Syllabus - MATH 4362 – Theory of Numbers
Section 1
Fall 2018

Instructor Information

Name: Dr. Dermot McCarthy

Office: Math Building Room 247

E-mail: dermot.mccarthy@ttu.edu

Phone: (806) 834-0191

Office Hours: TR 11:00 am - 12:30 pm, and by appointment.

Webpage: www.math.ttu.edu/~mccarthy/math4362f18.html

Note: Outside of office hours the best way to contact me is via e-mail. Please include your full name in any e-mail you send to me.

Course Information

Class Times: TR 2:00 pm – 3:20 pm in Mathematics 015

Prerequisites: MATH 3310

Textbook: *Elementary Number Theory* by David M. Burton, 7th edition.

Course Description and Purpose

This course is an introduction to elementary number theory and covers prime numbers; modular arithmetic; theorems of Fermat, Euler, and Wilson; residues; quadratic reciprocity; and Diophantine Equations. Students should write proofs.

Course Learning Outcomes

Students learn how to think and reason abstractly in the context of number theory, derive basic concepts, and learn how to write correct and clear mathematical arguments in this context. Concepts and skills to be mastered by the students include, but are not limited to, the following:

- Divisibility theory in the integers;
- Diophantine equations;
- The Fundamental Theorem of Arithmetic;
- The theory of congruences;
- The standard number theoretic functions;
- Primitive roots and indices;
- Quadratic reciprocity; and

This roughly corresponds to chapters 1-9 of the textbook.

Learning Assessment

Learning outcomes will be assessed through class participation, homework exercises and examinations.

Homework: Homework will be assigned throughout the semester as written assignments, usually on a weekly basis. There will be approximately 10 such assignments over the course of the semester. Late homework will not be accepted.

In-class exams: There will be two in-class exams given during the semester. A **tentative** schedule for these exams is
Exam 1: Tuesday, September 25
Exam 2: Tuesday, October 30

Final exam: The final exam will take place on Monday, December 10, 1:30 pm – 4:00 pm in our regular classroom. The final exam is comprehensive, i.e., it will examine material from the entire course.

Final exam dates are set by the university - please confirm the date of our exam on the university website www.depts.ttu.edu/officialpublications/ClassSchedule/FinalExams.php

Grading

A student's overall percentile grade for the course will be calculated based on his/her percentile grade in each of the assessment categories described above, weighted as follows:
Homework   20%
In-class exams   40%   (each worth 20%)
Final Exam   40%

Letter grades will then be assigned in accordance with the following correspondence:
Letter grade A = a percentile grade of 90% of higher
Letter grade B = a percentile grade of 80% or higher, that is lower than 90%
Letter grade C = a percentile grade of 70% or higher, that is lower than 80%
Letter grade D = a percentile grade of 60% or higher, that is lower than 70%
Letter grade F = a percentile grade lower than 60%

Civility In The Classroom

Texas Tech University endeavors to foster a classroom climate of mutual respect among students and between students and teacher. Mutual respect means that we should be tolerant of different ideas and varying opinions about topics of discussion in class, that we address each other respectfully and without interrupting while others are speaking, and that we do not engage in disruptive behavior in class. Signs of disrespect include, but are not restricted to: ringing cell phones (students must turn them off or leave them home), reading a newspaper or other material that is not part of a class assignment while in class, talking with classmates during class, eating and drinking in class, and similar disruptive behaviors. Students who engage in disruptive behavior will be warned. Repeated disruptive behavior may result in the student being asked to leave the classroom.

Academic Honesty

It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and high standard of integrity. The attempt of students to present as their own any work not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offenders liable to serious consequences, possibly suspension.

"Scholastic dishonesty" includes, but it not limited to, cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, and any act designed to give unfair academic advantage to the student (such as, but not limited to, submission of essentially the same written assignment for two courses without the prior permission of the instructor) or the attempt to commit such an act.

Please see Operating Policy and Procedure 34.12 for a complete description of Texas Tech's policy on academic dishonesty.

Accommodation Of Students With Disabilities
Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's office hours. Please note: instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, please contact Student Disability Services in West Hall or call 806-742-2405.

Please see Operating Policy and Procedure 34.22 for a complete description of Texas Tech's policy on accommodations or students with disabilities.

Student Absences
Observation Of Religious Holy Days:
1. A "Religious holy day" means a holy day observed by a religion whose places of worship are exempt from property taxation under Texas Tax Code §11.20.
2. A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence.
3. A student who is excused under section 2 may not be penalized for the absence; however, the instructor may respond appropriately if the student fails to complete the assignment satisfactorily.

Officially Approved Trips and Excused Absences: A student who misses an examination or is unable to complete an assignment due to an officially approved trip or an excused absence (e.g. illness) will be allowed to make-up the missed examination or assignment within a reasonable timeframe thereafter. Students should notify the instructor of any such absences as soon as is possible. The student should be able to provide official evidence to support the reason for their absence (e.g. a doctor's note in the case of illness).

Unexcused Absences: Make-up of examinations or assignments will not be allowed in the case of unexcused absences.