Lecture 1

Monday, January 13, 2025   10:09 AM

In this course, you will learn various models to solve problems from the real world based using calculus tools and some additional tools you will learn in this course such as linear algebra, numerical methods, differential equations, and optimization. The topics of this course include:
- Linear system of equations
- Linear programming
- Eigenvalues and eigenvectors
- Pagerank algorithm
- Bisection method
- Newton-Ralphson method
- Partial derivatives
- Lagrange multiplier
- Steepest descent method
- Euler's method to solve a differential equation
- Finite difference method
- …

You are highly encouraged to take Math 343 (Linear Algebra) concurrently with this class. Math 390R will do a project in the last week of class and present it on the day of Final exam (although there is no real Final exam). Math 490R is exempted from the project.

Today:
- system of linear equations
- matrix
- elementary row operations of a matrix