MATH 4025 Optimization Theory and Applications

Math 4025   Spring 2025

Time: Tuesday and Thursday, 12:00noon-1:20pm   **Modality:** In person

Classroom: Room 119, Lockett Hall

Instructor: Name: Hongchao Zhang   Email: zhc At lsu.edu
web page : http://www.math.lsu.edu/∼hozhang/Math4025-Spring2025/Math4025.html

Office Hours: Tuesday and Thursday 1:30-2:30 PM, or by email Appointment or Anytime I am in office

Text: *Lecture Notes*
Reference Books: *Convex Optimization by Stephen Boyd and Lieven Vandenberghe*, ISBN 978-0-521-83378-3; *Nonlinear Programming by Dimitri P. Bertsekas*, ISBN 1-886529-00-0

Prerequisites: Linear Algebra, Multivariable Calculus, Basic Matlab Programming

Contents: Depending on the time available, tentative topics include Convex sets, Convex functions, Optimality Conditions, Linear Programming, Simplex Method, Nonlinear Programming, line Search and Trust Region Method, Steepest Descent Method, Newtons Method, Cojugate Gradient Method, Quasi-newton Method, Introduction to Tensor

Homework: Homework will be handed out in the class.

Grade: Class Attendence: 10%; Homework: 25%; Midterm Exam: 25% Final Exam: 40%

Final Exam: Wednesday, May 7, 12:30pm - 2:30pm

Grade Scale: A-: 90-92 A:93-96 A+:97-100; B-: 80-82 B:83-86 B+:87-89;
C-: 70-72 C:73-76 C+:77-79;   D-: 60-62 D:63-66 D+:67-69; F: less than 60
Final grades maybe finally scaled, but will only be scaled up.

Note: Except for unforeseen reasons, students must obtain advance approval from the instructor for missing any assignments including Homeworks and Exams, etc. Under this case, any excuse for missing an assignment must be properly documented and any missed assignment must be made up within three days. Use of Generative AI is **Prohibited** for all course work.

Disabilities: Compliance with The Americans with Disabilities Act and the Rehabilitation Act of 1973