Mathematics 103 Spring 2012 Syllabus

The text is **Calculus** by Edwards and Penney, 6th edition.

Lesson/Reading		**Page/Exercises**
I.	*Vectors, curves, and surfaces*	
1. Vectors in $\mathbb{R}^2$	12.1	777/ 1, 7, 13, 17, 23, 31, 35, 40, 47, 52, 54, 55
2. Vectors in $\mathbb{R}^3$	12.2	786/ 5, 18, 23, 25, 31, 33, 39, 42, 43, 47, 53, 62, 67-70 845/ 1
3. Cross product	12.3	794/ 3, 5, 7, 11, 15, 17, 19, 21, 23, 29, 30, 36; 845/ 5
4. Lines and planes	12.4	801/ 3, 7, 13, 14, 15, 17, 25, 27, 29, 30, 32, 33, 37, 40, 51, 53, 56, 57, 59
5. Curves in $\mathbb{R}^3$	12.5	813/ 2, 4, 11, 21, 31, 33, 45, 46, 49, 54, 55, 56, 64 845/ 16
6. Curvature and acceleration	12.6	828/ 1, 6, 10, 18, 23, 34, 42, 47, 49, 50, 54, 55 845/ 42
7. Quadric surfaces	12.7	837/ 1, 3, 7, 9, 13, 15, 21, 25, 29, 30, 43, 51
II.	*Differential calculus of functions of several variables*	
8. Limits and continuity	13.1-13.2	857/ 7, 11, 15, 25, 27, 29, 34, 37, 39, 41, 43, 53-58
	13.3	866/ 5, 13, 24, 27, 30, 43, 45, 51
9. Partial derivatives	13.4	875/ 3, 7, 13, 19, 22, 35, 41, 43, 53, 55, 57(a,c), 58(a,c), 60, 71; 896/ 43
10. Max-min	13.5	886/ 9, 12, 18, 24, 26, 28, 32, 38, 43, 57
11. Differentials	13.6	895/ 5, 7, 17, 18, 26, 34, 42
12. Chain rule	13.7	904/ 3, 7, 9, 19, 28, 37, 40, 43, 45, 51
13. Directional derivative	13.8	915/ 6, 8, 14, 19, 26, 28, 30, 33, 34, 36, 40, 48, 50, 51, 56, 57
14. Lagrange multipliers	13.9	924/ 5, 10, 15, 30, 42, 49, 62 (for n=3)
15. 2^{nd} derivative test	13.10	933/ 1, 4, 6, 8, 10, 12, 20, 25, 29, 32

Lesson/Reading		**Page/Exercises**
III.	*Integral calculus of functions of several variables*	
16. Double integrals	14.1-14.2	945/ 3, 15, 17, 32, 34, 40 953/ 1, 12, 18, 22, 23, 30, 31, 41, 42
17. Area and volume	14.3	959/ 3, 7, 18, 22*, 24, 28*, 30*, 37
18. Polar coordinates	10.2	635/ 1(a,b,c), 2(d), 6, 11, 24, 25, 39, 41, 42, 53, 56
19. Double integrals in polar coordinates	14.4	966/ 2, 5, 10, 12, 14, 23, 28, 29, 34, 38 959/ 33, 34, 42
20. Applications	14.5	975/ 8, 15, 42, 44, 46
21. Triple integrals	14.6	985/ 2, 6*, 8, 10, 12, 14, 22, 28, 33
22. Spherical coordinates	12.8	843/ 1, 9, 15, 17, 23, 26, 27, 29, 30, 31, 33, 39, 55
23. Triple integrals in spherical coordinates	14.7	993/ 1, 3, 4, 5, 15, 20, 22, 26, 30, 38
24. Change of variables	14.9	1007/ 1, 3, 4, 6, 7, 8, 10, 12, 14, 17
25. Surface area	14.8	1000/ 2, 3, 7, 13, 15, 17, 18; 1010/ 49
IV.	*Vector calculus*	
26. Vector fields	15.1	1018/ 1, 6, 9, 11, 12, 20, 21, 28, 32, 35, 36, 37, 38, 39, 40
27. Line integrals	15.2	1028/ 2d, 3d, 4d, 5d, 6, 10, 11, 12, 14, 16, 21, 22, 36 1072/ 9
28. Conservative fields	15.3	1036/ 2, 24, 26, 27, 28, 29, 30, 32, 35, 36
29. Green's theorem	15.4	1045/ 2, 3, 15, 16, 18, 22, 29, 34, 36, 38
30. Surface integrals	15.5	1055/ 2*, 6, 10, 14, 15, 18, 23; 1072/ 18
31. Divergence theorem	15.6	1063/ 4, 6, 7, 8, 15, 16,18,20, 22,
32. Stoke's theorem	15.7	1070/ 1, 2, 5, 7, 9, 10, 13, 14, 16, 17

Block Final Exam: Tuesday 2-5pm, May 1, 2012

*SET UP ONLY. DO NOT EVALUATE.