

Syllabus
University of New Mexico Valencia Campus
Math 215: Mathematics for Elementary and Middle School Teachers III
Spring 2010

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Office Hours: T 12:00-3:00, Th 12:00-2:00, W 11:30-1:30
or by appointment

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Course Description: Algebra from the viewpoint of the elementary curriculum with emphasis on proportional and linear relationships. Also included: topics from probability and statistics with connections to other topics in the elementary curriculum. Problem solving is emphasized throughout.

Prerequisite: C or better in Math 111 and Math 112

Textbook/Materials: Beckman, Sybilla, *Mathematics for Elementary Teachers*, 2nd edition, scientific calculator, graph paper, and ruler

Student Learning Outcomes:

Course Goal #1: Communication

Addresses UNM core area 2/ HED area II: Mathematics (Other College-Level Mathematics)

SLO 1: Students will be able to communicate mathematical ideas and concepts in oral form

SLO 2: Students will be able to communicate mathematical ideas and concepts in written form

SLO 3: Students will use mathematically correct terminology and notation

SLO 4: Students will be able to collect, organize, interpret, and present information relevant to the mathematics teaching field

Course Goal #2: Understand Ratios and Proportion

Addresses UNM core area 2/ HED area II: Mathematics (Other College-Level Mathematics)

SLO 1: Students will be able to identify relationships that are proportional

SLO 2: Students will be able to represent ratios in multiple ways such as pictures or diagrams, equations, and graphs

SLO 3: Students will be able to understand percent as a specific kind of ratio

SLO 4: Students will use ratio and proportionality to solve a variety of applied problems, e.g. percent, discount, and interest problems

Course Goal #3: Understand Algebraic Concepts of the K-8 Curriculum

Addresses UNM core area 2/ HED area II: Mathematics (Other College-Level Mathematics)

SLO 1: Students will be able to represent problem situations with algebraic expressions and equations

SLO 2: Students will understand and interpret slope as a rate-of-change

SLO 3: Students will be able to translate among verbal, tabular, graphical, and algebraic representations of linear functions and describe how slope and intercepts appear in different representations

SLO 4: Students will be able to use systems of equations to solve applied problems

Course Goal #4: Represent and Interpret Data

Addresses UNM core area 2/ HED area II: Mathematics (Other College-Level Mathematics)

SLO 1: Students will be able to represent data in different ways such as tables and bar graphs or histograms, line graphs, circle graphs, and box-and-whisker plots

SLO 2: Students will use descriptive statistics including mean, median and range to summarize and compare data sets

SLO 3: Students will be able to use proportions to make estimates related to a population on the basis of a sample

Course Goal #5: Understand the Basic Concepts of probability

SLO 1: Students will be able to distinguish between theoretical and experimental probability

SLO 2: Students will use theoretical probability and proportions to make approximate predictions

SLO 3: students will be able to make and identify connections between the concept of ratio and the concepts of probability

Attendance Policy: Students are expected to attend class regularly. Being absent 15% of the total class hours is considered excessive. A record of attendance will be kept by the instructor. One or more group projects will be done each class. The benefit of working with a group and learning from group members with hands-on materials is hard to simulate outside of class. Therefore, **no late work will be accepted**; however, at least one project grade will be dropped before computing your final grade.

Grading Policy: Grades will be based on the following:

Exams	50%	91 - 100	A
Group Projects and HW	15%	81 - 90	B
Portfolio*	10%	71 - 80	C
Final Exam	25%	61 - 70	D
		0 - 60	F

- If you have no absences, you may be excused from doing the portfolio.

Requirements:

1. **Attend class and participate.** The goal of this class is to understand the mathematical concepts. Many different pedagogical approaches will be used to help you understand the mathematical content. Calculators, computers and manipulatives will be used extensively. You will participate in numerous group projects and exploratory lessons.
2. Homework assignments will be given from the textbook to reinforce the concepts learned in class. The assigned exercises are considered the minimum requirement for each section. Textbook assignments are meant to be self-checking. Students are expected to attempt all problems. Students will have the opportunity to meet with classmates each class to discuss homework and selected problems will be done in class. Students should also seek assistance if necessary from the instructor, other students, or a tutor in the Enrichment Center. All homework assignments should be completed at the time of the exam. Homework will be collected the day of the exam.
3. **All exams must be taken on the date scheduled.** Arrangements must be made with the instructor if an emergency situation arises which prohibits you from taking a scheduled exam.
4. Keep an organized notebook that includes all notes, journal entries, assignments and projects.
5. Stay current on all assignments. The schedule is tentative and additions or deletions may be made in class. (Note: You may find it helpful to exchange phone numbers with a classmate in case you miss a class.)

* Students with special needs please see me as soon as possible to ensure that needs are met in a timely manner.

Tentative Course Outline

Week	Chapter
1 1/20	Chapter 13 Functions and Algebra
2 1/27	Chapter 13 Functions and Algebra Group Project: Algebra Tile Explorations 1/29 Last day to add courses or change sections
3 2/3	Chapter 13 Functions and Algebra Group Project: Solving Equations 2/5 Last day to drop without a grade

4 2/10	Chapter 13 Functions and Algebra Group Project: Exploring Sequences and Series 2/12 Last day to change grading options
5 2/17	Chapter 13 Functions and Algebra Group Project: Graphs: Walk the Walk Group Project: Chalk Board Globes Game
6 2/24	Proportional Reasoning Explorations
7 3/3	EXAM 1 Chapter 14 Statistics
8 3/10	Chapter 14 Statistics Group Project: Monday Blues Random Sampling Activity Homework: Watch cartoons 3/14-3/21 SPRING BREAK
9 3/24	Chapter 14 Statistics Group Project: Interpreting Graphs and Data Abuse Group Project: Cartoon Graphs
10 3/31	Chapter 14 Statistics Project: How Long is Your Name? Group Project: Using calculators to explore averages and standard deviation
11 4/7	EXAM 2 Chapter 15 Probability Group Project: Happy Birthday Exploration Group Project: Exploring Probability with M&M's
12 4/14	Chapter 15 Probability Group Project: Two Dice Sum Game Group Project: Rock, Paper, Scissors
13 4/21	Chapter 15 Probability
14 4/28	EXAM 3
15 5/5	Presentations and Review for Final
16	FINAL EXAM Wednesday, May 12, 2010 3:00-5:00