Math 251H: Honors Multivariable Calculus

Fall 2016

Instructor: Joseph Palmer
Email: j.palmer@rutgers.edu
Office: Hill 340
Office Hours: Wednesdays 10am-noon and by appointment

Personal Website: rci.rutgers.edu/~jp1535
Course Website: rci.rutgers.edu/~jp1535/teaching/2016fall_math251
Course Times: 5:00-6:20 Mondays and Wednesdays
Room: TIL-257
Textbook: *Calculus: Early Transcendentals*, Rutgers Edition, by Jon Rogowski (ISBN: 1-4641-0376-3)

Course Description:

In this course the students will be introduced to the methods of calculus in several variables. We will learn multidimentional derivatives and integrals, line/surface integrals, Green's Theorem, Stoke's Theorem, and the divergence theorem. This is an *Honors Section* of the course, so the exams will be more difficult and the problems discussed will be at a higher level.

Recitation Sections (or Workshops):

Once a week on Thursdays you will meet with the TA as indicated on your schedule. The times and locations are as follows:

Section	Time	Location
H1:	3:20-4:40pm, Thurs.	BE-251
H2	5:00-6:20pm, Thurs.	BE-013
H3	6:40-8:00pm, Thurs.	BE-013

During these meetings you will discuss homework questions, work on examples, and take a quiz.
Notice: The meeting on the first week (Sept 8th) is not in your usual location. You will meet in ARC IML 118 on Busch Campus to work on the first Maple lab.

Grading:

Breakdown of grades:

Homework, Maple, and Quizzes	20%
Midterm 1	20%
Midterm 2	20%
Final	40%

Homework:

For the homework in this course we will use the WebAssign system. There will be approximately one homework assignment per week, usually due to be completed on Wednesdays. The WebAssign system can be accessed through the SAKAI page for this course.

Quizzes:
Each Recitation section (on Thursdays) will end with a short quiz.

Maple:
This course will also give you the opportunity to get familiar with the very useful program Maple. The first TA section (on Sept 9th) will meet in the computer lab ARC IML 118 to discuss the first Maple assignment. The following Maple assignments can be accessed on this webpage: http://www.math.rutgers.edu/courses/251/Maple/ and are to be completed outside of class time. The due dates of these assignments will be discussed in class and posted on the course webpage.

Exams:
There will be two midterms and one final exam. The final exam for this class is scheduled for Thursday, December 22nd, 4-7pm.

Tentative Schedule:

Date	Sections	Topics
9/7	12.1, 12.2	Vectors in 2- and 3-dimension
9/12	12.3, 12.4	Dot product and Cross Product of Vectors
9/14	12.5	Planes in 3D
9/19	13.1, 13.2	Vector-valued Functions
9/21	13.3, 13.4	Arc Length, Speed, Curvature
9/26	14.1, 14.2	Multivariable Functions, Limit, Continuity
9/28	14.3, 14.4	Partial Derivatives, Differentiability, Tangent Planes
10/3	14.5	Gradient and Directional Derivatives
10/5	14.6	The Chain Rule
10/10	14.7	Optimization of Multivariable Function
10/12	14.8	Lagrange Multiplier
10/17	Midterm 1	
10/19	15.1	Integration of Multivariable Function
10/24	15.2	Double Integral Over General Regions
10/26	15.3	Triple Integral
10/31	12.7	Cylindrical and Spherical Coordinates
11/2	15.4	Integration in Polar, Cylindrical, and Spherical Coordinates
11/7	15.6	Change of Variables
11/9	16.1	Vector Fields
11/14	16.2	Line Integrals
11/16	16.3	Conservative Vector Fields
11/21	Midterm 2	
11/28	16.4	Surface Integrals
11/30	16.5	Surface Integrals of Vector Fields
12/5	17.1	Green's Theorem
12/7	17.2	Stokes' Theorem
12/12	17.3	Divergence Theorem
12/14	Review	
12/22	FINAL EXAM	

SAKAI:

For this course I will be using the SAKAI gradebook, so you can log onto this page to see your current grade in the course. Please inform me of any discrepancies between the grades you think you got and your grades on SAKAI immediately.

Integrity:

You are encouraged to discuss problems pertaining to this course and examples from class with your classmates, but you should complete the WebAssign assignment independently. Remember you will be alone for the exams, which are the majority of your grade, so the WebAssign problems should be approached as important practice. Of course, I will not tolerate any cheating during the midterms or the final. See academicintegrity.rutgers.edu for more details about the academic integrity policies at Rutgers.

Disability:

If you have a disability, please coordinate with the Office of Disability Services as early as possible in the semester and I will do my best to accommodate your needs.

Further Questions?

If you have any questions about this course, please do not hesitate to email me or come to my office hours.