Sul Ross State University
Course Syllabus
MATH 3330-001,MC1: Number Theory
Fall 2018

Instructor: Dr. Angela M. Brown
Office Number: ACR 107B
Office Telephone Number: (432)837-8223
Email Address: abrown4@sulross.edu
Office Hours: 10:00-11:00 MWR, 3:30-4:30 MTWR, others by appointment
Time and Place of Class Meetings: TR 5:00-6:15 pm ACR 206

Course Prerequisites: MATH 2414

Mathematics Program Learning Objectives: The graduating student should be able to

- Apply knowledge of basic mathematics principles.
- Identify and provide valid proofs or solutions for theorems or problems.
- Recognize and dispute invalid mathematical statements by using counter-examples.

Course Objectives:

- The student will be able to solve problems using divisibility rules and the Euclidean Algorithm.
- The student will apply their knowledge through the course to cryptography.
- The student will be able to apply different factoring techniques.
- The student will be able to recognize congruences.

Required Textbooks: *A Friendly Introduction to Number Theory* 4th ed, Silverman ISBN 978-0-13-468946-3. Homework will be assigned from the text.

Other Equipment Needed: paper and pencils.

Grading Scale: 90-100 A, 80-89 B, 70-79 C, 60-69 D, 59-Below F

Grading Policy: The grade weighting will be as follows:
Quizzes/Homework/in Class Assignments: 35%
Class Presentations 10%
Exams: 30%
Final Exam: 25%

Quizzes: Quizzes will be given periodically. You will have advanced warning of most quizzes. Additional in class assignments will be given and counted the same as quiz and homework grades.

Homework: Homework will be assigned daily and homework will be taken up at the beginning of class on Tuesdays. Homework will be graded on completion and accuracy. Copying answers out of the back of the book is plagiarism and will be prosecuted.

Class Presentations: Throughout the semester students will be required to work out problems during class at the Document Camera. These problems will then be discussed and critiqued by the class as a whole. Most of these problems will have been assigned in the previous two class periods. Names will be randomly drawn for presenting problems in class, so it is extra important that you keep up with assigned problems.

Exams: No make-up exams will be given. If there is a valid reason for missing an exam, then the grade for the missed exam will be replaced by the grade on the final exam. Otherwise, a missed exam will be a zero. Exams will be closed notes, closed book, and no calculator will be allowed. Any restroom breaks need to be taken before an exam starts. You cannot leave the classroom in the middle of an exam under any circumstances.

Final Exam Date: Monday, December 10 at 6 pm

Attendance Policy: Students are expected to attend every class. If class must be missed, the student is expected to get the notes from a classmate, and to check with me or on Blackboard for announcements and updated assignments.

Students are expected to arrive to class on time. If a student is perpetually late, they will be asked to not attend class unless they arrive on time. If tardiness becomes a problem for the class as a whole, people who arrive late will not be permitted to enter the class. If this stricter policy becomes necessary, there will be an announcement made in class.

It is policy of the university to drop a student with a grade of "F" if 9 hours or more of class are missed. For this course that would be 9 or more class sessions missed.

Cell Phone Policy: Cell phones are not allowed in class. They can not be used as calculators on any assignment. Any phone ringing during class will be taken up until the end of class. If a phone rings during a test or quiz, the student will forfeit their right to finish said test or quiz.

Americans With Disabilities Act: Sul Ross State University is committed to equal access in compliance with the Americans With Disabilities Act of 1973. As an instructor I am required to give students reasonable accommodations in each course. It is the student's responsibility to initiate a request for accessibility services. Contact Mary Schwartze, the ADA Coordinator in Counseling and Accessibility Services Ferguson Hall, Room 112. Her phone number is 432-837-8203 or you can email her at mschwartze@sulross.edu.

Important Dates:

August 27	First Day of Classes
August 30	Last Day for Late Registration and Schedule Changes
September 3	Labor Day Holiday
September 12	12th Class Day
November 16	Last Day to Withdrawal from University or Drop Classes with a Grade of "W" (by 4 pm)
November 21-23	Thanksgiving Holiday
December 5	Last Day of Classes
December 6	Dead Day
December 7-12	Final Exams
December 14	Commencement

Tentative Schedule-Subject to Change			
Tuesday		Thursday	
August 28	Intro, What is Number Theory	August 30	PythagoreanTriples and the Unit Circle
September 4	Sums of Higher Powers and Fermat's Last Theorem	September 6	Divisibility and GCDs, Linear Equations
September 11	Fundamental Theorem of Arithmetic	September 13	Congruences, Fermat's Little Theorem, Euler's Formula
September 18	Euler Phi Function and the Chinese Remainder Theorem	September 20	Review/Catch up Day
September 25	Exam 1	September 27	Primes and Counting Primes
October 2	Mersenne Primes and Perfect Numbers	October 4	Powers Modulo M and Successive Squaring
October 9	kth Root Mod m	October 11	Powers, Roots and Unbreakable codes
October 16	As easy as 1, 2, 3	October 18	Review/Catch up Day
October 23	Exam 2	October 25	Square/Triangular Numbers Revisited
October 30	Pell's Equation	November 1	Diophanitine Approximations
November 6	Imaginary Numbers	November 8	Gaussian Integers and Unique Factorization
November 13	Irrational Numbers and Transcendental Numbers	November 15	Review/Catch up
November 20	Exam 3	November 22	Thanksgiving Holiday
November 27	Binomial Coefficients and Pascal's Triangle	November 29	Linear Recurrence Sequences
December 4	Continued Fractions, Generating Functions	December 6	Dead Day