Analysis I

SPRING 2020, MA515

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MA 515 is an introduction to Functional Analysis. The course develops the basic concepts and principles and methods of functional analysis and its applications. Especially, it covers Metric spaces: contraction mapping principle, normed space, Banach spaces: linear operators, Hahn-Banach theorem, open mapping and closed graph theorems. Hilbert spaces: projection theorem, Riesz representation theorem, Lax-Milgram theorem, complete orthonormal sets. It is an essential course for learning the basic fundamental analysis tool for mathematics and engineering sciences. Various types of applications, including approximation theory, optimization, differential equation will motivate the concepts and theorems introduced in this course.

Textbook: Erwin Kreyszig, Wiley', "Introductory Functional Analysis with Applications".

Homework: Every Week Accumulated Homework Assignments.

Two Mid Term Exams and Final Exam (Comprehensive).

Grade: 20% (Homework, Quizzes), 30% points (Final Exam) and 25%points (Mid Terms).

Lectures: Chapters 1-9.

Office Hours: MWF 12:00-1:00 p.m., otherwise Appointment.