Multivariable Calculus
Math 211, Fall 2016

Meeting Times and Location:
Lecture: MWF 10:00-10:50am, JOCH 202
Discussion: Th 9:00-9:50am, SMUD 205

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Prerequisites: A grade of C or better in MATH 121, or equivalent Intermediate Calculus course

Textbook: *Multivariable Calculus* (7th Edition) by James Stewart, published by Cengage Learning (formerly, Brooks/Cole), 2012. (ISBN-13: 978-0538497879)

Course Webpage: http://ynaqvi.people.amherst.edu/math211fa16/

Course topics: This course extends the ideas of previous calculus courses to functions which depend on more than one variable or have outputs in more than one dimension (or both). We will cover geometry of the plane and space, partial derivatives, optimization techniques, line and surface integrals, and Green's Theorem. This corresponds to chapters 12-16 of the textbook.

Homework: Homework will be assigned twice a week and will take on a variety of formats, such as readings, WeBWorK, written solutions to problems, Mathematica labs, and presentations. Refer to the course website for assignments and their due dates. Written homework and labs must be handed in at the beginning of the class in which they are due, and late homework will not be accepted for grading. Submitted work should be neat, organized, and stapled.

You are required to read the relevant sections from the texbook that we cover each day. It is also important to look at homework problems for each class before the start of the next class in order to keep up with the class effectively. The best way to understand mathematics is to solve a lot of problems!

While you are strongly encouraged to work in groups, all submitted assignments must consist only of your own work, *written in your own words*. If you work with other students or with a tutor, you should include a note at the top of your homework saying who you worked with.

Absences: You are expected to attend every class and arrive on time for class. An absence due to emergency may be excused, provided that you can supply acceptable written evidence if required, and that you notify me *as soon as possible*. Two late arrivals will be treated as an absence. Students with more than four unexcused absences may have their grade lowered by one step (for example, a B- may be lowered to a C+).

Exams: There will be two in-class midterm exams and a three-hour cumulative final exam. All exams must be taken at the scheduled time. Make-up exams will only be allowed if you can supply *acceptable* written evidence, and that you notify me *before the end of the missed exam*. The midterm exams are tentatively scheduled as follows:

Midterm Exam 1: Wednesday, October 5
Midterm Exam 2: Friday, November 11

The final exam will be scheduled by the registrar at some point during the semester.

Grading: The overall grade will be based on the results of exams, the scores on homework, and on class participation, which will be measured in various ways, including attendence, participation in group work, in-class assignments and short quizzes. It will be determined using the following point distribution:

Homework & Class Participation	100
1st Midterm Exam	100
2nd Midterm Exam	100
Final Exam	200
Total	500

About the Statement of Intellectual Responsibilty: While you are strongly encouraged to work on homework problems in groups, the work you write up and hand in must be your own. If you receive help from an outside source, please include a note in your homework specifying what this was. For exams, you are not permitted to work with other students or use any additional aids such as calculators, notes, formula sheets, etc. If you are unsure about whether something is allowed or not, please speak with me, and I would be happy to clarify.

Course Outline: The following plan for the course is tentative and may be subject to change.

Week	Dates	Sections	Topics
1	9/7-9/9	12.1	Three Dimensional Coordinates
		12.2	Vectors
		12.3	The Dot Product
2	9/12-9/16	12.4	The Cross Product
		12.5	Equations of Lines and Planes
		13.1	Vector-Valued Functions
3	9/19-9/23	13.2	Calculus of Vector-Valued Functions
		13.3	Arc Length and Speed
		13.4	Motion in Three-Space
4	9/26-9/30	14.1	Functions of Several Variables
		14.2	Limits and Continuity in Several Variables
5	W 10/5		**MIDTERM EXAM #1**
5	10/6-10/7	14.3	Partial Derivatives
		14.4	Differentiability and Tangent Planes
6	10/12-10/14	14.5	Chain Rule
		14.6	Directional Derivatives and Gradient
7	10/17-10/21	14.7	Optimization in Several Variables
		14.8	Lagrange Multipliers
8	10/24-10/28	15.1	Definite Integrals
		15.2	Iterated Integrals
		15.3	Double Integrals over General Regions
		15.4	Polar Coordinates
9	10/31-11/4	15.7	Triple Integrals
		15.8	Cylindrical Coordinates
		15.9	Spherical Coordinates
10	11/7-11/9	15.10	Change of Variables
10	F 11/11		**MIDTERM EXAM #2**
11	11/14-11/18	16.1	Vector Fields
		16.2	Line Integrals
		16.3	Fundamental Theorem of Line Integrals
12	11/28-12/2	16.4	Green's Theorem
		16.5	Curl and Divergence
		16.6	Parametric Surfaces
13	12/5-12/9	16.7	Surface Integrals
		16.8	Stokes's Theorem
14	12/12-12/14	16.9	Divergence Theorem
			Review for Final Exam