

MATH 332 – Fall 2007 – Algebra and Number Theory

Week	Day	Ch.	Topics
8/23 – 24	1		Introduction
8/27 – 8/31	2	1	Numbers, induction, divisibility and primes
	3		The Euclidean algorithm
9/3 – 9/7	4		The linear diophantine equation
	5	2	Congruences, divisibility tests
9/10 – 9/14	6		Linear congruences, solving them
	7		Chinese Remainder Theorem and applications
9/17 – 9/21	8	3	Fermat's little theorem and Wilson's theorem
	9		Euler's theorem and the Euler Φ -function
9/24 – 9/28	10		Rings and Fields – $\mathbb{Z}/m\mathbb{Z}$
	11	5	Quadratic congruences
10/1 – 10/5	12		Quadratic residues and the law of Quadratic Reciprocity
	13		Quadratic Reciprocity
10/8 – 12			FALL BREAK
	14	6	Order of an integer modulo p
10/15 – 19	15		Primitive roots, power residues, indices
	16		Existence of primitive roots
10/22 – 26	17	7	Primes: Eratosthenes, perfect and Fermat numbers, Mersenne
	18		The prime number theorem, Dirichlet's thm., Goldbach conjecture
10/29 – 11/2	19	8	Diophantine equations: pythagorean triples and Fermat Last Thm.
	20		Sums of two squares
11/5 – 9	21	9	Continued fractions: finite and infinite
	22		Periodic continued fractions
11/12 – 16	23		Rational approximations to irrational numbers
	24	10	Pell's equation
11/19 – 23	25		Pell's equation (continued)
			THANKSGIVING
11/26 – 30	26	11	Gaussian integers
	27		Other quadratic extensions