Math 275-03 **Spring 2015**

Course:	**Analytic Geometry and Calculus III**
Professor:	Lyudmyla Barannyk
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Office Hours:	MWF 3:30 - 4:30 pm or by appointment
Book:	*Calculus* by William L. Briggs & Lyle Cochran
Time:	MWF 1:30 pm - 2:20 pm
Location:	TLC 022

Course web site: http://www.webpages.uidaho.edu/∼barannyk/Teaching/Math275.html

There is a class email list: math275-03-sp15@uidaho.edu. You can make an alias for it. You can use the email list to ask me questions that might be of interest to others in the class. You can also email me at barannyk@uidaho.edu with other questions.

Topics:

- Vectors and Vector-Valued Functions (Chapter 12)
- Functions of Several Variables (Chapter 13)
- Multiple Integration (Chapter 14)
- Vector Calculus (Chapter 15)

Exams: There will be three in class "midsemester" exams and a final. Before each exam there will be a review session.

Exams: *Exam 1*, Wednesday, February 11 in class, TLC 022
Exam 2, Wednesday, March 11 in class, TLC 022
Exam 3, Wednesday, April 15 in class, TLC 022
Final Exam - Tuesday, May 12, 3 – 5 pm, TLC 022

Calculator Policy: Calculators are not to be used on exams.

Homework: Written homework will be assigned and suggested on a weekly basis. Random assigned problems will be graded. Students are expected to read the corresponding sections of the book and do the assigned and suggested homework in order to gain a better understanding of the course material.

Matlab Project: There will be one Matlab project to learn how to use the software Matlab to visualize some geometric objects. Matlab is available in all computer labs on campus as well as via VLab.

Course Grade: Exam 1: 20%; Exam 2: 20%; Exam 3: 20%; Final Exam: 30%; Homework and Matlab project: 10%

Math 275 Course Content Outline

The students will learn the following topics.

- Fundamental notions of higher dimensions
  - Vector geometry and analytic geometry of $\mathbb{R}^3$
  - Calculus of vector valued functions with applications to motion in space
  - Functions of several variables, including graphs and level curves
- Differential calculus in higher dimensions
  - Differentiation of functions of several variables, including partial derivatives, the chain rule, directional derivatives, gradients, and differentials
  - Optimization problems for functions of more than one variable, including critical point analysis and Lagrange multipliers
- Integral calculus in higher dimensions
  - Double integrals in both rectangular and polar coordinates
  - Triple integrals in rectangular, cylindrical, and spherical coordinates
  - Change of variable theorem
- Vector calculus
  - Vector fields
  - Line integrals
  - Conservative vector fields and the fundamental theorem of line integrals
  - Greens Theorem