Math 114 Syllabus (Effective Spring Semester 2009)

Text: Stewart, James, Calculus, 6th Ed.

10. Ordinary differential equations and modeling

10.1 - 10.4 (review; see Math 104 syllabus for core problems)	
10.5 Linear Equations.	642: 5, 11, 17, 29, 31, 33, 35.
10.6 Predator prey systems.	648: 1, 3, 8, 9.

13. Vectors and the Geometry of Space

13.1 Three-dimensional coordinate systems.	805: 6, 18, 21, 31, 38.
13.2 Vectors.	813: 1, 4, 7, 19, 24, 29, 31, 33.
13.3 The Dot Product.	820: 1, 2, 5, 8, 11, 14, 17, 23, 37, 45, 51, 53.
13.4 The Cross Product.	828: 2, 9, 13, 19, 29, 35, 39, 42.
13.5 Equations of Lines and Planes.	838: 1, 3, 15, 16, 30, 37, 51, 61, 75.
11.5, 13.6 Conic sections, Cylinders and. Quadric surfaces	696: 3, 11, 19, 49; 846: 7, 9, 19, 21-28, 45.

14. Vector functions

14.1 Vector functions and space curves.	858: 3, 7, 13, 17, 19-24, 37, 39, 41.
14.2 Derivatives and Integrals of Vector functions.	864: 1, 3, 11, 19, 25, 33, 39, 47.
14.4 Motion in space: velocity and acceleration.	882: 3, 9, 15, 17(a), 21, 23, 27.
14.3 Arc length and curvature.	866: 3, 11, 13, 17, 21, 25, 31, 41, 43, 45, 48.
14.4 Motion in space: tangential and normal components of acceleration, Kepler's laws	883: 33, 35, 40, 41.

15. Partial Derivatives

15.1 Functions of several variables.	901: 1, 3, 5, 13, 30, 32, 37, 39.
15.2 Limits and continuity.	913: 1, 5, 9, 13, 21, 37, 39 (see section 11.3), 44.
15.3 Partial derivatives and PDE's.	924: 1, 3, 5, 10, 11, 21, 31, 45, 51, 73, 81.
15.4 Tangent plane and linear approximations.	935: 3, 11, 19, 25, 31, 35, 37.
15.5 The Chain Rule.	943: 3, 9, 13, 17, 24, 31, 39.
15.6 Directional derivatives and gradient vectors:	956: 3, 5, 7, 19, 23, 29, 33, 34, 39, 47.
15.7 Maxima and Minima.	966: 1, 3, 13, 21, 31, 39, 46, 51, 55.
15.8 Lagrange multipliers.	976: 3, 7, 11, 19, 21, 25, 35.

16. Multiple integrals

16.1 Double integrals over rectangles.	994: 1, 3, 9, 13.
16.2 iterated integrals.	1000: 1, 9, 17, 20, 25, 31, 35.
16.3 Double integrals over general regions.	1031: 5, 13, 17, 21, 31, 43, 45, 55.
16.4 Double integrals in polar coordinates.	1014: 1, 7, 11, 15, 25, 30.
16.5 Applications of double integrals.	1024: 1, 5, 15, 19, 27, 29, 31.
16.6 Triple integrals.	1034: 1, 3, 11, 19, 23, 27, 39, 45.
11.3, 11.4, 16.7 Polar and cylindrical coordinates	683: 3, 5, 17, 31, 49; 689: 3, 9, 29; 1040: 3, 17, 21, 29.
16.8 Spherical coordinates	1046: 1, 7, 17, 21 30, 35.
16.9 Change of Variables in Multiple Integrals.	1056: 1, 5, 7, 13, 21.

17. Vector Calculus and Line Integrals

17.1 Vector Fields.	1068: 3, 11-14, 15-18, 25, 27, 35.
17.2 Line Integrals.	1079: 3, 7, 11, 17, 21, 29(a), 33, 39, 45.
17.3 The fundamental Theorem for line integrals.	1082: 1, 3, 7, 11, 15, 19, 23, 27, 33.
17.4 Green's Theorem.	1096: 3, 5, 7, 11, 13, 17, 21, 27.