Math 110A: General Course Outline

Catalog Description

110A. Algebra. (4) Lecture, three hours; discussion, one hour. Requisite: course 115A. Not open for credit to students with credit for course 117. Ring of integers, integral domains, fields, polynomial domains, unique factorization. P/NP or letter grading.

Textbook

T. Hungerford, Abstract Algebra, 2nd Ed., Brooks Col.

Reviews & Exams

The following schedule anticipates 24 days of instruction, with 2 holidays and 4 days for exams and reviews. If there is extra time, one could do section 6.3 - the structure of R/I when I is prime or maximal and/or section 4.6 - irreducibility in $\mathbf{R}[x]$ or $\mathbf{C}[x]$.

Schedule of Lectures

Week	Pages	Topics
1	2-20	Division Algorithm, divisibility, primes, and unique factorization.
2	24-40	Congruence and congruence classes, modular arithmetic, Z /p Z when p is a prime.
3	42-62	Definition and examples of rings, basic properties.
4	66-79	Isomorphims and homomorphism of rings. Review and first midterm. [Note: The book does isomorphism first then homomorphism. The order should probably be inverted.]
5	80-92	Polynomials and the Division Algorithm, divisibility in F[x], irreducibles, and unique factorization.
6	100-115	Polynomial functions, roots, and reducibility, irreducibility in $\mathbf{Q}[x]$.
7	119-123	Review, second midterm. Congruence in F[x] and congruence classes.
8	123-133	Congruence class arithmetic, the structure of $F[x]/(p(x))$ when $p(x)$ is irreducible.
9, 10	134-153	Ideals and congruence, quotient rings and homomorphisms.

Comments

Outline update: 4/98

For more information, please contact Student Services, <u>ugrad@math.ucla.edu</u>.