

Ordinary Differential Equations I

FALL 2020, MA532

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MA 532 is an introduction to Ordinary Differential Equations Theory. The course develops the existence uniqueness and stability theory. Topics include Fundamental solutions and Matrix exponential for systems of linear equations. Nonlinear systems and plane autonomous systems, Lyapunov theory, LaSalle invariant principle and Numerical Methods. It is an essential course for learning the basic fundamental analysis tool for ODE models and dynamical systems in mathematics and engineering sciences. Various types of applications will motivate the concepts and theorems introduced in this course.

Reference Books: There is no assigned textbook for this course. The lectures notes will be provided. The following reference books are recommended.

1. Ordinary Differential Equations and, Dynamical Systems, Gerald Teschl, AMS
2. Differential Equation sand Dynamical Systems Third Edition, Lawrence Perko, Springer
3. Ordinary Differential Equations: Basics and Beyond, D. Schaeffer and J. Cain, Springer

Homework: Every Week Accumulated Homework Assignments.

Two Mid Term Exams and Final Exam (Comprehensive).

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

Zoom Lectures are based on On-Line Lecture Notes and Recorded.

Office Hours: MWF 11:00-12:00 a.m., Appointment.

Course Delivery Changes Related to COVID-19: Please be aware that the situation regarding COVID-19 is frequently changing, and the delivery mode of this course may need to change accordingly. All lectures are recorded and uploaded. Regardless of the delivery method, we (instructor and students) should all strive to provide a high-quality learning experience.