

**Required Text:** *Calculus: Early Transcendentals, Fifth Edition*, by James Stewart, Brooks/Cole Publishing Co., 2003. The Student's Solutions Manual, with solutions to odd problems, is available in the Bookstore, but not required. A few copies of the Complete Solutions Manual, with solutions to both even and odd problems, will be on reserve in the Tisch Library.

**Website:** Announcements, exams from past semesters, and solutions to review problems and exams will be posted at the Math 13 website at [blackboard.tufts.edu](http://blackboard.tufts.edu).

**Exam Dates:** There will be three in-term exams and a final. There will be no make-ups.

Exam 1: Thursday, February 24 (Monday schedule), noon–1:20 p.m.

Exam 2: Monday, March 14, noon–1:20 p.m.

Exam 3: Monday, April 11, noon–1:20 p.m.

Final Exam: Monday, May 9, 8:30 a.m.–10:30 a.m.

### Adding and Dropping:

**Thursday, February 3:** Last day to add classes.

**Thursday, February 17:** Last day for sophomores, juniors and seniors to withdraw without a W and the last day to choose pass/fail option.

**Thursday, April 7:** Last day for first-year students to withdraw without a W.

**Monday, May 2:** Last day to withdraw from a course (with a W).

**Homework:** Homework is assigned for each lecture to give you practice in working with the material *actively*. The only way to learn mathematics is by *solving problems*. Each assignment is due in the class following the date listed on the syllabus. You are encouraged to collaborate with other students on the homework, and to check your solutions using the solutions manuals, your own or the ones on reserve in the Tisch Library. However, at the end you must hand in the solutions in your own handwriting and your own words. The grader will award a point to an assignment if:

1. Every exercise is honestly attempted (it is not enough to copy the statement of the problem or to copy the solutions from the solutions manual), and
2. At least 60 % of the exercises are solved correctly. (Answers alone are not adequate. You must show your work.)

Late homework will not be accepted; however, you are allowed to miss two problem sets without penalty for whatever reason, e.g., illness or religious holidays. Please do not trust that the grader will notice all your errors — the grader must check a large number of problems in a relatively small amount of time. The exams, on the other hand, are graded by professors; expect us to be more demanding on exams.

**Exam Rules:** No calculators, books, notes, or any other form of external help may be used on the exams. Once an exam is handed in, it may not be modified. You are required to sign your exam book. With your signature, you are pledging that you have neither given nor received assistance on the exam. Students found violating this pledge will receive an **F** in the course. Questions about the grading of an in-term exam must be written on the cover of the exam book and returned to the instructor during the class in which you get the exam back.

*There will be no make-ups for the three in-term exams!*

If you miss one, that will be the one crossed off in determining the course grade (see below).

**Attendance:** This course proceeds linearly; each lecture depends on all preceding lectures. To do well in the course, it is essential that you attend classes and hand in the homework when they are due. Missing a few classes may make it impossible for you to understand the subsequent lectures.

**Grades:** All exams will be written down with the final exam appearing twice. The lowest of these five numbers will be crossed out and the remaining four numbers averaged. If you have  $n \geq 20$  homework points at the end of the semester, then  $\min\{(n - 20)/10, 1\}$  bonus points will be added to the average. The numerical course grade will be converted into a letter grade by the standard rules.

**Text:** James Stewart, *Calculus: Early Transcendentals*, 5th edition, Brooks/Cole, 2003.

Lect.	Section	Topic	Homework
1	12.1, 12.2	Three-dimensional coordinate systems Vectors	p. 797: 7,10abd,13,15,31 p. 805: 17,21,25,29,32
2	12.3	The dot product	p. 812: 1,7,9,17,24,26,37,47,51
3	12.4	The cross product	p. 820: 3,5,9,11,15,24,25,29,39
4	12.5	Lines and planes	p. 829: 3,4,7(parametric only),16,19,27,31, 35,39,53,59,63,65
5	12.6	Cylinders, quadric surfaces	p. 837: 5,8,9,11–15,17,22,23,28
6	13.1, 13.2 13.3	Vector functions, space curves Arc length, arc length parametrization (Omit Curvature, normal and binormal vectors, pp. 864–868)	p. 855: 3,8,19,21,23; p. 861: 11,15,19,25 p. 868: 3,9,10,11
7	13.4 14.1	Velocity and acceleration Functions of several variables (Omit Tangential and normal components of acceleration, Kepler's laws, pp. 874–878)	p. 878: 7,18a,22,25,27 p. 898: 6,17,18,23,28,29,38,43,59,61
8	14.2	Limits and continuity	p. 908: 7,11,12,13,34,37,38
9	14.3	Partial derivatives	p. 920: 15,17,27,28,36,41,43,47,51,53,86ab
10	14.4	Tangent planes, linear approximations	p. 930: 1,5,11,17,19,23,25,31,32,33

**First Exam (Lectures 1–10): Thu., Feb. 24 (Mon. Schedule), noon–1:20 p.m.**

11	14.5	The chain rule	p. 938: 5,9,21,38,39,42
12	14.6	Directional derivatives, gradient	p. 950: 7,11,25,31,33,39,43,47
13	14.7	Local max and min, open domains	p. 961: 1,3,5,13,14,39
14	14.7	Absolute max and min	p. 962: 27,33,45,48
15	14.8	Lagrange multipliers	p. 970: 4,9,11,23,31,33,36
16	15.1, 15.2	Double integrals over rectangles Iterated integrals	p. 989: 13,14 p. 994: 3,7,14,25,29
17	15.3	Double integrals over general regions	p. 1002: 9,11,14,26,37,41,42,45,48
18	15.4	Double integrals in polar coordinates	p. 1008: 11,13,21,22,31,36abc

**Second Exam (Lectures 11–18): Monday, March 14, noon–1:20 p.m.**

19	15.7	Triple integrals: $z$ -simple regions	p. 1030: 7 (set up, do not evaluate),9, 10 (set up in the order $dz dy dx$ , do not evaluate),11,13,17,19
20	15.7	Triple integrals: interchanging order	p. 1030: 15,21a,26,31,33
21	12.7	Cylindrical and spherical coordinates	p. 842: 7,9,17,21,23,28,35,39,42,53,55,65
22	15.8	Triple integrals in cylindrical and spherical coordinates	p. 1037: 1,3,7,11,14a(set up iterated integral, do not evaluate),18,23,30,33,35
23	15.9	Change of variables	p. 1048: 1,4,10,13,17a,19,22
24	16.1, 16.2	Vector fields Line integrals of scalar functions	p. 1060: 5,9,11,13,17,23,30,31 p. 1071: 3,9,11
25	16.2	Line integrals of vector fields	p. 1071: 5,7,17,18,21,37,41
26	16.3	Fundamental theorem for line integrals	p. 1081: 1,5,9,13,15

27 16.3 Fundamental theorem for line integrals p. 1082: 11,19,23,33,34a

**Third Exam (Lectures 19–27): Monday, April 11, noon–1:20 p.m.**

28 16.4 Green's theorem p. 1089: 2,3,7,11,12,17,19,21  
29 16.5 Curl and divergence p. 1096: 1,5,12,15,17,20  
30 15.6, 16.7 Surface area of a graph p. 1022: 3,9,10,12(Why do #10 and #12 have  
the same answer?)  
Surface integrals of scalar functions p. 1119: 4,7,13,14(Use symmetry)  
(Omit Parametric surfaces, pp. 1111–1113)  
31 16.7 Surface integrals of vector fields p. 1119: 19,21,22,23,25  
(Omit Parametric surfaces, pp. 1117–1118)  
32 16.8 Stokes' theorem p. 1125: 1,2,5,7,9,11a,18  
33 16.9 Divergence theorem p. 1132: 9,11,13,16,19,22; redo p. 1119: 25  
34 16.9 Divergence theorem p. 1132: 1,2  
Circulation and flux p. 1096: 9,10,11  
35 Recapitulation of line and surface integrals

**Final Exam (all lectures): Monday, May 9, 8:30 a.m.–10:30 a.m.**

	Section C P. Staab Section I C. Beneš	Section D L. Tu	Section E T. Gwena	Section C: TWF 9:30–10:20 Section D: M 9:30–10:20, T,Th 10:30–11:20 Section E: MWF 10:30–11:20 Section I: TWF 3–3:50
	<b>January</b>			
Thu. 20		1		
21	1		1	
Mon. 24		2	2	
25	2	3		
26	3		3	
27		4		
28	4		4	
Mon. 31		5	5	
	<b>February</b>			
Tue. 1	5	6		
2	6		6	
Thu. 3		7		Last day to add
4	7		7	
Mon. 7		8	8	
8	8	9		
9	9		9	
10		10		
11	10		10	
Mon. 14		11	11	
15	11	12		
16	12		12	
Thu. 17		13		So., Jr., Sr. Drop without W; Pass/Fail deadline
18	13		13	
Mon. 21				Presidents' Day — no classes
22	14	14		
23	Review		14	Monday schedule, Exam 1, noon–1:20 p.m.
Thu. 24		Review	Review	
25	15		15	
Mon. 28		15	16	
	<b>March</b>			
Tue. 1	16	16		
2	17		17	
3		17		

4	18	18	
Mon. 7	18	19	
8	19	19	
9	20	20	
10	20	20	
11	Review	21	
Mon. 14	Review	Review	Exam 2, noon–1:20 p.m.
15	21	21	
16	22	22	
17	22	22	
18	no class	no class	
Mar. 19–27			Spring Break!
Mon. 28	23	23	
29	23	24	
30	24	24	
31	25	25	
	<b>April</b>		
Fri. 1	25	25	
Mon. 4	26	26	
5	26	27	
6	27	27	
Thu. 7	28	28	First-year drop without W
8	Review	28	
Mon. 11	Review	Review	Exam 3, noon–1:20 p.m.
12	28	29	
13	29	29	
14	30	30	
15	30	30	
Mon. 18			Patriot's Day — no classes
19	31	31	
20	32	31	
21	32	32	
22	33	32	
Mon. 25	33	33	
26	34	34	
27	35	34	
28	35	35	
29	Review	35	
	<b>May</b>		
Mon. 2	Review	Review	
Mon. 9			Final Exam, 8:30 a.m.–10:30 a.m.