This standard multivariable calculus course extends single variable calculus to higher dimensions. It provides a vocabulary for understanding fundamental processes of nature like weather, planetary motion, waves, diffusion, finance, or quantum mechanics. It teaches important background needed for statistics, discrete math, computer graphics, bio-med, bio-informatics or economics. It provides tools for describing curves, surfaces, solids and other geometrical objects in three dimensions. It develops methods for solving optimization problems with and without constraints. You learn a powerful computer algebra system. The course will enhance problem solving and visualization skills and prepares you for further study in other fields of mathematics and its applications.
1. Week: Geometry / Space
Lect 1-2  6/25  Space, Vectors, Dot Product
Lect 3-4  6/28  Cross product, Lines/Planes

2. Week: Surfaces / Curves
Lect 5-6  7/2  Implicit / Parametric Surface
Lect 7-8  7/3  Curves, Chain Rule, Arc Length
(this is a one time Wed 12-2 PM lecture, in Hall A)

3. Week: Linearization / Gradient
Lect 9-10  7/9  Partial Derivatives, Review
Lect 11-12 7/11  Midterm. Gradient

4. Week: Extrema / Double Integrals
Lect 13-14  7/16  Tangents, Extrema
Lect 15-16  7/18  Lagrange. Double integrals

5. Week: Triple Integrals / Line Integrals
Lect 17-18  7/23  Double and triple integrals
Lect 19-20  7/25  Midterm Line integrals

6. Week: Vectorfields / Integral Theorem
Lect 21-22  7/30  Curl, Greens theorem, Flux
Lect 23-24  8/1  Stokes / Divergence theorem

Arithmetic, Algebra, Geometry
Trigonometry
Single Variable Calculus

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