Math 503 - Functional Analysis

(Analysis C)


Course Objectives

The course will develop the theory needed to treat linear integral and differential equations, within the framework of infinite-dimensional linear algebra. Applications to some classical equations will be presented.

Prerequisites

- Math 501 (Analysis A) Lebesgue measure theory.
- Math 535 (Algebra A) Introduction to linear Algebra.

Course Topics


2. Spaces of bounded linear operators. The uniform boundedness principle and the open mapping theorem.


4. Spaces of continuous functions. Ascoli’s theorem, Stone-Weierstrass’ theorem. The space $C^{0,\gamma}$ of Hölder continuous functions and the space $C^k$ of $k$-times differentiable functions.


8. Semigroups of linear operators; generators, resolvents. Application to linear parabolic and
hyperbolic PDE’s.

References

