Number Theory MATH 3365-01 (51266)

Syllabus

Semester: Spring 2018
Classes: Tuesday and Thursday 7:20 pm - 8:35 pm (MAGC 1.208)
Instructor: Professor Dr. Paul-Hermann Zieschang
Phone: 956-665-7063
Email: paulhermann.zieschang@utrgv.edu
Office Hours: Tuesday and Thursday 3:55 pm - 5:55 pm (MAGC 3.734)

Textbooks: A textbook will not be required, instead a pdf file will be distributed containing all necessary material.

Course Description: Topics will be among the following: sums and mathematical induction, binomial coefficients, integral divisibility, prime numbers, Mersenne and Fermat primes, Theoremsof Euler, Fermat, and Wilson, quadratic number fields, the ring of the gaussian integers, pythagorean triples, Fermat’s Theorem for multiples of 4, the ring of the Eisenstein integers, the theorem of Sophie Germain, Gauss’ Quadratic Reciprocity Law.

Prerequisites: MATH 3345 with a grade of C or better.

Learning Objectives/Outcomes for the Course: After completing this course students will be able to understand basic number theoretic concepts such as prime elements and irreducible elements, divisibility, and congruences and apply these basic number theoretic concepts to more advanced topics such as Pythagorean triples and Diophantine equations; to conduct elementary proofs involving basic number theoretic concepts, to read and understand proofs involving basic number theoretic concepts, to give examples and counterexamples involving basic number theoretic concepts, to make connections of number theoretic concepts to other areas of mathematics, and to write mathematics in a precise, effective, and understandable way.

Grading Policies: UTRGVs grading policy is to use straight letter grades (A, B, C, D, or F). Project and/or oral participation: 60%, midterm: 20%, final examination: 20%. Late work will be not considered.

Calendar of Activities: The UTRGV academic calendar can be found at the webpage https://my.utrgv.edu/home at the bottom of the screen, prior to login. Some important dates for spring 2018 include: January 16: First day of classes; January 19: Last day to add a course or register for spring 2018; March 12 - 17: SPRING BREAK - NO classes; March 30 - 31: EASTER HOLIDAY - NO classes; April 12: Last day to drop a course; will count toward the 6-drop rule; May 2: Last day of classes; May 3: Study Day - NO class; May 4 - 10: Spring 2018 Final
Exams; May 11 - 12: Commencement Ceremonies.

**Students with Disabilities:** Students with a documented disability (physical, psychological, learning, or other disability which affects academic performance) who would like to receive academic accommodations should contact Student Accessibility Services (SAS) as soon as possible to schedule an appointment to initiate services. Accommodations can be arranged through SAS at any time, but are not retroactive. Students who suffer a broken bone, severe injury or undergo surgery during the semester are eligible for temporary services. Brownsville Campus: Student Accessibility Services is located in Cortez Hall Room 129 and can be contacted by phone at (956) 882-7374 (Voice) or via email at ability@utrgv.edu. Edinburg Campus: Student Accessibility Services is located in 108 University Center and can be contacted by phone at (956) 665-7005 (Voice), (956) 665-3840 (Fax), or via email at ability@utrgv.edu.

**Mandatory Course Evaluation Period:** Students are required to complete an ONLINE evaluation of this course, accessed through your UTRGV account (http://my.utrgv.edu); you will be contacted through email with further instructions. Students who complete their evaluations will have priority access to their grades. Online evaluations will be available: Spring 2018 Module 1: February 14 - February 20; Spring 2018 Module 2: April 11 - April 17; Spring 2018 (full semester): April 11 - May 2.

**Attendance:** Students are expected to attend all scheduled classes and may be dropped from the course for excessive absences. UTRGV’s attendance policy excuses students from attending class if they are participating in officially sponsored university activities, such as athletics; for observance of religious holy days; or for military service. Students should contact the instructor in advance of the excused absence and arrange to make up missed work or examinations.

**Scholastic Integrity:** As members of a community dedicated to Honesty, Integrity and Respect, students are reminded that those who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and expulsion from the University. Scholastic dishonesty includes but is not limited to: cheating, plagiarism (including self-plagiarism), and collusion; submission for credit of any work or materials that are attributable in whole or in part to another person; taking an examination for another person; any act designed to give unfair advantage to a student; or the attempt to commit such acts. Since scholastic dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced (Board of Regents Rules and Regulations and UTRGV Academic Integrity Guidelines). All scholastic dishonesty incidents will be reported to the Dean of Students.

**Sexual Harassment, Discrimination, and Violence:** In accordance with UT System regulations, your instructor is a Responsible Employee for reporting purposes under Title IX regulations and so must report any instance, occurring during a students time in college, of sexual assault, stalking, dating violence, domestic violence, or sexual harassment about which she/he becomes aware during this course through writing, discussion, or personal disclosure. More information can
be found at www.utrgv.edu/equity, including confidential resources available on campus. The faculty and staff of UTRGV actively strive to provide a learning, working, and living environment that promotes personal integrity, civility, and mutual respect that is free from sexual misconduct and discrimination.

Course Drops: According to UTRGV policy, students may drop any class without penalty earning a grade of DR until the official drop date. Following that date, students must be assigned a letter grade and can no longer drop the class. Students considering dropping the class should be aware of the 3-peat rule and the 6-drop rule so they can recognize how dropped classes may affect their academic success. The 6-drop rule refers to Texas law that dictates that undergraduate students may not drop more than six courses during their undergraduate career. Courses dropped at other Texas public higher education institutions will count toward the six-course drop limit. The 3-peat rule refers to additional fees charged to students who take the same class for the third time.

Other Course Information: The use of electronic devices (texting or internet browsing) is not allowed during classes. Oral participation in class is crucial for the final grade.