

Mathematics 53 - Multivariable Calculus

Professor M. Zworski
643-7991
zworski@math.berkeley.edu

Office Hours: 1:10-3 PM on Mondays and 2:10-3 PM in Evans 801.

Class meetings: The main lectures are MWF 11 AM-noon in 2050 VALLEY Life Sciences Building. There are in addition 16 discussion sections meeting on TuTh.

Text: J. Steward, Custom version of *Calculus (Early Transcendentals)*, 7th edition for Math 53

Overview

Material	Number of Lectures
Introduction, parametric equations	4
Vectors and Planes	4
Partial Derivatives	9
Multiple Integrals	10
Vector Calculus	12
Review (RRR Week)	3
Total	42

	Date	Topic
1	August 29	Introduction
2	September 3	Parametric curves
3	September 5	Tangents and Area
4	September 8	Polar coordinates
5	September 10	More on polar coordinates
6	September 12	Vectors
7	September 15	Lines and planes
8	September 17	Quadric surfaces
9	September 19	Cylindrical and spherical coordinates
10	September 22	Space curves
11	September 26	Functions of several variables
12	September 29	Partial Derivatives
13	October 1	Tangent planes and differentials
14	October 3	Chain rule
15	October 6	More on chain rule, implicit differentiation
16	October 8	The gradient
17	October 10	Maxima and minima
18	October 13	Lagrange multipliers
19	October 15	Double integrals
20	October 17	Iterated integrals
21	October 20	More on double integrals
22	October 22	Applications
23	October 24	Surface area
24	October 27	Triple Integrals
25	October 29	Integrals in cylindrical and spherical coordinates
26	October 31	Change of variables, Jacobians
27	November 3	More on change of variables
28	November 7	Vector fields
29	November 10	Line integrals
30	November 12	Fundamental Theorem of line integrals
31	November 14	Green's Theorem
32	November 17	Proof of Green's Theorem
33	November 19	Curl and divergence
34	November 21	Parametric surfaces
35	November 24	Surface integrals
36	November 26	Stokes's Theorem
37	December 1	Applications
38	December 3	Divergence Theorem
39	December 5	Applications
40	December 8	Review
41	December 10	Review
42	December 12	Review