

Sul Ross State University
MTH 3308 / Survey of Basic Mathematical Theory I

Location: Teleconference

Professor: Patricia Nicosia, Ph.D.

Term: Fall 2019

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Day/Time: Monday & Wednesday / 9:30 A.M. – 10:45 A.M.

Description: Math 3308 includes the following topics: problem solving, foundations of arithmetic, sets, functions, numeration systems, number theory, integers and rational numbers.

Student Learning

Objectives: Student will be able to recognize that problems can be solved in a variety of ways and select appropriate strategies for a given problem, demonstrate an understanding of estimation and evaluate its appropriate uses, analyze the structure of numeration systems and the role of place value and zero in the base ten system, demonstrate an understanding of a variety of models for representing numbers, understand characteristics of the set of whole numbers, integers, rational numbers, and real numbers analyze and describe relationships between number properties, operations and algorithms for the four basic operations involving integers, rational numbers, and real numbers, justify procedures used in algorithms for the four basic operations with integers, rational numbers, and real numbers, and demonstrate an understanding of ideas from number theory as they apply to whole numbers.

Text: Long, DeTemple & Millman, *Mathematical Reasoning for Elementary Teachers*, Seventh Edition, Addison Wesley Longman, Inc., 2012. ISBN: 978-0-321-90099-9

Attendance: You are expected to attend all meetings. If you miss a session, you must make arrangements to get all notes, assignments, handouts and announcements from the missed class. Test dates are fixed and will not change. No make-up examinations will be given except for genuine emergencies. Students are responsible for providing the instructor with written justification for the emergency absence. All documentation will be reviewed and a decision will be made. **All exams will be taken at the site where you are officially enrolled.**

Grading: Your grade will be based on two exams (30% each), two written reports (two typed pages each with sources cited on the third page) about Carl Friedrich Gauss (15%) and Sophie Germain (15%) and a Homework/Activity Folder (10%). Grades will be assigned as follows- A: 90%-100%, B: 80%-89%, C: 70%-79%, D: 60%-69%, F: below 60%.

Schedule: Math 3308 will cover Chapters 1 - 5.

Week 1: Thinking Critically (An Introduction to Problem solving, Polya's Problem Solving Principles, More Problem-Solving Strategies, Algebra as a Problem-Solving Strategy, Additional Problem-Solving Strategies, Reasoning Mathematically)

Weeks 2 & 3: Sets and Whole Numbers (Sets and Operations on Sets, Sets, Counting and the Whole Numbers, Addition and Subtraction of Whole Numbers, Multiplication and Division of Whole Numbers)

Weeks 4 & 5: Numeration and Computation (Numeration Systems Past and Present, Nondecimal Positional Systems, Algorithms for Adding and Subtracting Whole Numbers, Algorithms for Multiplication and Division of Whole Numbers, Mental

Arithmetic and Estimation)

Weeks 6, 7 & 8: Number Theory (Divisibility of Natural Numbers, Tests for Divisibility, Greatest Common Divisors and Least Common Multiples, Codes and Credit Card Numbers: Connections to Number Theory)

Weeks 9 & 10: Integers (Representations of Integers, Addition and Subtraction of Integers, Multiplication and Division of Integers, Clock Arithmetic)

Weeks 11 & 12: Fractions and Rational Numbers (The Basic Concepts of Fractions and Rational Numbers, Addition and Subtraction of Fractions, Multiplication and Division of Fractions, The Rational-Number System)

Weeks 13, 14, & 15: Decimals, Real Numbers, and Proportional Reasoning (Decimals and Real Numbers, Computations with Decimals, Proportional Reasoning, Percent)

Test/Due Dates: Exam I / October 2

Exam II / December 2

Carl Friedrich Gauss Report Due* / September 23

Sophie Germain Report Due** / November 25

Homework/Activity Folder/ December 2 / 9:30 am

Additional Information:

1. Sul Ross State University Rio Grande College 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 the Student Support Specialist on their campus.
2. Office Location: Del Rio , Room 219
3. Office Hours:
Monday: 8:30 – 9:30 am, 11 – 12:30 pm, Tuesday: 8:30 – 9:30 am, 11 – 12:30 pm
Wednesday: 8:30 – 9:30 am, 11 – 12:30 pm, Thursday: 8:30 – 9:30 am, 11 – 12:30 pm
Also available anytime I'm in my office and by appointment.
***If I am teaching at another location, I will be available at that site.*
4. *No lecture Monday, September 23. Class time to work on Carl Gauss report (RGC computer labs). The report will be submitted by 10:45 am on Monday, September 23. The report will be e-mailed to me (pnicosia@sulross.edu) as a word document. No credit will be given for reports submitted past the due date and time.
5. **No lecture Monday, November 25. Class time to work on Sophie Germain report (RGC computer labs). The report will be submitted by 10:45 am on Monday, November 25. The report will be e-mailed to me (pnicosia@sulross.edu) as a word document. No credit will be given for reports submitted past the due date and time.
6. No lecture days- September 18, October 16. Class time to work on reports and assigned problems/activities (campus computer labs),
7. Texas Essential Knowledge and Skills (TEKS) web site is www.tea.state.tx.us
8. **Student Learning Outcomes-** See Department of Education outcomes- The preservice teacher understands how students learn mathematical skills and uses that knowledge to plan, organize and implement instruction and assess learning. The preservice teacher understands concepts related to numbers, operations and algorithms and the properties of numbers. The preservice teacher understands concepts related to patterns, relations, functions and algebraic reasoning. The preservice teacher understands concepts and principles of geometry and measurement. The preservice teacher understands concepts related to probability and statistics and their applications. The preservice teacher understands mathematical processes and knows how to reason mathematically, solve mathematical problems and make mathematical connections within and outside of mathematics.