

SM221 Calculus III Syllabus Fall Semester AcYr 2010-2011

TEXT: CALCULUS, Early Transcendentals, Edition 6e by James Stewart

1. Please see <http://www.usna.edu/MathDept/website/local/courses.htm> This site will have the most up to date information about this course and others, including this syllabus, practice exams, etc.

2. Calculus III is very geometric in nature. Almost every concept we will study has a corresponding visualization. To help us, all students in this course are expected to have a calculator like the Voyage 200 with the capabilities to graph and do symbolic calculations. There will be assignments that use such a calculator as well as questions on the common final exam for which it is expected that the student has such a calculator. At the same time the ability to do computations by hand is extremely important. The final exam will have a number of problems for which the use of the calculator will not be allowed.

3. If you would like help in the course, you should contact your instructor for extra-instruction. If your instructor is not available, try the **Math Lab** in CH130. It is staffed all six periods every class day with instructors who should be able to answer your questions. Also, the **Midshipman Group Study Program** (MGSP) will be available evenings from Sunday through Thursday. Upper class midshipmen will be available to help as you work on Calculus III in groups. More information will be given to you about the particulars of MGSP at the start of the semester. See: <http://intranet.usna.edu/AcCenter/MGSP.htm>

4. There are three proofs listed in the notes column. Each student is expected to be able to prove the three corresponding theorems. One of the proofs will appear on the final exam.

DAY	SECTION	TOPIC	PROBLEMS	NOTES
1	12.1/12.2	3-D and Vectors (review)	p. 769: 5,11,16,28,31; p. 777: 6,9,24,29,31	
2	12.3/12.4	Dot and Cross Product (review)	p. 784: 7,11,13,18,37,38; p. 792: 1,16,20,29	x-prod applet Wrench lab
3	12.5	Lines and Planes (review)	p. 802: 7,16,22,29,65,66	
4	12.6	Cylinders & Quadric Surfaces	p. 810: 1,3,5,8,11,12,13,14	
5	12.6	(continued)	p. 810: 15,16, 21 - 28,41	
6	13.1/13.2	Vector Fns./Space Curves/Derivs & Integrals (review)	p. 822: 1,6,9,11,17-24,42 p. 828: 1,3,9,19,29,39	
7	13.3/13.4	Arc Length / Motion in Space	p. 836: 1,2,7,8; p. 846: 1,2,5,6,10	
8	13.4	Motion in Space through p. 842	p. 846: 16,17,19,23,24,28	
9	Review			
10	Review			
11	TEST 1			
12	14.1	Functions of Several Variables	p. 865: 2,5,6,7,19,23,26	
13	14.1	(continued)	p. 865: 31,33,34,38,61,63	
14	14.3	Partial Derivatives	p. 888: 3,4,10,15,18,23	Hill Lab
15	14.3	(continued)	p. 888: 6,7,39,40,60,70,74a,78	
16	14.4	Tangent Planes and Lin Approx	p. 899: 1,6,11,16,19,22,24no diff'ntials	
17	14.5	Chain Rule	p. 907: 1,2,7,10,13,16,22,23,37	
18	14.6	Directional Derivatives & Gradient	p. 920: 1,2,7,8,12,15,18,21	Proof Thm 15
19	14.6	(continued)	p. 920: 26,28,34,38,39,44,52	
20	14.7	Maximum and Minimum Values	p. 930: 1,2,3,4,7,8,50,51	
21	Review			
22	Review			
23	TEST 2			
24	15.1	Double Integrals over Rectangles	p. 958: 1,5,8,9,11,12,14	
25	15.2	Iterated Integrals	p. 964: 4,5,16,23,24,28,30	
26	15.3	Double Integrals General Regions	p. 972: 1,4,7,10,15,21	
27	15.3	(continued)	p. 972: 27,32,37,39,45,50,57,58	Proof Ex 57

28	10.3	Polar Coordinates (review)	p. 647: 1,3,6,9,10,17,19,22,25,29	
29	15.4	Double Polar Integrals	p. 978: 1,4,7,10,15,21	
30	15.4/15.5	(continued) / Applications	p. 978: 30,31; p. 988: 1,2,3,8,9,13	
31	15.6	Triple Integrals	p. 999: 1,6,9,12,13,16	
32	15.6	(continued)	p. 999: 17,21,22,29,30,37,40	
33	15.7	Triple Integrals -- Cylindrical	p. 1004: 1,3,5,6,9,12,15,17,18,19	
34	15.7 / 15.8	(Cylindrical continued) / Spherical	p. 1004: 21,25,27; p. 1010: 1,3,5,6,11,12,17	
35	15.8	Triple Integrals -- Spherical	p. 1010: 19,20,21,22,25,26,30	
36	Review			
37	Review			
38	TEST 3			
39	16.1	Vector Fields	p. 1032: 1,3,4,6,11-18,25,29	
40	16.2	Line Integrals	p. 1043: 2,3,5,8,12,13,14,17	
41	16.2	(continued)	p. 1043: 18,19,22,23,33,39,41	
42	16.3	Fundamental Theorem for Line Int	p. 1053: 1,2,3,4,5,6,7,11	
43	16.3	(continued)	p. 1053: 12,13,15,16,19,20,23,28	
44	16.4	Green's Theorem.	p. 1060: 1,3,4,5,7,9	
45	16.4	(continued)	p. 1060: 11,13,17,18,19,20	
46	16.5	Curl & Divergence	p. 1068: 1,2,4,5,6,9,11	
47	16.5	(continued)	p. 1068: 12,13,16,17,21,22	Proof Thm 3
48	16.6	Parametric Surfaces	p. 1078: 1,3,4,13-18	
49	16.6	(continued)	p. 1078: 23,24,25,37,38,41,46,47	
50	16.7	Surface Integrals	p. 1091: 5,8,9,10,13,18	
51	16.7	Flux Integrals	p. 1091: 19,20,21,22,23,41,43	
52	16.8	Stokes' Theorem	p. 1097: 1,2,3,4	
53	16.8	(continued)	p. 1097: 8,9,10,13	
54	16.9	Divergence Theorem	p. 1103: 2,3,4,5,7	
55	16.9	(continued)	p. 1103: 10,11,12,13,17,19	
56	Review			
57	Review			
58	TEST 4			
59	Review	for common final		

Course Coordinator: Prof M. Meyerson, email: mdm@usna.edu