Math 216: Mathematics for Middle School Teachers

University of New Mexico, Fall 2019

Instructor: **Email:**

Office: **Office Hours:**

Textbook: Mathematics for Elementary Teachers with Activities (5th edition) by Sybilla Beckmann available on "RedShelf" in UNM Learn.

Topics: Development of mathematical concepts from the viewpoint of the middle school curriculum. Topics include: in-depth development of algebraic thinking, connections between algebra and geometry, and applications. Problem solving is emphasized throughout.

Common Core State Standards: Familiarize yourself with the CCSS addressed in Math 216. These standards have been adopted by the State of New Mexico, in addition to many other states, and will be referred to throughout the semester. http://newmexicocommoncore.org/mathematics/

Grades: Your grade will be based on your performance on the following:

Exams	300 points
Final Exam	200 points
Homework/ Quizzes/ Activities/ Projects	200 points
Total	700 points

Grading Scale: 90-100 A, 80-89 B, 70-79 C, 60-69 D, below 60 F. (Instructor reserves the right to assign +/- grades)

Homework: Completing homework assignments on time is critical to your success in this class. Expect to do 2 to 3 hours of homework for every hour of class meeting time (an average of 6-9 hours per week). No late assignments will be accepted.

Exams: There will be three in-class exams each worth 100 points. The final exam will be cumulative and worth 200 points.

Projects/Activities/Quizzes: Details provided by instructors in consultation with course-coordinator.

Attendance: Attendance is mandatory. If a student has more than three unexcused absences he/she may be dropped from the course. Tardiness or early departure may be regarded as an absence. After the Withdrawal deadline the instructor will not drop any student. Please note that it is the student's responsibility to drop the course if he/she stops attending. A failing grade of F may be assigned if the student stops attending and does not drop before the posted deadline. No early final exams will be permitted except in documented emergencies: flight reservations, weddings, vacations, birthdays etc. are not considered emergencies.

Student Behavior: All students have to abide by the Student Code of Conduct: www.pathfinder.unm.edu. According to the Code of Conduct, student activities that interfere with the rights of others to pursue their education or to conduct their University duties and responsibilities will lead to disciplinary action. This includes any activities that are disruptive to the class and any acts of academic dishonesty. Students are expected to

behave in a courteous and respectful manner toward the instructor and their fellow students. Students may be dropped for inappropriate behavior. The use of cell phones, headphones, smart watches, etc. is not permitted during class or exams.

Cheating: Cheating of any kind will not be tolerated. Examples are: looking at a neighbor's exam, plagiarizing, using a calculator when not permitted, using the book and/or a cheat sheet, modifying an exam after it is graded, etc. Cell phones and other items that could be used for cheating should not be accessible during exams (including under the leg and in hoodie pockets). The instructor may warn an offending student, the score of the exam may be reduced, the score may be set to zero, the student may get dropped from the class, the student may get a grade of F for the class, and in most cases the incident will be reported to the Dean of Students.

Grading: To get full credit on graded work students must address all mathematical components presented by the problem, showing all steps and calculations. The use of proper notation, well structured procedures, and legibility will be taken into account when assigning points.

Deadlines: The Department of Mathematics and Statistics will adhere to all of the registration deadlines published by the Office of the Registrar in the schedule of classes: www.registrar.unm.edu. We will not give permission to override any deadline except in documented emergencies; failing a class is not considered an emergency.

Grade mode and Withdrawals: You must select your grade mode (Letter Grade, CR/NC, or Audit) within the first 2 weeks of the semester. We will not give permission to change the grade mode after the deadline.

Students who are in the regular grade mode and who withdraw after the end of week 3 will receive a grade of "W". If you do not withdraw, you will receive a letter grade of A, B, C, D, or F (not a W).

Students who are in the CR/NC grade mode and who withdraw after the end of week 3 will receive a grade of "W". If you do not withdraw (but stop attending), you will receive a letter grade of NC (not a W).

See the list of all deadlines: www.registrar.unm.edu

Aug 30, 2019: Last day the CHANGE grade mode on LoboWEB

Sept 6, 2019: Last day to DROP without "W" grade and 100% tuition refund on LoboWEB

Nov 8, 2019: Last day to DROP without Dean's permission on LoboWEB

Accessibility Statement: We will accommodate students with documented disabilities (through ARC). During the first two weeks of the semester, those students should inform the instructor of their particular needs.

Course Outline: The course outline may be modified as the semester progresses. Supplemental activities and exercises may be included where appropriate. Check your e-mail frequently for updates**.**

Responsible Employees: In an effort to meet obligations under Title IX, UNM faculty, Teaching Assistants, and Graduate Assistants are considered "responsible employees" by the Department of Education (see pg 15 - http://www2.ed.gov/about/offices/list/ocr/docs/qa-201404-title-ix.pdf). This designation requires that any report of gender discrimination which includes sexual harassment, sexual misconduct and sexual violence made to a faculty member, TA, or GA must be reported to the Title IX Coordinator at the Office of Equal Opportunity (oeo.unm.edu). For more information on the campus policy regarding sexual misconduct, see: https://policy.unm.edu/university-policies/2000/2740.html

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Tentative Schedule of Topics (TR)

Week	Week of	Key Topics	Student Reading (additional supplemental reading assignments posted in UNM Learn)
1	Aug 19	**Unit 1: Numbers to Algebra** T: types of numbers, representing integers, absolute value, ordering and negative numbers R: representing and understanding operations with integers	Section 1.2 pgs 18-20 Section 3.5 pgs 134-139 Section 5.3 pgs 210-212
2	Aug 26	**Unit 1: Numbers to Algebra** T: understanding properties of exponents R: variables, equations, and word problems	Section 5.4: pgs 213 – 217 Section 9.2: pgs 388-391 Section 9.3: pgs 396-401
3	Sept 2 (no school on Monday for Labor Day)	**Unit 1: Numbers to Algebra** T: Modeling and solving algebraic equations R: Proportional relationships: understanding the "cross multiply and divide" algorithm and constants of proportionality	Section 9.4: pgs 404-407 Section 7.3: pgs 300-304
4	Sept 9	**Unit 1: Numbers to Algebra** T: Proportional relationships and slope, linear and other relationships R: Review	Section 7.4: pgs 307-313 Section 9.7: pgs 436-440
5	Sept 16	T: Test 1 **Unit 2: Geometry and Connections to Algebra** R – Proving the Pythagorean theorem, understanding square roots and irrational numbers	Section :8.6 pgs 363, 369-371 Section: 12.9 pgs 570-572
6	Sept 23	**Unit 2: Geometry and Connections to Algebra**	Section 10.1: pg 455-459

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		T – Angle theorems R – 3D shapes and surface area	Section 13.1: pgs 581-586 Section 13.2: pg 589
7	Sept 30	**Unit 2: Geometry and Connections to Algebra** T– 3D shapes and volume R- Introduction to reflections, translations, rotations, and symmetry	Section 13.3 pg 598-602 Section 14.1 pgs 613-615 Section 14.2: pgs 619-623
8	Oct 7	**Unit 2: Geometry and Connections to Algebra** T – Congruence R - Fall Break (No Class Thursday and Friday)	Section 14.3: pgs 627-633
9	Oct 14	**Unit 2: Geometry and Connections to Algebra** R – Similarity T – Dilations and similarity	Section 14.5: pgs 643-648 Section 14.6: pgs 654-660
10	Oct 21	**Unit 2: Geometry and Connections to Algebra** T- Areas, Volumes, and Similarity R - Review	Section 14.7: pgs 665-666
11	Oct 28	T- Test 2 **Unit 3: Applications of Middle School Math** R – Reasoning with percent	Section 2.5: pgs 79-84
12	Nov 4	**Unit 3: Applications of Middle School Math** T - Percent increase and decrease R- Statistics: random samples and predictions, scatterplots and linear relationships	Section 7.6: pgs 323-327 Section 15.1: pgs 674-678 Section 15.2: pgs 687-690
13	Nov 11	**Unit 3: Applications of Middle School Math** T – Statistics: Summarizing, describing, and comparing data distributions R – Basics of probability and counting the number of outcomes	Section 15.4: pgs 703-713 Section 16.1: pgs 723-727 Section 16.2: pgs 730-733
14	Nov 18	**Unit 3: Applications of Middle School Math**	Section 16.3: pgs 736-739

		T – Calculating probabilities of compound events R - Review	
15	Nov 25	T - Test 3 R – Thanksgiving (No class Thursday and Friday)	
16	Dec 2	Review Week	
17	Dec 9	**Final Exam (see date and time published by UNM registrar)**	

Student Learning Outcomes for Math 216:

Course Goal 1: Extend understanding of numbers and operations.

SLO 1.1: Analyze and perform operations on number sets beyond positive rationals and on variables.

SLO 1.2: Use visual models and symbols to represent real numbers and variables and their operations, and move flexibly between representations.

Course Goal 2: Identify and use mathematical reasoning to explore deeper structure of algebra and geometry.

SLO 2.1: Analyze student work, validity of arguments, mathematical misconceptions.

SLO 2.2: Appropriately use and interpret algebraic problem solving strategies and graphical representations.

SLO 2.3: Use informal arguments to explain geometric relationships (ex. transformations and Pythagorean Theorem).

SLO 2.4: Use informal arguments to explain 3-D geometry and measurement concepts.

Course Goal 3: Apply and extend understanding of algebra and geometry.

SLO 3.1: Apply proportional reasoning to solve application problems in the area of statistics and probability.

SLO 3.2: Solve application problems using algebraic reasoning and geometric models.