

# Calculus for Social Sciences 2

MATH 126-03, MWF 1:00 - 1:50, O'Neil 112, Spring 2002

Dr. Gareth Roberts

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**Office hours:** Mon., Wed., 10:00 - 11:00, Tues. 1:00 - 3:00 or by appointment.

**Required Text:** *Applied Calculus for the Managerial, Life, and Social Sciences*, 5th Edition, by S. T. Tan.

**Web page:** <http://mathcs.holycross.edu/~groberts/Courses/MA126/homepage.html>

Homework assignments, schedule changes, exam materials, useful links and other important information will be posted at this site. Please bookmark it!

## Course objectives:

- Develop an understanding for the techniques and theory of single and multi-variable calculus.
- Learn some of the applications of calculus to the natural and social sciences.
- Become proficient at making clear and coherent mathematical arguments.
- Work and collaborate with your peers.

**Syllabus:** This course is primarily intended for Social Science majors (especially Economics or Accounting) or for students interested in fulfilling their Mathematics or Natural Sciences core requirement. The first two months will focus on the integration of functions of a single variable, including the Fundamental Theorem of Calculus, area under a curve, and various techniques of integration. We will then cover functions of several variables, including partial differentiation, extrema of functions of several variables, Lagrange multipliers and double integrals. (This material is usually taught in a third semester course in Calculus.) The course concludes with a brief tour of Differential Equations and Probability, subjects rich with applications to the natural and social sciences. The course material covers Chapters 6 - 10 of Tan's book.

**Homework:** There will be homework due every Wednesday at the START of class. Assignments will be posted on the course web page. There will be a list of problems for you to hand in, a nonempty subset of which will be graded. While you are allowed and encouraged to work on homework problems with your classmates, the solutions you turn in to be graded should be your own. Plagiarism will not be tolerated and will be treated as an Honor Code violation.

**NOTE:** LATE homework will NOT be accepted. The only excused homework which is late will be accompanied by a letter from the Class Dean. However, you will be allowed ONE "mulligan" over the course of the semester where you can turn in the assignment up to one week late.

It is highly recommended that you take advantage of the **Calculus Workshop**, a drop-in peer tutoring center, open Sunday through Thursday from 7:00 - 9:00 pm in SWORDS 302. This is an excellent place to get help while you are working on homework problems or studying for quizzes or exams.

**Calculators:** Certain assignments will necessitate the use of a calculator of the type TI-83 or higher model. Calculators which allow for multiple expressions to be entered and evaluated will be needed. However, do not expect to use your calculator as a mathematical crutch on exams. Both

graphing and symbolic computing via your calculator will NOT be allowed on exams and any abuse of such a policy will be considered a violation of the Honor Code.

**Quizzes and Exams:** There will be 3 quizzes and 2 exams, all in class. A comprehensive 3 hour final will be given at the end of the semester. The exam schedule is given below. Please make a note of these dates and plan accordingly. Any conflicts must be legitimate and brought to my attention well before the exam is scheduled. If you have any specific learning disabilities or special needs and require accommodations, please let me know early in the semester so that your learning needs may be appropriately met. You will need to contact Dr. Matthew Toth of Disability Services in Hogan 207 (x 3693) to obtain documentation of your disability.

Quiz/Exam Schedule:	Quiz 1	Fri., Feb. 8	In Class
	Exam 1	Wed., Feb. 20	In Class
	Quiz 2	Fri., March 22	In Class
	Exam 2	Wed., April 10	In Class
	Quiz 3	Fri., April 26	In Class
	Final	Fri., May 3	2:30 - 5:30 pm

**Honor Code:** At the conclusion of every quiz or exam, you are required to write and sign your name to the following honor pledge:

*I have neither given nor received aid on this examination.*

This is a written agreement between you and I that the work you are submitting is entirely of your own doing. By signing the pledge you are also stating that you did not allow another student to benefit from your work. Thus, allowing another student to copy off your exam is considered a violation of the Honor Code. Anyone who violates the Honor Code will receive a 0 for that assignment as well as possible further disciplinary action involving the Dean.

**Grade :** Your course grade will be based on your scores on the homework 20% , quizzes 20% , two in-class exams 30% and final exam 30% .

**How to do well in this course :**

- **ATTEND THE LECTURES, PARTICIPATE and ASK QUESTIONS**

I take pride in my lectures and will work hard to get you to master the course material. However, this will not be of much use to you if you don't attend class. Furthermore, certain class periods will involve your participation in activities designed to get you to think. These days should be fun, with me lecturing little and you participating greatly. Do not take for granted the privilege you have of attending college. Value your time here and I will make it worth your while.

- **DO YOUR HOMEWORK REGULARLY.**

The best way to learn mathematics is to *do* mathematics. This means mastering the material to the point where you could explain it to your classmates and your friends. "You don't really learn the subject until you teach it," is a common adage amongst mathematicians. It is not enough to know how to mimic an algorithm. An "A" student should be able to follow and propose arguments as to why an algorithm is working or not working.

- **WORK WITH YOUR CLASSMATES.**

Some of the best assets available to you are the knowledge and abilities of your peers. Learn to explain mathematics to your classmates. Mathematics can be fun and rewarding when there are people around you who enjoy figuring out problems as much as you do. Take advantage of this opportunity and organize study groups.