Algebraic Number Theory

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What is the basic language and what are the basic objects of number theory? This is the essential course for any student interested in studying modern number theory. Algebraic number theory investigates algebraic numbers, which are roots of polynomials with coefficients in $\mathbb{Q}$, and is the language of much of number theory, just as schemes and varieties are the language of algebraic geometry. This course is about algebraic numbers, the group of ideals modulo principal ideals, and the group of units of the integers of a number field. The primary textbook will be http://wstein.org/books/ant/

Prerequisites: Students must have taken a course in abstract algebra that covered Galois theory.
Algebraic number theory involves using techniques from (mostly commutative) algebra and finite group theory to gain a deeper understanding of the arithmetic of number fields and related objects (e.g., functions fields, elliptic curves, etc.). The main objects that we study in this book are number fields, rings of integers of number fields, unit groups, ideal class groups, norms, traces, discriminants, prime ideals, Hilbert Algebraic number theory is a branch of number theory that uses the techniques of abstract algebra to study the integers, rational numbers, and their generalizations. Number-theoretic questions are expressed in terms of properties of algebraic objects such as algebraic number fields and their rings of integers, finite fields, and function fields. Algebraic number theory. To tackle these problems, we need a way to show rings such as $\mathbb{Z}[\sqrt{-2}]$. Algebraic number theory. The idea of the proof is the following: if we are to have $a = bq + r$ with $\frac{1}{2}(r) < \frac{1}{2}(b)$ for some $q, r \in \mathbb{Z}[i]$ then.