Multivariable Calculus

(Mathematics 640:251:Sec. 01-03 — Spring 1996)

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Textbook: *Calculus and Analytic Geometry*, 8th edition, by G. B. Thomas and R. L. Finney, ISBN # 0-201-52929-7, Addison-Wesley Publishing Company.

Lectures: TF 1, SEC-117 (Busch).

Recitations: Sec. 01: W1* SEC-218; Sec. 02: W2* TCB-110; Sec. 03: W3* SEC-216. Recitation instructor: Luke Higgins, 622 Hill Center (Busch); E-mail lukeh@math.rutgers.edu.

Grade: The final grade for the course will be based on two midterms (20% each), on a final exam (40%) and, in addition, on a set of weekly quizzes (20%).
Note that the final exam is comprehensive. All exams are closed-book. No *cheat-sheets* and notes are allowed. You must bring your picture I.D. card to every exam.
The quizzes will be given during the recitations starting on Jan. 24. The two lowest quizzes will be dropped hence <u>NO</u> make-up quizzes will be offered. Make-up exams will be given only in case of an emergency or if a valid excuse is given and verified in advance.
Attendance and active participation to class life will be also taken into consideration when computing the final grade.
Homework will be mandatory but it will not be collected; you are encouraged to work together in doing it.

Outline: The following is a tentative plan for this course:

Chapter:	Sections:	Title/Homework Assignments:
Ten	**1-5, 7, & 8**	**Vectors and Analytic Geometry in Space**
		10.1: 1, 5, 7, 9, 13, 15, 17, 19, 21, 25, 29, 33.
		10.2: 1, 5, 11, 13, 17, 19, 23, 25, 29, 33, 37, 45, 49, 59, 63.
		10.3: 1, 5, 9, 13, 17, 21, 25, 27, 29, 37, 39.
		10.4: 1, 3, 7, 11, 15, 17, 19, 21, 23, 25, 27.
		10.5: 1, 3, 9, 17, 21, 23, 25, 31, 35, 41, 45, 51, 55.
		10.7: 1, 5, 9, 15, 19, 23, 27, 31, 33, 35, 37, 41, 45, 51, 59.
		10.8: 3, 7, 9, 15, 19, 29, 33, 35, 39, 41.

Outline (cont.):	Chapter:	Sections:	Title/Homework Assignments:
	Eleven	**1, 3, & 4**	**Vector-Valued Functions and Motion in Space** **11.1:** 1, 3, 9, 11, 15, 19, 21, 23, 25, 29. **11.3:** 1, 3, 7, 9, 11, 13. **11.4:** 3, 5, 9, 15, 17, 25, 27, 29, 31.
	Twelve	**1-10**	**Functions of Two or More Variables and Their Derivatives** **12.1:** 3, 7, 13, 21-26, 27, 37, 41. **12.2:** 1, 11, 15, 19, 25, 29, 31, 35, 49, 51, 53. **12.3:** 11, 17, 25, 27,31, 43, 45, 49, 53, 61, 65, 67, 71. **12.4:** 3, 7, 11, 13, 17, 25, 31, 37. **12.5:** 3, 5, 7, 9, 11, 15, 25, 27, 29, 33, 35. **12.6:** 1, 3, 5, 7, 11. **12.7:** 3, 5, 11, 13, 15, 19, 23, 25, 27, 31, 37, 39, 41, 43. **12.8:** 5, 13, 21, 25, 31, 35, 39, 43, 45. **12.9:** 1, 3, 5, 9, 11, 15, 17, 21, 27, 29. **12.10:** 1, 3, 5, 7.
	Thirteen	**1-7**	**Multiple Integrals** **13.1:** 3, 5, 9, 11, 13, 19, 21, 25, 29, 31, 35, 39, 41, 45. **13.2:** 3, 7, 9, 13, 17, 21, 23, 25, 31, 35. **13.3:** 5, 9, 13, 16, 19, 25, 29, 33, 35. **13.4:** 3, 7, 11, 15, 19, 21, 25, 29, 33, 35, 39. **13.5:** 5, 7, 11, 13, 15. **13.6:** 5, 11, 15, 19, 21, 23, 27, 33, 37, 51, 55. **13.7:** 3, 5, 6, 9, 11, 13.
	Fourteen	**1-7**	**Integration in Vector Fields** **14.1:** 1-8, 11, 15, 17, 21, 25. **14.2:** 1, 5, 13, 15, 19, 21, 25. **14.3:** 3, 7, 11, 15, 17, 23, 25, 31, 37. **14.4:** 5, 11, 15, 17, 23, 27, 29, 31, 37, 39. **14.5:** 1, 3, 5, 7, 9, 13, 15, 17. **14.6:** 1, 3, 5, 7, 9, 11, 15. **14.7:** 3, 5, 7, 9, 11, 13, 17, 21, 25, 27, 29.

First hourly exam: from Section 10.1 through Section 12.6 (1 hr and 20 m).

Second hourly exam: from Section 12.7 through Section 14.3 (1 hr and 20 m).

FINAL EXAM: comprehensive (3 hrs).

Syllabus: The following is an approximate schedule for this course:

Lecture:	Sections Covered:
1	10.1, 10.2
2	10.3, 10.4
3	10.4, 10.5
4	10.7, 10.8
5	11.1
6	11.3, 11.4
7	12.1, 12.2
8	12.2, 12.3
9	12.4
10	12.5, 12.6
11	First hourly exam
12	12.7
13	12.8, 12.10
14	12.9
15	13.1
16	13.2
17	13.3, 13.7 (in 2 dimensions)
18	13.4, 13.5
19	13.6, 13.7 (in 3 dimensions)
20	14.1
21	14.2
22	14.3
23	Second hourly exam
24	14.4
25	14.5
26	14.6
27	14.7
28	Catch up and review.

Notes: Lectures 20 and 21 might be combined, if one is behind schedule. It might require an extra lecture to cover Chapter 12 adequately.