

MATH 3309: Survey of Basic Mathematical Theory II

Sul Ross State University ~ Rio Grande College
Summer II 2018

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- Course Description** MTH 3309 covers geometric concepts, probability, statistics, estimation, problem solving, and other related topics.
- TEKS** Information on the Texas Essential Knowledge and Skills can be found on the TEA website: <http://www.tea.state.tx.us>
- Class Time** Tuesday and Thursday, 1:00 – 4:45
- Class Location** Del Rio 107; Eagle Pass B112; Uvalde B114
- Required Text** Long, DeTemple, & Millman, *Mathematical Reasoning for Elementary Teachers*, Seventh Edition, ISBN 0321900995
- Office Hours** Monday – Thursday 12:00 – 1:00 or by appointment

Course Policies

Attendance Policy

Attendance is mandatory. **You may be dropped from the course if you accumulate nine absences**, in accordance with University policy. One class period amounts to four absences. Arriving in class late or leaving early may be counted as an absence. It is your responsibility to notify me if you will be absent for any reason.

You will be held responsible for all material covered in class or the assigned text. If you have to miss a class, it is your responsibility to obtain all notes, assignments, and announcements from someone else in the class. Make-up exams will be given only in the event of an emergency, in which case written justification and/or documentation must be provided and approved.

Communication

The Blackboard system will be used to provide course materials and post grades. You are welcome to e-mail or call me at any time. Please make sure to check the e-mail address associated with Blackboard on a regular basis. You are also welcome to come to my office hours if you need help with the homework or wish to speak about your progress in the course.

Homework

Homework will be assigned for each section that we cover in the text. Although the homework will not be collected and graded, you should regard it as the most essential component of the course. It is very important that you complete each homework assignment before the next class

period. This will allow you to make the most of our time together. If you have a question, ask about it. If you don't understand the homework, you are not ready to take the exam.

In order to achieve success in this course, you must work all the homework assignments in a timely manner! The amount of work for any college class is generally calculated as 3 hours of outside work for each hour in class. **That means you should expect to spend as much as 20 hours each week on outside work in this course.**

We will always have time to discuss the homework in class, and we may also work on problems together in groups. You should come to class prepared: make sure to have your textbook and suitable writing materials with you.

Grading Policy

Your grades will be weighted as follows:

Midterm Exam	40%
Final Exam	60%

A student who averages at least 90% will receive an A; at least 80% will receive at least a B; at least 70% will receive at least a C; at least 60% will receive at least a D.

Exams

There will be one midterm exam. Its tentative date is Tuesday, July 31. This is subject to change. You will be notified of a change at least one week in advance. Make-up exams will be given only in the event of an emergency, in which case written justification and/or documentation must be provided and approved.

Implicit in registering for this course is your agreement that you will be present to take the final exam at the time determined by the University, which is Thursday, August 16, from 1:00 – 4:45 p.m. The final exam will be comprehensive.

Subject Outline

Below is a tentative outline of the subjects we will cover in this course. We will adhere to the textbook fairly closely. Next to each unit is the corresponding section from the textbook.

- I. Rational numbers and real numbers
 1. Fractions (§6.1): *basic concepts – representations and manipulatives – equivalent fractions – fractions in simplest form – common denominators – ordering*
 2. Addition and subtraction of fractions (§6.2): *addition of fractions – addition with manipulatives – proper fractions and mixed numbers – subtraction of fractions – subtraction with manipulatives*
 3. Multiplication and division of fractions (§6.3): *multiplication of fractions – multiplication as an operator – the area model – division of fractions – division with pictures – the invert-and-multiply rule*

4. Rational numbers (§§6.1,4): *the rational number system – properties of arithmetic – the density property – applications*
5. Decimals and real numbers (§§7.1 – 2): *the decimal system – powers of ten – terminating decimals and fractions – repeating decimals and fractions – irrational numbers and real numbers – the number line – arithmetic with decimals*
6. Ratios, proportions, and percents (§§7.3 – 4): *ratios – proportions – proportional reasoning – percents*

II. Statistics

1. Organizing and representing data (§13.1): *dot plots – stem-and-leaf plots – histograms – line graphs – bar graphs – pie charts – pictographs – cautions*
2. Measuring the center and variation of data (§13.2): *the mean – the median – the mode – upper and lower quartiles – outliers – box plots – the standard deviation*
3. Statistical inference (§13.3): *the role of statistical inference – biased studies and random samples – estimating the mean and standard deviation of a population – distributions – z-scores and percentiles*

III. Probability (Chapter 14)

1. The basics of probability (§14.1): *basic terminology – experimental probability – theoretical probability – the addition principle – complementary events*
2. Principles of counting (§14.2): *the addition principle – permutations – the multiplication principle – conditional probability – compound events – independent events*
3. Permutations and combinations (§14.3): *permutation vs. combination – notation – formulas – Pascal's identity – applications*
4. Odds and expected value (§14.4): *odds – expected value*

Schedule

This schedule is tentative only. The unit numbers refer to the above outline.

Unit I	July 10 – July 26
Midterm Exam	July 31
Unit II	July 31 – August 7
Unit III	August 7 – 14
Final Exam	August 16

Americans With Disabilities Act

Sul Ross State University is committed to equal access in compliance with the Americans With Disabilities Act of 1973. It is the student's responsibility to initiate a request for accessibility services. Students seeking accessibility services must contact Kathy Biddick, Student Services Administrative Secretary.