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

Location: Teleconference **Lecturer:** Patricia Nicosia, Ph.D.
Term: Spring 2017 **Telephone:** 703-4836 (Office)
E-mail: pnicosia@sulross.edu

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 (40% each) including homework folders, a manipulative activity folder (15%) and a written report (1-2 typed pages) about George Polya (5%). 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 - 6.

Weeks 1 & 2: 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 3 & 4: 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 5 & 6: 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 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 Dates: Exam I / March 1 / First Homework Folder Due
Exam II / May 3 / Second Homework Folder Due
March 20 / George Polya Report Due*
April 19 / Manipulative Activities Folder Due (during class)

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: 9 – 9:30 am, 11 – 12 pm, Tuesday: 9 – 9:30 am, 11 - 12 pm
   Wednesday: 9 – 9:30 am, 11 – 12 pm, Thursday: 9 – 9:30 am, 11 - 12 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, March 20. Class time to work on George Polya report (RGC computer labs). The report will be submitted by Monday, March 20 before midnight. The report will be e-mailed to me (pnicosia@sulross.edu) as a word document.
5. Activities in ETA Cuisenaire binder for folder: (1)Fill and Count, (2)Tens in a Bag, (3)Race for a Flat, (4)Tangram Tear-Ups, (5)Tangram Triangles, (6)Tile Trains, (7)Counter Patterns, (8)Coin Capers, (9)Pocket Peeks, (10)Design Costs.
6. No lecture Monday, April 17. Class time for work on manipulative activities.
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.