Math 324A & 324B Advanced Multivariable Calculus I Spring 1997

Course Description

ADMINISTRATIVE INFORMATION

Instructor:	Professor John M. Lee Phone: 543-1735 Office: Padelford C546 Office Hours: Mon & Wed 11:30–12:20 or by appointment E-mail: `lee@math.washington.edu`
Class Meetings:	Math 324A: MWF 9:30–10:20, EEB 108 Math 324B: MWF 10:30–11:20, Bagley 421
Problem Sessions:	Thursdays 12:30-2:20, Miller 302A
Texts:	[AMCI] *Advanced Multivariable Calculus I*, version 96.9, by Caspar R. Curjel, 1996. Available at Professional Copy, 4200 University Way NE (634-2689). Required. [EMVC] *Exercises in Multivariable and Vector Calculus*, by Caspar R. Curjel, McGraw-Hill, 1990. Available at the University Bookstore. Required. *Reprints of Math 324 Exams*, version 96.9, by Caspar R. Curjel, 1995. Available at Professional Copy, 4200 University Way NE (634-2689). Optional.
Equipment:	A transparent ruler with metric scale is required for homework assignments, tests, and exams. You can purchase one in the bookstore. *Be sure to bring your ruler and texts to every class meeting.*
Prerequisite:	Math 126, or an equivalent course in multivariable calculus that stresses geometric reasoning. The course must have covered vectors in space, lines, planes, curves, partial derivatives, gradients, directional derivatives, max/min problems for functions of x and y, and double integrals. Much of the material in Math 324 requires geometric reasoning. During the first week of this course, you'll get a chance to practice the skills you learned in your previous course.
Course Web Site:	`http://www.math.washington.edu/~lee/Courses/324` From the Math Dept. home page, **Courses** → **Math 324A & B**

REGISTRATION INFORMATION

As of the weekend before the start of Spring quarter, both sections A and B are full, but there are openings in at least one other section. On Wednesday, April 2, several openings in my sections will become available on STAR on a first come, first served basis. There will probably be a few more spaces during the second week of classes, as people drop the course. If you are not currently enrolled, the only way to get in is by registering through STAR when space becomes available; no entry codes will be given.

PROBLEM SESSIONS

Every Thursday from 12:30 to 2:20, there will be a Math 324 Problem Session in Miller 302A. It will be available to students in all sections of Math 324, and will be staffed by Math 324 instructors and student volunteers. You are encouraged to use it as a place to work or to meet with a study group, whether or not you need help.

HOMEWORK

Your written homework will consist of all the problems at the ends of chapters 2 through 17 of [AMCI]. See the course schedule for the homework due dates. The homework will take a lot of time, so *don't put it all off until a few days before it's due!* Late homework will not be accepted except in extraordinary circumstances and with advance permission.

The homework will be graded as follows: each problem for which you write up a complete solution earns one point (this means drawing a picture if appropriate, and writing out all steps of the answer, complete with justifications; just writing the problem and copying the answer from the back of the book are not sufficient). In addition, one problem from each set will be chosen for careful grading: depending on whether your work on that problem is correct, you will receive up to 10 additional points. You won't know in advance which problem will be graded.

TESTS

There will be four 50-minute Friday tests; see the course schedule for dates. Each test will consist of five questions, usually very similar to ones you've done for homework. You may bring to the exam two $8\frac{1}{2}'' \times 11''$ one-sided pages (or one sheet written on both sides) of your own handwritten notes. No books, photocopies, or printed materials are allowed. No makeup tests will be given.

The first test (Friday, April 4) will consist of review questions on prerequisite material from Math 126, which is summarized in Chapter 1 of [AMCI]. Scores from the first test will be available on the Math 324A/B Web site and on my office door by 6:00 PM that same day. If you do poorly on this test, it probably means you're not sufficiently familiar with the prerequisites and you may wish to drop the course. You may drop without charge through April 11.

FINAL EXAM

The final exam for Math 324A (9:30 section) will be Wednesday, June 11, at 8:30–10:20 AM; the one for Math 324B (10:30 section) will be Monday, June 9, at 8:30–10:20 AM. The exam will consist of eight problems, covering material from the entire quarter, with a slight extra emphasis on the last three weeks. Each problem will be comparable in difficulty to the problems on the tests. You may bring to the exam two $8\frac{1}{2}'' \times 11''$ one-sided pages (or one sheet written on both sides) of your own handwritten notes. No books, photocopies, or printed materials are allowed.

You may not take the final exam other than at the scheduled time except for religious reasons or extraordinary circumstances of grave personal import. Plans for sporting events, travel or work on exam day, etc. do not constitute extraordinary circumstances. To arrange an alternative exam time, you must give Professor Lee a written request, accompanied by appropriate written documentation, no later than Wednesday, April 30. Approval of such requests is by no means automatic. If you are unable to take the final examination for reasons of health, you must contact Professor Lee before the final, and you will have to provide a written medical excuse.

GRADES

Your grade will be based on a weighted average of the following scores. Roughly speaking, an overall score of 90% will get you a 4.0, 45% a 1.0, and grades in between will be linearly interpolated. Any grade below 1.0 will be considered failing.

12%	Homework assignments
44%	Friday tests
44%	Final exam

MATH 324A & 324B COURSE SCHEDULE **SPRING 1997**

All homework problems are from [AMCI].

Week 1	3/31	Section 1: *Review*
	4/2	Section 1: *Review*
	4/4	**Test 1:** Section 1
Week 2	4/7	Section 2: *Vector fields in the plane*
	4/9	Section 3: *Flow lines*
	4/11	Section 4: *Vector fields in space*
Week 3	4/14	Section 5: *The* ∇ *operator*
	4/16	Review
	4/18	**Test 2:** Sections 2–5
		Homework 1 due: 2.7–2.13, 3.4–3.9, 4.7–4.12, 5.1–5.3
Week 4	4/21	Section 6: *Work*
	4/23	Section 7: *Line integrals*
	4/25	Section 8: *Conservative vector fields*
Week 5	4/28	Section 9: *The curl test*
	4/30	Review
	5/2	**Test 3:** Sections 6–9
		Homework 2 due: 6.4–6.7, 7.16–7.24, 8.6–8.15, 9.16–9.24
Week 6	5/5	Section 10: *Parametrized planes*
	5/7	Section 11: *Parametrized surfaces*
	5/9	Section 12: *Flux*
Week 7	5/12	Section 13: *Surface integrals*
	5/14	Review
	5/16	**Test 4:** Sections 10–13
		Homework 3 due: 10.11–10.16, 11.9–11.14, 12.3–12.6, 13.7–13.15
Week 8	5/19	Section 14: *Triple integrals*
	5/21	Section 15: *Boundaries*
	5/23	Section 15: *Boundaries*
Week 9	5/26	HOLIDAY
	5/28	Section 16: *The divergence theorem*
	5/30	Section 16: *The divergence theorem*
Week 10	6/2	Section 17: *Stokes's theorem*
	6/4	Review
	6/6	Review
		Homework 4 due: 14.5–14.8, 15.4–15.6, 16.6–16.14, 17.6–17.15
Monday	6/9	**MATH 324B FINAL EXAM 8:30-10:20 AM**
Wednesday	6/11	**MATH 324A FINAL EXAM 8:30-10:20 AM**