

Mathematics 32 – Calculus III

Claremont McKenna College, Fall 2010

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Office Hours: TTh 10:00-11:50 AM and by appointment

The text for this course is *Calculus of Several Variables* by Serge Lang. Class is from 9:00 to 9:50am in Roberts North 103 every Monday, Wednesday and Friday. Regular attendance is encouraged.

Our book includes practice problems at the end of each chapter; you are strongly encouraged to try a few of these problems from each chapter, though they will not be collected for a grade. Merely attending class is not enough; in order to pass this class, you will need to read the assigned sections and work the practice problems on your own. Each day, I will give a lecture explaining concepts and showing examples from that day's sections, which you should have already read; then, before the next class, you should try some of the problems for that day's sections and read the next assigned sections. Tutoring is available in the math commons room in the evenings; check the posted schedule.

There is no way to learn calculus without doing the problems and reading the sections in the book. On the other hand, if you do the required reading and problems (and at least a few of the practice problems), pay attention in the lectures, and make sure to ask questions when things don't make sense (my office hours are for **your** questions!), you have every reason to expect success in the course.

Grading will be as follows:

- 15% - weekly take-home assignments
- 15% - weekly quizzes
- 40% - two midterms
- 30% - final exam (**Monday, December 13 9am-12pm.**)

My grading policy is explained on my website, which you should read carefully. In summary, we will use a 5-point scale for grading problems, designed to ensure uniform and fair grading.

15% of your grade will come from weekly take-home assignments. These will be handed out in class and also posted to my website, in case you need a new copy. Another 15% of your course score will come from your weekly quizzes, given during the last ten minutes of class each Friday. We will drop the lowest quiz and lowest homework scores when determining the final grade.

The midterms will have around eight problems plus some bonus problems. The final will be cumulative, will have around sixteen problems plus some bonus problems and will be given in RN 103 on Monday, December 13 from 9am to 12pm. Before each exam, I will post a practice exam and separate solutions page to the above-listed website. These practice exams can be helpful in identifying weaknesses in your understanding of the material. However, the fact that a certain type of problem does not show up on the practice exam does **not** mean that a problem of that type will not show up on the actual test. In particular, doing the practice exam is not a substitute for working the practice problems throughout the semester.

Since make-ups will not be given for quizzes and late take-home assignments will not be accepted, we will drop the lowest homework and quiz scores. Make-up tests will be permitted only with a valid reason and should be scheduled ahead of time. Calculators are permitted but are neither required nor necessarily helpful – you cannot simply write a number or formula and expect to receive credit, as your grade is based on your *explanation* of your answer, not just the answer itself. Cheating in any form will not be tolerated.

You are encouraged to come to my office hours with any questions or concerns you might have; my office hours are there for you. You can also send me questions through email, at Sam.Nelson@cmc.edu or via AIM/Y!IM/FB at ProfSamNelson or via SMS.

Math 32 Lecture Topics, Fall 2010

<p>L1 Vectors [I 1,2] L2 Vector operations [I 3,4,7] L3 Parametric equations [I 5,6] L4 Paths & arc length [II 1,2] L5 Graphs & level sets [III 1] L6 Partial derivatives [III 2,4] L7 Gradients [III 3] L8 Chain rule [IV 1] L9 Tangent plane & Directional derivatives [IV 2,3] L10 Critical points [V 1] L11 Boundary points [V 2] L12 Lagrange multipliers [V 3] L13 Taylor's formula [VI 1,5] L14 Vector fields & potential functions [VII 1] L15 Conservative vector fields [IV 5] L16 Local potentials [VII 2]</p>	<p>L17 Curve integrals [VIII 1,2] L18 Path dependence [VIII 3,4] L19 Double integrals [IX 1] L20 Repeated integrals [IX 2] L21 Green's theorem [X 1] L22 Divergence & rotation [X 2] L23 Triple integrals [XI 1] L24 Polar coordinates [IX 3] L25 Cylindrical & spherical coords [XI 2] L26 Surfaces [XII 1] L27 Surface area [XII 2] L28 Surface integrals [XII 3] L29 Curl & divergence [XII 4] L30 Divergence Theorem [XII 5] L31 Stokes' Theorem [XII 6] L32 Connections with linear algebra [XVI]</p>
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Math 32 Approximate Calendar, Fall 2010

September

M	W	F
	1 Intro	3 L1
6 L2	8 L3	10 Break
13 L4	15 L5	17 L6
20 L7	22 L8	24 L9
27 L10	29 L11	

October

M	W	F
		1 L12
4 L13	6 Review	8 Mid 1
11 L14	13 L15	15 L16
18 Break	20 L17	22 L18
25 L19	27 L20	29 L21

November

M	W	F
1 L22	3 L23	5 L24
8 L25	10 L26	12 L27
15 Review	17 Mid2	19 L28
22 L29	24 Bonus	26 Break
29		

December

M	W	F
	1 L30	3 L31
6 L32	8 Review	10 Review

**Final Exam: Monday, December 13th
9am-12pm.**