MATH 326: Introduction to Number Theory Spring 2018

Time: MWF 1.10 – 2:00
Place: Math 306
Instructor: Dr. Sriraman
Office: Math 310
Office Hours: MW: 12.10-1.00
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Description: The goal of the course was to familiarize students with basic number theory. Topics that are normally covered in this course are: congruence, multiplicative functions, properties of divisors and primes, quadratic residues, continued fractions, and algebraic numbers.

Texts: There are several texts available that cover the basic topics of this course. However the recommended textbook is: Elementary Number Theory by David M. Burton (McGraw Hill), from which homework problems will be routinely assigned.

Course Learning Goals:
1. To construct elementary proofs in number theory.
2. To explore the multiplicative structure of the integers.
3. To define congruence modulo n; and find solutions of linear congruences, quadratic congruences, and quadratic reciprocity.
4. To calculate values and properties of multiplicative functions
5. To construct representations of irrational numbers in terms of continued fractions.

Course Agenda: Number theory is often referred to as the "queen of mathematics" because it is an area of mathematics where questions are very easily stated and understandable, but answers are difficult to find and require new areas of mathematics being invented (e.g., homological algebra). In this course, we will adopt a very basic and classical approach, and among other things will cover properties of integers, the division algorithm and divisibility, continued fractions, prime and perfect numbers, the fundamental theorem of arithmetic, theory of congruences, special theorems (Fermat and Wilson), and number theoretic functions.
We will derive results through basic computation [followed by proof]. You will improve your proof writing skills
Important Dates: For detailed Add/Drop dates refer to the appendix

Date	**Description**
Thursday-Friday, January 17-19	New Student Orientation
Monday, January 22	Spring Semester Classes Begin
Monday, February 19	Presidents Day – No Classes, Offices Closed
Monday-Friday, March 26-30	Spring Break - No Classes
Friday, May 4	Last Day of Regular Classes
Monday-Friday, May 7-11	Final Exams
Saturday, May 12	Commencement

Other Information: *Academic misconduct* is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. Academic misconduct is defined as all forms of

academic dishonesty and the Student Conduct Code. In particular, Student Conduct Code Section IV.a.5 identifies the following violations: Submitting false information: Knowingly submitting false, altered, or invented information, data, quotations, citations, or documentation in connection with an academic exercise

Students with disabilities may request reasonable modifications by contacting me. The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students (DSS). "Reasonable" means the University permits no fundamental alterations of academic standards or retroactive modifications. For more information, please consult http://www.umt.edu/disability

Grading Distribution:

Homework/Recitation:	49 [7 x 7]	
1 Mid-term:	75	
1 Project:	41	
Final Exam:	135	**3.20-5.20; May 8**
Total:	**300**	

Grading Scale: 90-100 A ; 80-89.9 B ; 70-79.9 C ; 60-69.9 D ; Below 60 F

Homework/Recitation

In order to succeed in this course, it is important to attend lectures, take lecture notes and complete the homework assignments. Homework will be assigned regularly and will be compiled by you in a homework notebook. I will collect your homework notebook before your mid-term and before the Final exam. It is important you maintain this book exclusively for your homework in an orderly manner.

On Fridays there will typically be recitation, at which time you will be asked to work in groups and present your homework solutions to each other. After this you will be asked to come to the board and present selected problems. This is the only way to become proficient at writing proofs- by subjecting them to scrutiny from your peers. Everyone is expected to participate. This may seem intimidating at first but with time, you will become comfortable and proficient.

Mid-term: A mid-term will be given in March. It will cover the content from the lectures/homework.

Project: Each of you will be assigned a project in February that will be due on April 9. The project involves you working on one extended problem and maintaining a folder with materials I ask you to periodically put into it. After April 9, each of you will also be given 20 minutes each to present your project to the class. A write up of your solution is expected in the folder. A schedule will be drawn via lottery.

Final Exam: The final exam is compulsory and no exceptions can be made about the date/time at which it is held- this is decided a priori by the University Administration.

SOME "FREE" ADVICE : *Factors that affect your grade*

- Readings/Lecture notes: It is your prerogative to keep up with the material.
- Attendance: Students are expected to attend class, and although class attendance is NOT a component of the course grade, absences will impact your performance since you will miss the material covered in the lectures. Late assignments will NOT be accepted.
- Make-ups: THERE ARE NO MAKE-UPS regardless of the reason. Exam make-ups will ONLY be given under special and extenuating circumstances, such as a death in the family or illness, provided that a note from the Health Service or doctor is furnished by the student AND permission is given by me prior to the exam.
- Come to class, work hard, participate in the planned activities, and you will do well in this course. Good luck and welcome to 326.