



18.02 | Spring 2006 | Undergraduate

Multivariable Calculus

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Calendar

LEC #	TOPICS	KEY DATES
I. Vectors and Matrices		
1	Vectors in 2- and 3-space Dot Product	
2	Determinants of Orders 2 and 3 Cross Product	
3	Matrices; Inverse Matrices	
4	Solving Systems of Linear Equations; Lines, Planes	
5	Parametric Curves; Velocity, Acceleration	Problem set 1 due
6	Kepler's Second Law	
	Exam 1 (Covering Lectures 1-6)	Problem set 2 due
II. Partial Derivatives		
7	Level Curves, Partial Derivatives, Tangent Plane	
8	Max-Min Problems Least Squares Approximation	
9	2nd Derivative Test; Boundaries and Infinity	Problem set 3 due
10	Differentials; Chain Rule	
11	Gradient, Directional Derivative	
12	Lagrange Multipliers	Problem set 4 due
13	Non-independent Variables	
14	Partial Differential Equations Review	
	Exam 2 (Covering Lectures 7-14)	Problem set 5 due
III. Double and Triple Integrals		
15	Double and Iterated Integrals	
16	Double Integrals in Polar Coordinates Applications	
17	Change of Variables	Problem set 6 due
18	Triple Integrals in Rectangular and Cylindrical Coordinates	
19	Spherical Coordinates Gravitational Attraction	
IV. Vector Calculus in 2 and 3-space		
20	Line Integrals in the Plane	Problem set 7 due
21	Gradient Fields and Path Independence	


Feedback






LEC #	TOPICS	KEY DATES
22	Conservative Fields and Potential Functions	
23	Green's Theorem 2-dimensional Curl (Vorticity)	Problem set 8 due
24	Simply-connected Regions Review	
	Exam 3 (Covering Lectures 15-24, Except 18-19)	Problem set 9 due
25	Flux Form of Green's Theorem	
26	Vector Fields in 3-space; Surface Integrals and Flux	
27	Divergence (= Gauss's) Theorem	Problem set 10 due
28	Divergence Theorem (cont.)	
29	Line Integrals in Space, Exactness, and Potentials	
30	Stokes' Theorem	Problem set 11 due
31	Understanding Curl Review	
	Exam 4 (Covering Lectures 18-19, 25-31)	
32	Topological Issues	Problem set 12 due
33	Conservation Laws; Heat/Diffusion Equation	
34	Course Review	
35	Course Evaluation Maxwell's Equations	



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