Math 471.1 (17316) - Theory of numbers, an introduction - Spring 2019
MoWe 2:30 pm → 3:45 pm LGRT 202

Professor: Eyal Markman
Office: LGRT 1223G
Office Phone: 545-2788
E-mail: markman@math.umass.edu
Office hours: Tuesday 3:00 → 4:00 pm, Wednesday, 4:30 → 5:30 pm, and by appointment. Office hours are held in 1223G LGRT.
Course Web page: http://www.math.umass.edu/∼markman/ **Please check it often!** The homework will be posted here.

Text: *A Lively Introduction with Proofs, Applications, and Stories,* by Pommersheim, Marks, and Flapan, ISBN: 9780470424131, Wiley 2010,

Homework: Will be assigned weekly and will be due each Wednesday, unless mentioned otherwise. The homework will be graded by a special grader. Due to lack of funds, it will not be possible to grade all the homework problems assigned. A few of the homework problems will be corrected and graded every week. Nevertheless, for your own benefit, you will be asked to hand in *all* the homework problems assigned. Your grade on each homework assignment will be calculated as follows:

- 70% The grade on the corrected problems.
- 30% Credit for handing in *most* of the homework problems assigned. Partial credit will be given.

Late homework will not be collected. Instead, your two lowest grades will be dropped.
Grades:

Homework–20%
Two Midterms–50% (each 25%)
Final Exam –30%

First Midterm: Thursday, February 28, 7:00 - 8:30 PM.

Second Midterm: Monday, April 15, during class period.

Final: To be scheduled by the registrar. Make-ups will not be given to accommodate travel plans.
<p align="center">**See back . . .**</p>

Syllabus:

Chapter 3: Divisibility and primes, Sections 3.1 to 3.6.

Chapter 4: The Euclidean algorithm, Sections 4.1, 4.2, 4.3.

Chapter 5: Linear Diophantine Equations, Sections 5.1 to 5.4.

Chapter 6: The fundamental Theorem of Arithmetic, Sections 6.1, 6.2.

Chapter 7: Modular arithmetic, Sections 7.1 to 7.4.

Chapter 8: Modular number systems, Sections 8.1 to 6.6 and section 6.9.

Chapter 9: Exponents modulo n, Sections 9.1 to 9.5.

Chapter 10: Primitive roots, Sections 10.1 to 10.3.

Chapter 11: Quadratic residues, Sections 11.1 to 11.6.

Chapter 13: Gaussian integers, Sections 13.1 to 13.6

Other topics (Chapter14, and/or section 15.1) as time permits.

Homework Assignment 1: Due Wednesday, January 30.
Review chapters 1 and 2.
Exercises 1.3 page 26 problems: 4, 10, 13, 17.
Exercise 1.5 page 37: 5, 10.
Exercises 2.1 page 49: 1, 4, 11.
Exercises 2.2 page 63: 7, 9.