MATH 212: MULTIVARIABLE CALCULUS II

SPRING 2016

Place:	Library 204
Time:	MTWF, 12:00–12:50P.M.
Instructor:	Kyle Ormsby (ormsbyk@reed.edu)
Office Hours:	Library 313, Mon. 11A.M.–12P.M., Wed. 2–3P.M., and by appt.
Textbook:	*Vector calculus* by Susan Colley (4th ed.)
Tutoring:	SuMTWTh 7–9P.M. in Library 387 Individual tutoring through Student Services
Website:	people.reed.edu/~ormsbyk/212/

Summary. In Math 211, you learned about the differential calculus of multivariable functions. In this course, we will study the corresponding integral theory. Topics include multiple integration, Fubini's theorem, line and surface integrals, and Green and Stokes theorems. Time permitting, we will also investigate differential forms.

Texts. The course will use Susan Colley's *Vector Calculus* (4th ed.) as its primary text. Copies are available in the campus bookstore, and will additionally be on reserve in the library. This text will be supplemented by notes written by the instructor.

Participation. All of our meetings will place an emphasis on active engagement with multivariable calculus. Students are expected to do assigned readings in advance of class (see the section on quizzes below), and to participate in discussions and demonstrations.

Homework. Homework will be assigned on a **bi-weekly** basis, due Tuesday and Friday at the start of class. Serious engagement with problems is the best way to learn mathematics, and this course will not be an exception. Exercises will range from rote to challenging, requiring anything from basic familiarity with definitions and concepts to genuine insight and mathematical creativity. Especially difficult or deep problems will be singled out as bonus problems; all students are encouraged to interact with these exercises despite their optional nature.

Excellent solutions take many forms, but they all have the following characteristics:

- » they are written as explanations for other students in the course; in particular, they fully explain all of their reasoning and do not assume that the reader will fill in details;
- » they include a paraphrasing of the problem;
- » when graphical reasoning is called for, they include large, carefully drawn and labelled diagrams;
- » they are neatly written or typeset;[1] and
- » they use complete sentences, even when formulas or symbols are involved.

Date: 25.I.16.

[1]Interested students are encouraged to prepare solutions in the LaTeX document preparation system. A guide to LaTeX resources is available on the course website.

Each homework problem can earn up to **eight points**, **five** of them awarded for mathematical insight into the problem and **three** for written communication. Late assignments *will not be accepted* in any form, but your two lowest homework scores will be dropped.

Quizzes and reading. We will take a five-minute entrance quiz at the start of class on (most) Mondays and Wednesdays. *Successful completion of the quizzes will require you to have completed the reading assignment in advance of class.* The problems will be very easy if you have done the reading, and will serve as a starting point for class discussions. Your two lowest quiz scores will be dropped.

Tests. We will have two in-class midterms, one take-home midterm, and a take-home final. All exams are open book, open notes, open instructor. You may *not* collaborate with your classmates or other individuals on the exam problems. The final presentation of your solutions must be your own and must be properly cited.

» Friday, February 19: in-class exam.
» Friday, March 11: take-home exam due (distributed on March 8).
» Friday, April 15: in-class exam.
» Friday, May 6: take-home final due (distributed on April 29).

Technology. The use of electronic devices (cell phones, computers, tablets, calculators, *&c*) is strictly prohibited in the classroom without prior authorization from the instructor. That said, legitimate uses of technology (*e.g.*, note-taking) will be accommodated — just talk to me first.

Grades. Your exams, homework, quizzes, and class participation will be taken into account in the determination of your final grade.

Remember: *Math is hard, but we're going to get through this together.*