MATH-4020 Introduction to Number Theory, Spring 2015

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The Course Web Page will be at http://www.rpi.edu/~piperb/nt/
Check this for more information and throughout the semester for updates, office hours, etc.

Texts and Materials

• Required Introduction to Analytic Number Theory by Apostol (Springer)

Difficulty Level and Pre-requisites: This course will require a mathematical maturity and the ability to quickly learn proof techniques, logic, and basic set theory. Students may wish to consider Foundations of Analysis before attempting this course.

Course Objectives: Number theory is primarily the study of integers and their properties. We will cover most of chapters 1,5,9 and 10 and parts of 2,3,4 and 7 as well as additional topics on primality testing and factoring.

Learning Outcomes: Students will demonstrate

• knowledge of the basic definitions and theorems in number theory
• the ability to apply number theory algorithms and procedures to basic problems
• the ability to think and reason about abstract mathematics
• skills at writing mathematical proofs

Activities: On most class days, there will be lectures with intervals for students to work on problems. You will need to read the book to complete your understanding.

Grades: All of the learning outcomes listed above will be assessed through the following assessments.

• 10 equally weighted homework assignments worth a total of 40%
• 3 equally weighted in-class exams worth a total of 60%
• 1 extra credit final worth 5%

The items above will be combined to form a number score for the course. Letter grades will be achieved as follows: 90% + is an A; 88%-90% is an A-; 85%-88% is a B+; 80%-85% is a B; 78%-80% is a B-; 75%-78% is a C+; 70%-75% is a C; 68%-70% is a C-; 65%-68% is a D+; 60%-65% is a D; 0%-59% is a F.

Grade Appeals: Due to the nature of proofs, you will need to make sense logically AND advance the towards the conclusion to get any substantial partial credit. Appeals will be granted only if something has been overlooked. The appeal must be made within one week of the date the item is returned in class. It is important that you KEEP all the returned material for the entire semester as they may be needed for studying for the final exam, and they will be your only method for correcting any recording errors that may accidentally occur on my part.
Late Policies: Late homework is not accepted without a legitimate excuse. Missing an exam without a legitimate excuse results in a grade of zero and cannot be made up. To find out general policies on excused absences, please see the web page se.rpi.edu/policies/ea/.

Academic Integrity: Student-teacher relationships are built on trust. For example, students must trust that teachers have made appropriate decisions about the structure and content of the courses they teach, and teachers must trust that the assignments that students turn in are their own. Acts, which violate this trust, undermine the educational process. The Rensselaer Handbook of Student Rights and Responsibilities defines various forms of Academic Dishonesty and you should make yourself familiar with these. Exams and tests are to be done individually. You must ask me before you work or get help on the homework with someone other than myself or the TA or another student taking the class this semester. Before working with other students in this class, you must think over the problems on your own. After you have found relevant definitions and theorems and considered several possible approaches to solving a problem, you may work with others in the class. Before you write up your solutions you must separate and rethink and rewrite your assignments alone. You are not allowed to just copy from a shared set of notes. You are not allowed to copy from another person’s homework.

First violations will result in a grade of F on the material and a report to the Dean of Students. Repeat offenders will fail the class.

Exam Dates and Due Dates

Please check the web page for the complete daily schedule:

1. Homework will be due in class on Thursday of many weeks in which there is no exam.

2. In-Class Exam Dates:
   (a) Exam 1: Thursday, February 26th
   (b) Exam 2: Thursday, April 2nd
   (c) Exam 3: Thursday, April 30th

3. Optional Final Exam: As scheduled by the registrar.

All students must take the final exam as scheduled by the Registrar. Please make travel plans accordingly.

Please check the course web page frequently for updates on the schedule, homework assignments, exam study guides and other information. The first homework assignment will be available on January 29th and will be due on February 5th.