ICTP DIPLOMA PROGRAMME IN MATHEMATICS 2012-13

Abstract Algebra

Qingtao Chen (20 lectures : 30 hrs)

Rings
Definition of a ring, ring Homomorphisms, Ideals, Quotient Rings and their basic propeties
Prime Ideals and Maximal Ideals
Polynomial rings over a field
Euclidean rings and principal ideal domains

Fields
Field extensions and degree theorem
Algebraic extensions, simple algebraic extensions and Algebraic closure
Splitting fields
Normal extensions and Separable extensions
Finite fields
Galois groups and the fundamental theorem of Galois theory
Solvability by radicals