Analysis I

SPRING 2020, MA515
Instructor: K. Ito
Phone/Office: 515-7140 / SAS 3270

MA 515 is an introduction to Functional Analysis. The course develops the
basic concepts and principles and methods of functional analysis and its ap-
plications. 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 mo-
tivate the concepts and theorems introduced in this course.


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.