
Math 28 Calculus II

SMC Spring 2007

Professor: Adam Lucas
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Office Hrs: MWF 11:30-12:30

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Prerequisites A C- or better in Math 27

Course Credit and Schedule. One Saint Mary's College unit
Sec 1: MWF 9:10-10:10 Dante 204
Sec 2: MWF 10:20-11:20 Dante 204

Text: *Thomas' Calculus* by Weir, Hass & Giordano, 11th ed. (ISBN 0-321-18558-7)

Course Description: In Math 27 (or Math 13/14) you learned about derivatives and their applications. In Math 28 we will concentrate on integrals (the opposite of derivatives) and their applications. We will then study some advanced topics that utilize both derivatives and integrals, known as differential equations. Many of the fundamental laws of physics, chemistry, biology and economics can be formulated as equations involving derivatives (differential equations). We will finish this fun and exciting course by generalizing calculus in one variable to calculus in several variables (multivariable calculus).

Math 28 vs 38: Math, physics and chemistry majors should take Math 38 with Dr. Luquet. Math 38, although similar to Math 28, will have different topics important for further study in mathematics.

Homework: Problems will be assigned at the end of each class. It is important for your success in the course that you attempt to do those problems before the following class meeting. The struggle to solve them prepares you for the following class. Late homework will not be accepted for any reason.

You may discuss the homework by forming a group and studying with your peers. If you need help please come to my office or go to

Sichel 105, the Academic Support and Achievement Program, and ask for a tutor. Act fast and do not fall behind.

You will be allowed to make corrections on your homework in class only in **blue** ink. Graders will not grade anything written in blue ink. Hence it is important that at home, you do your homework in pencil or black ink.

Attendance:

Attendance is required and roll will be taken at the *beginning* of each hour. If you are not in your seat when roll is taken, you may be considered absent, so be on time. You are allowed to miss **three** classes without affecting your grade. After your grade is dropped one step (A- to B+, C+ to C, etc.) for each two successive misses. SMC athletes are excused to attend team commitments but are responsible for notifying me ahead of time (see below).

Exams:

There will be three midterm examinations and a final exam. Suppose a student receives the following grades.

First Midterm	B
Second Midterm	C
Third Midterm	B-
Final Exam	C+, C+
Homework Grade	A-

Then the lowest of the Midterm/Final Exam grades above is dropped. If you miss a midterm exam that is the grade you drop. The final grade for the course is the average of the remaining five grades, in this example a B-. The Homework Grade cannot be dropped.

Exam Dates:

Midterm exams:

Friday, March 9 classtime 1 hour exam
Friday, March 30 classtime 1 hour exam
Friday, May 4 classtime 1 hour exam

Final exam:

Time and location TBA --2 hour exa

Schedule of topics

- 2/12-2/19** Numerical integration: trapezoid and Simpson's rule, anti-derivatives, definite integral, fundamental theorem of Calculus.
- 2/19-2/26** Fundamental theorem of Calculus continued, natural logarithms, logarithms and exponentials, integration techniques: substitution method
- 2/26-3/5** Integration techniques continued: integration by parts, derivative of inverse functions
- 3/5-3/12** Applications of the theory of integration: finding areas between curves, review, **Test 1**
- 3/12-3/19** Applications of the theory of integration: volumes. Applications in physics: work
- 3/19-3/26** Applications in physics: fluid force.
- 3/26-4/2** Differential equations: slope fields, Euler's method, review, **Test 2**
- 4/2-4/9** Easter holiday
- 4/9-4/16** Differential equations: separable equations, exponential growth and decay, applications
- 4/16-4/23** Functions of several variables, partial derivatives
- 4/23-4/30** Linearization, tangent planes, directional derivatives, gradients
- 4/30-5/7** Chain rule, review, **Test 3.**
- 5/7-5/14** Extrema, double integral
- 5/14-5/18** Double integral continued, review