

# MATH 226 - CALCULUS III

Prof Baxendale - Spring 2013

TEXT: Essential Calculus (First Edition), by James Stewart, published by Thompson Brooks/Cole. ISBN-10: 0-495-01442-7 / ISBN-13: 978-0-495-01442-3. [Essential Calculus is the text used at USC for all three semesters of Calculus: Math 125, Math 126 and Math 226. The second edition of this text appeared in 2012, and is being phased in semester by semester so that students already in the sequence will not have to switch editions. For the Spring 2013 semester Math 125 and 126 will use the second edition, but Math 226 will continue to use the first edition.]

CHAPTER 10 VECTORS AND THE GEOMETRY OF SPACE: Sections 10.1 to 10.8. Coordinate systems in 2 and 3 dimensional space, vectors, dot product, cross product, equations of lines and planes, cylinders and quadric surfaces, vector functions of a scalar variable, space curves, derivatives and integrals of vector functions, arc length. (The material in Section 10.8 on curvature is optional.) 9 lectures.

CHAPTER 11 PARTIAL DERIVATIVES: Sections 11.1 to 11.8. Functions of several variables, limits, continuity, partial derivatives, tangent planes and linear approximations, chain rule, directional derivatives and gradients, maximum and minimum values, Lagrange multipliers. 10 lectures.

CHAPTER 12 MULTIPLE INTEGRALS: Sections 12.1 to 12.7. Double integrals and iterated integrals over rectangles and general regions, double integrals using polar coordinates, applications, triple integrals using rectangular, cylindrical and spherical coordinates. (Section 12.8: change of variables for multiple integrals is optional.) 9 lectures.

CHAPTER 13 VECTOR CALCULUS: Sections 13.1 to 13.9. Vector fields, line integrals, conservative vector fields, Green's theorem, curl and divergence, parametric surfaces, surface area, surface integrals, Stokes' theorem, divergence theorem. 11 lectures.

The number of lectures on each chapter is a suggestion. Some professors may spend more time on some topics and less on others. The suggested total of 39 lectures leaves some time available for midterm tests and review.