

Courses Description(revised version)

Erzhuo Wang

Functions of Real Variable(Real Analysis):

- (1) Textbook: Folland's Real Analysis
- (2) Content: Measure space, Lebesgue Measure, Integration, Lebesgue-Radon-Nikodym Theorem, L^p Space, Radon Measure and Riesz Representation Theorem for LCH Space.

Theory of One Complex Variable:

- (1) Textbook: Stein's Complex Analysis
- (2) Content: Holomorphic and Meromorphic functions, Residue Formula, Classification of Singularity, Entire Functions, Elliptic Functions.

Functional Analysis:

- (1) Textbook: Functional Analysis written by Gongqing Zhang(张恭庆)
- (2) Content: Banach space, Open Mapping Theorem, Closed Graph Theorem, Hilbert Space, Spectral Theory of Operators, Fredholm Operators.

Abstract Algebra:

- (1) Textbook: Abstract Algebra written by Weisheng Qiu(丘维声)
- (2) Content: Group, Subgroup, Quotient Group, Group Action, Sylow Theorem, Ring, PID and UFD, Field, Algebraic Extension, Finite Field, Cyclotomic Field, Galois Theory, Computation of Galois Group.

Algebra Seminar:

- (1) Textbook: A Course in Commutative Algebra(GTM 256)
- (2) Content: Zariski topology, Spectrum of Commutative Ring, Krull Dimension, Localization, Integral Extension, Chain Condition, Hilbert Basis Theorem, Principal Ideal Theorem.

Analytic Number Theory:

- (1) Textbook: Lecture notes written by Professor Ping Xi.

- (2) Content: Abel Summation, Euler-Maclaurin, Poisson Summation, Arithmetic Function, Mean Value of Arithmetic Function, Prime Number Theory, Perron Formula, Dirichlet Series, Exponential Sum, Bombieri-Vinogradov Theorem.

Differential Manifold:

- (1) Textbook: Loring Tu's Smooth Manifold
- (2) Content: Smooth Manifold and Smooth Maps, Tangent Space, Immersion and Submersion, Submanifold, Vector Field, Differential Form, Integration on Manifold.

Topology:

- (1) Textbook: Topology written by Chengye You(尤承业)
- (2) Content: Point Set Topology, Fundamental Group, Covering Space, Classification of Closed Surfaces.

The following three courses were taken in a summer school holded by Chinese Academy of Sciences rather than Xi'an Jiaotong University, so they don't appear on my transcript.

Algebraic Geometry:

- (1) Textbook: Lecture notes written by Professor Shizhang Li(李时璋)
- (2) Content: Sheaf Theory, Affine Scheme, Basic Propositions of Scheme and morphism of Scheme, open immersion and closed immersion, fiber product, Quasi-coherent modules

Algebraic Number Theory:

- (1) Textbook: Lecture notes written by Professor Jingren Chi(迟敬人)
- (2) Content: Minkowski Theory, Ramification Theory, Density Theorem, Class Field Theory, Artin L-functions.

Representation Theory:

- (1) Textbook: Lecture notes and Serre's Linear Representations of Finite Groups
- (2) Content: Group Algebra, Basic Examples of Linear Representation, Character Theory, , Induced Representation.