

**Course Outline**  
**Analytic Geometry and Calculus C - Spring 2004**  
**Math 243**

**Instructor:** Prof. John A. Pelesko

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**Office Hours:** Monday, Wednesday 1:30-2:30, Friday 11:30-1:00

**Teaching Assistant:** Paula Vasquez

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**Text:** Calculus, Fourth Edition, by James Stewart

**Software:** Maple, Microsoft Power Point, Adobe Acrobat Reader

**Course Description:** This class uses a mixed problem based learning - lecture format. Students will work in groups of four and analyze mathematical problems. These problems will often be real world problems, but note this includes the world of mathematics! Lectures and class discussion will also play a major role in the course. Students will learn to “think mathematically.” This includes developing the ability to see mathematics in the natural world, to see mathematics as a living discipline, to develop mathematical taste, and the mathematical sophistication needed to synthesize mathematical knowledge with itself and with other disciplines. The focus will be on concepts from multivariable calculus. In particular we will study

- Vectors, the geometry of  $\mathbb{R}^3$ , lines, planes, and quadric surfaces
- Vector functions, differentiation, integration, arc length, curvature
- Functions of several variables, partial derivatives, linear approximations
- The gradient, optimization, Lagrange multipliers
- Integration over regions in  $\mathbb{R}^2$  and  $\mathbb{R}^3$
- Vector fields, line integrals, Green’s theorem, curl, divergence, divergence theorem

The bulk of this material is in sections 13.1-13.7, 14.1-14.4, 15.1-15.8, 16.1-16.4, 16.7-16.8, 17.1-17.7, and 17.9. Additional material will be presented in class. You are responsible for this as well.

**Support Services:** There are many ways for you to obtain help in this class. You should take advantage of them as often as possible. These include:

- Classmates - in particular your team members. While homework you hand in must be your own, I encourage you to work with others on the problems.

- Office Hours - I maintain regular office hours and encourage you to use them. Please come prepared with questions! Office hours work best if you've tried the problems on your own and we can discuss where you are stuck. I'm also available by appointment.
- Textbook - Read the textbook! This particular text offers clear explanations. I suggest you read the text at least twice - once before a given lecture and once after a lecture.
- Maple - Maple is a valuable tool for this course. Take advantage of it! In particular, Maple is wonderful for visualizing surfaces and developing intuition.
- Recitation - You have a recitation section in this class. This time provides you with two things, a regular time for group meetings, and a chance to ask questions about the homework assignments. Your TA is also available to help you with Maple.

**Course Calendar:** The course calendar covering the period until the first exam follows. I will update the syllabus as the semester progresses to cover the remainder of the semester.

Date	Class Plan
2/10	Introduction to course and teams
2/11	Team project #1 distributed, preliminary work
2/13	Sections 13.1 and 13.7
2/16	Section 13.2
2/17	Section 13.3
2/18	<b>Team Updates</b> , group activities
2/20	Section 13.4
2/23	Section 13.4, <b>Add/Drop Day</b>
2/24	Section 13.5
2/25	<b>Team Presentations</b>
2/27	Section 13.6
3/1	Overview of 13.1-13.6
3/2	Section 14.1
3/3	Group activities
3/5	Section 14.2
3/8	Section 14.3
3/9	Section 14.3, 14.4
3/10	<b>Exam #1</b>

**Grading Structure:** Your final grade will be based on the following:

Discussion section (includes homework, quizzes)	10%
Exams (15% each)	45%
Project Team Grade	25%
Final Exam	20%

Note, an unclear answer is a wrong answer. On homework, exams, and group project reports, your ability to clearly communicate your understanding of the problem will be judged. Assignments should be neat, well organized, and understandable to a university student not in the class.

**Course Policies:**

- Homework assignments will be posted on the class website. Due dates will also be posted on the website. It is your responsibility to check for assignments regularly. The first assignment also appears below.
- All exams will occur in class on the days listed on the syllabus. There will be no makeup exams without a valid documented excuse and prior notification.
- All students are expected to abide by the university Academic Regulations for Undergraduates.

**Homework Assignment #1:** This assignment is due on 2/19. It should be handed in to your recitation instructor.

Section	Problems
13.1	7,11,31
13.7	62(M), 43, 53
13.2	4,13,23,29,35
13.3	1,11,17,29,51

(M) indicates an assignment that requires the use of Maple. You should provide clearly written answers to homework assignments. Remember, an unintelligible answer is a wrong answer.