2) teach norms for group interaction and mathematical discourse, 3) model a growth mindset, develop multidimensional mathematics tasks, and recognize a variety of intellectual aptitudes relevant to doing mathematics, and 4) teach

study skills that promote goal setting, planning, and self regulation in the mathematics classroom.

6) The following “high leverage” practices (Ball, 2011) will be taught and practiced throughout the course:

- a. Choosing and using mathematical tasks that entail complex mathematical work and build basic skills
- b. Choosing examples
- c. Teaching and using academic language
- d. Leading a productive whole-class math discussion
- e. Responding productively to students “errors”
- f. Using homework equitably
- g. Using specific mathematically-focused positive reinforcement
- h. Using public recording (posters, whiteboard)
- i. Diagnosing common patterns of student thinking (and not-so-common)
- j. Assessing students’ mathematical proficiency and teaching responsively

An underlying focus of this course will be on preparing teachers to work in culturally, linguistically, and academically diverse classrooms.

Required Texts/Readings

Textbook

Van de Walle, J.A., Karp, K. S., Bay-Williams, J. M. (2013). Elementary and Middle School Mathematics (eighth edition). New York, NY: Addison Wesley Longman. & Field Experience Guide

Common Core State Standards Initiative. *Standards for Mathematical Practice and The Standards >> Mathematics (available online @ www.corestandards.org/the-standards/mathematics)*

Other Readings

All other readings, required or suggested, are on course e-reserves at MLK library and can be accessed from your computer. <http://library.sjsu.edu> (services tab, course reserves, type professor’s name)

Classroom Protocol

Please arrive to class on time and notify the instructor if you will be absent.
For information on students’ rights, responsibilities and grievance procedures, *Please refer to “Policies and Procedures” in the University Schedule of Classes.*

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drops, academic renewal, etc. [Information on add/drops are available at http://info.sjsu.edu/web-dbgen/narr/soc-fall/rec-324.html](http://info.sjsu.edu/web-dbgen/narr/soc-fall/rec-324.html) . [Information about late drop is available at http://www.sjsu.edu/sac/advising/latedrops/policy/](http://www.sjsu.edu/sac/advising/latedrops/policy/) . Students should be aware of the current deadlines and penalties for adding and dropping classes.

Assignments and Grading Policy

Assignments total 100 points. Assignments are graded on quality and completeness. Late assignments will be reduced 10% from the total point value. A grade of C or higher is required.

Grading	
90 -100 points	A
80 - 89 points	B
70 - 79 points	C

A brief description of each assignment, its value, and related learning objectives is provided below.

Active Informed Participation (10 points) (obj. 1-6)

Participation in class discussion, actively involved in mathematics activities

Analysis of Sample CCSSM Balanced Assessment Task (10 points) (obj. 1 & 6j)

Describe your assigned assessment task. Analyze the skills required to complete the task; describe the mathematical properties embedded in the task; describe the mathematical uses and applications; identify the mathematical representations. (obj. 1)

Examine the student work sample from the task. Assess the student's mathematical proficiency and write what you would say to provide the student with feedback and guide further learning. Describe the mathematical practices you will need to teach to prepare students for tasks like this.

(obj. 6j)

High Leverage Practices (40 points) (obj. 1-6)

Teachers are required to implement in their classrooms the following content lessons and high leverage mathematical practices. A one-page written reflection with student work samples and analysis of learning is required to document classroom teaching.(CR/NC)

Implementation: Socio-Mathematical Norms (obj. 6c-d)	5
Implementation: Teaching Study Skills (obj. 5)	5
Implementation: Designing and Equitable Homework Policy (obj. 6f)	5
Implementation: Deducing Formulas (obj. 1-3)	5
Implementation: Modeling with Probability (obj. 1-3)	5
Implementation: Practicing Academic Language (obj. 4)	5
Implementation: Responding to Student Work (obj. 6j)	5
Implementation: Common Core Assessments (obj. 1 & 6j)	5

Mathematics Unit Outline (20 points) (obj. 1-6: *Signature Assignment*)

Integrate Common Core content and practices and instructional strategies learned in this course with the grade level mathematics text used by your district. Create an integrated instructional unit that significantly enhances the student text, making mathematics conceptually strong, accessible, and engaging to a wide range of learners.

1. Choose one of the content areas covered in your Van de Walle text.
2. Find the corresponding chapter(s) in a grade level mathematics text and compare it to the Van de Walle chapter. Write a 1-2 page analysis identifying the strengths and weaknesses of the student text and the adaptations and additions you will need to make to teach Common Core content well, using strategies and activities that make mathematics accessible and promote strong conceptual understanding.
3. Create a 5-day instructional sequence that combines your selected math program/text with specific instructional strategies and mathematics content learned in this course (utilizing Van de Walle, and/or ideas presented in class.)

Use your Van de Walle book to research the big ideas and the suggested instructional sequence for your content area. Decide on essential competencies for your students and craft learning objectives. How will you teach essential mathematics ideas to promote conceptual understanding, procedural competence, and problem solving? For each day you should identify the academic language and specific instructional strategies you will use to scaffold language development for English language learners. Your unit outline should provide a clear teaching sequence with a brief description of the specific activities (appropriately cited) that you will use. Finally, include the formative and summative assessments will you use to assess student learning throughout the unit.

Final (20 points) (Obj. 1-6)

The final will include 20 multiple choice and short answer questions. It is comprehensive, covering content and pedagogical practices addressed in the course.

University Policies

Credit Hour Policy

Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of forty-five hours over the length of the course (normally 3 hours per unit per week with 1 of the hours used for lecture) for instruction or preparation/studying or course related activities including but not limited to internships, labs, clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus.

Academic integrity

Students should know that the University's [Academic Integrity Policy is available at http://www.sa.sjsu.edu/download/judicial_affairs/Academic_Integrity_Policy_S07-2.pdf](http://www.sa.sjsu.edu/download/judicial_affairs/Academic_Integrity_Policy_S07-2.pdf). Your own commitment to learning, as evidenced by your enrollment at San Jose State University and the University's integrity policy, require you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The website for [Student Conduct and Ethical Development is available at http://www.sa.sjsu.edu/judicial_affairs/index.html](http://www.sa.sjsu.edu/judicial_affairs/index.html).

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include in your assignment any material you have submitted, or plan to submit for another class, please note that SJSU's Academic Policy F06-1 requires approval of instructors.

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with the DRC (Disability Resource Center) to establish a record of their disability.

Note: The following Schedule provides a preliminary outline of topics and assignments. This schedule may be modified by the instructor as necessary.

EDTE 233 MATHEMATICS SEMINAR: COMMON CORE GRADES 4-8 Course Schedule.

Day	Date	Topics, Readings, Assignments, Deadlines
1		<p>Building a Mathematics Community of Learners Introduction to Course Content and Purposes Supporting Your Classroom Implementation of Common Core Mathematics Standards and Practices</p> <p>Beginning the Year: Classroom Community and Knowing Your Students Social and Sociomathematical Norms (Yackel & Cobb, 1996) * Extending Your Repertoire of Skillbuilders: Discussion Builders (CC mathematical practice #3: Construct viable arguments and critique the reasoning of others)</p> <p>The Unique Learning Needs of Young Adolescent Learners * Implications for Classroom Practice * Implications for Grading and Homework Policies * Implications for Remediation</p> <p><i>On-Line Viewing and Classroom Implementation</i> Lessons: Starting the Year Socio-mathematical skillbuilders</p> <ul style="list-style-type: none"> • <i>Implementation: Teaching Socio-Mathematical Norms (Due by Seminar 2)</i> • <i>Implementation: Designing an Equitable Homework Policy (Due by Seminar 2)</i> <p><i>Reading:</i> <u>Elementary and Middle School Mathematics</u>, "Helping Children Master the Basic Facts," pp. 171-191.</p> <p>Chapin, S. H., O'Connor, C., Anderson, N. C. (2003). <i>Classroom discussions: Using math talk to help students learn</i>. Sausalito, CA: Math Solutions Publications. (Chapter 9)</p>
2		<p>Number and Operations in Base 10 Place Value: Large Numbers and Decimals (CC mathematical practice #7: Look for and make use of structure) *Role Play: Fostering Growth Mindset</p>

Day	Date	Topics, Readings, Assignments, Deadlines
		<p><i>On-Line Viewing and Classroom Implementation</i> Lessons: Modeling Computational Algorithms with Manipulatives Dialogues “Fostering Growth Mindset” • <i>Implementation: Teaching Study Skills</i> (Due by Seminar 3)</p> <p><i>Reading:</i> <u>Elementary and Middle School Mathematics</u>, “Developing Concepts of Decimals and Percents,” pp. 338-356</p>
3		<p>Area Developing Area and Volume Formulas * Math Journals and Note-taking * Teaching Students to Use Multiple Representations (CC mathematical practice #1: Make Sense of Problems and Persevere in Solving Them)</p> <p><i>On-Line Viewing and Classroom Implementation</i> Lessons: Making Area Formula Notebooks • <i>Implementation: Deducing Formulas</i> (Due by Seminar 5)</p> <p><i>Required Reading and Viewing</i> Video Case “Classroom Participation Through the Eyes of the Students” and Case Commentary.Link: http://www.sjsu.edu/atn/services/webcasting/events/mathideas.html <i>Reading:</i> <u>Elementary and Middle School Mathematics</u>, “Measurement” pp. 388-401.</p>
4		<p>Exploring Pi Deducing Pi from Circle Measurements Graphing Pi as Slope: Circumference/Diameter Strategies for Deducing Circle Area Formulas: Radius Squared and Algebraic Strategies</p> <p>Preparing for Common Core Assessments Analysis of Student Work from Assessment Task</p> <p><i>On-Line Viewing and Classroom Implementation</i> Lessons: Deducing Pi & Circle Area Formulas • <i>Implementation: Common Core Assessment</i> (Due by Seminar 6)</p> <p><i>Reading:</i> <u>Elementary and Middle School Mathematics</u>, “Measurement” pp. 388-401.</p>

Day	Date	Topics, Readings, Assignments, Deadlines
		<p><i>Recommended Reading:</i> Lamon, S. J. (2005). <i>Teaching fractions and ratios for understanding</i>, 2nd ed. Mahwah, NJ: Lawrence Erlbaum Associates, Inc.</p> <p>National Mathematics Advisory Panel. (2008). <i>Foundations for success: The final report of the National Mathematics Advisory Panel</i>. Washington, DC: U.S. Department of Education.</p>
5		<p>Volume Filling Boxes and Deducing Volume Formulas: Base Area x Height Exploring Cylinders, Cones, and Pyramids Grade Level Jigsaw: Planning for Implementation</p> <p><i>On-Line Viewing and Classroom Implementation</i> Lessons: Making & Measuring Boxes: Deducing Volume Formulas for Rectangular Prisms •<i>Implementation: Responding to Student Work (Due by Seminar 7)</i></p> <p>•<i>Due: Analysis: CCSSM Assessment Task</i></p> <p><i>Reading:</i> <u>Elementary and Middle School Mathematics</u>, “Measurement” pp. 388-401.</p>
6		<p>Geometry: Properties of Shapes Properties of Triangles and Quadrilaterals Visualization: Moving from 2-D shapes to 3-D solids Similarity and Congruence Informal Deduction Leading into High School Geometry (CC mathematical practice #3: Construct viable arguments and critique the reasoning of others)</p> <p>Teaching and Using Academic Language</p> <p>The Pythagorean Theorem: An Art Application: The Wheel of Theodorus</p> <p><i>On-Line Viewing and Classroom Implementation</i> Lessons: Shape Sorts Making Quadrilaterals and Informal Deduction The Pythagorean Theorem: The Wheel of Theodorus</p> <p>• <i>Implementation: Teaching and Using Academic language (Due Seminar 7)</i></p>

Day	Date	Topics, Readings, Assignments, Deadlines
		<p><i>Reading:</i> <u>Elementary and Middle School Mathematics</u>, “Geometric Thinking and Geometric Concepts” pp. 400-419.</p>
7		<p>Geometry: Location and Transformation Video Games: Algebraic Transformations on a Plane Coordinate Dilations: Perspective in Art (CC mathematical practice #4: Model with mathematics.)</p> <p>Grade Level Jigsaw: Planning for Implementation</p> <p><i>On-Line Viewing</i> Lessons: Motion Man and Paths Coordinate Dilations: Perspective in Art</p> <p><i>Reading:</i> <u>Elementary and Middle School Mathematics</u>, “Geometric Thinking and Geometric Concepts” pp. 419-432.</p>
8		<p>Statistics Choosing the Right Graph for the Data: Exploring Relevant Data Interpretation: The Shape of the Data Exploring Measures of Central Tendency: Summarize and Describe Distributions * Box and Whisker Plots * Using Graphing Calculators to Explore Real Data Sets</p> <p><i>Reading:</i> <u>Elementary and Middle School Mathematics</u>, “Developing Concepts of Data Analysis,” pp. 434-453.</p> <p><i>On-Line Viewing</i> Lessons: Balancing for the Mean & Exploring Distributions</p>
9		<p>Experimental and Theoretical Probability The Probability Continuum: From 0-1: An Opportunity to Revisit Rational Numbers Simple versus Compound Events *Exploring “and” & “or” with Area Models and Tree Diagrams and Revisiting Fraction Computation. (CC mathematical practice #2: Reason Abstractly and Quantitatively.)</p>

Day	Date	Topics, Readings, Assignments, Deadlines
		<p><i>On-Line Viewing and Classroom Implementation</i> Lessons: Design a Bag: Exploring Experimental and Theoretical Probability</p> <ul style="list-style-type: none"> • <i>Implementation: Modeling with Probability</i> • <i>Unit Outline Due</i>
10		<p>Simulations with Probability Simulations with Probability: Weather (CC mathematical practice #4: Modeling with Mathematics.)</p> <p>Wrapping-Up: Goals for Next Year</p> <ul style="list-style-type: none"> • <i>Final</i>