UMTYMP Calculus II Spring 2005

Syllabus

Text: Calculus: Concepts and Contexts (Stewart) plus supplemental materials

Supplementary homework problems will be given in class for some assignments.

This syllabus (especially the homework problems) may be revised during the semester.

Professional problems are marked with *.

#	Day	Date	Section	Topic and basic HW	HW Due
1	Wed	12/15	Read H1, 9.7 Skim H2	*Review polar coordinates; cylindrical and spherical coordinates* **Appendix H1: 10, 11, 36, 40** **9.7: 3, 6, 8, 10, 13, 14(sph. and cyl.), 17, 26, 28** **Professional problem: Describe and sketch $\rho=1-\cos(\phi)$**	1/12
2	Wed	1/12	10.1	*Parametric curves and vector valued functions* **10.1: 2, 4, 5-10, 11, 12, 13, 16, 18*, 27, 29 (the cone is z = r in cyl. coords)**	1/19
	Mon	1/17		(No study session 1/17 -- MLK holiday)	
3	Wed	1/19	10.2, 10.3	*Tangent vectors and arclength; curvature (begin)* **10.2: 1, 2, 3, 4, 6, 12, 14, 18, 20, 22, 25, 28*, 31, 46**	1/26
4	**MON**	1/24	10.2, 10.3	*Curvature and moving frames (finish)* **10.3: 3, 4, 11, 12, 24, 25, 27, 30, 31, 36* + supplemental problems**	1/31
	Wed	1/26		**Exam Review**	
	MON	1/31		**Exam 1**	2/7
5	Wed	2/2	10.4	*Motion in Space* **10.4: 2, 6, 10, 14, 17*, 20, 21, 29, 31, 32, 33**	2/9
	Mon	2/7		Study session 1	
6	Wed	2/9	9.6, 11.1	*Surfaces and multivariable functions* **9.6: 2, 15, 20, 25** **11.1: 1, 6, 9, 10, 12, 14, 18, 24*, 31-36, 37, 38, 39, 40, 42c**	2/16
	Mon	2/14		Study session 2	
7	Wed	2/16	10.5	*Parametric Surfaces* **10.5: 1, 4, 11-16 combined*, 18, 19, 20, 21, 22, 24, 29a, 32a**	2/23
8	**MON**	2/21	11.2	*Limits and continuity* **11.2: 1, 7, 11*, 18, 25, 30, 35. Hint for #11: Use polar coordinates.**	2/28
9	Wed	2/23	11.3	*Partial derivatives* **11.3: 1, 4*, 6, 7, 8, 14, 17, 24, 26, 52, 54, 60, 75**	3/2
	Mon	2/28		**Exam Review**	
	Wed	3/2		**Exam 2**	

#	Day	Date	Section	Topic and basic HW	HW Due
10	**Mon**	3/7	11.4, supp	*Derivative matrix; tangent planes and linear approximations (begin)* **11.4: 1, 4, 10, 13*, 18, 26, 30, 40**	3/23
11	Wed	3/9	11.4, supp	*Derivative matrix; tangent planes and linear approximations (finish)* **Homework problems will be handed out in class**	3/23
				Spring Break	
	Mon	3/21		Study session 3	
12	Wed	3/23	11.5	*Chain rule* **11.5: 3, 6, 7, 10, 12, 16, 22, 25, 28, 34*, 42** **Additional problems handed out in class**	
13	Wed	3/30	11.6	*Directional derivatives and the gradient* **11.6: 7, 8, 11, 13** **11.6: 2, 4, 6, 16, 17, 22, 23, 32, 34, 36, 38, 44*, 52a**	**4/4** 4/6
14	**MON**	4/4	supp	*Quadric forms and Sylvester's theorem* **Homework will be handed out in class**	4/11
15	Wed	4/6	supp	*Taylor's theorem* **Homework will be handed out in class**	4/13
	Mon	4/11		**Exam Review**	
	Wed	4/13		**Exam 3**	
	Mon	4/18		Study session 4	
16	Wed	4/20	11.7, supp	*Optimization* **11.7: 2, 4, 5, 7, 13, 23, 25*, 32** **Additional homework may be handed out in class**	4/27
17	**MON**	4/25	11.8	*Lagrange multipliers* **11.8: 1, 2 (without calculator), 5, 8, 13, 23***	5/2
18	Wed	4/27	supp	*Implicit differentiation and the inverse function thm* **Homework will be handed out in class**	5/2
	Mon	5/2		**Exam review session**	
	Wed	5/4		**Exam 4**	