

## Math 150 A: Single Variable Calculus

Fall 2011

Instructor : Maria R. D'Orsogna

Lectures : Mon-Tu-Th 5:00 - 6:25pm in Chaparral 5124

Office hours : Mon 11-12 am and Thu 11-12 am in Santa Susana Hall 123

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Textbook : Calculus, 7th edition, Thompson, James Stewart, ISBN 9780538497817

### Course description:

Math 150A is the first section of your Calculus series. You will learn the basic concepts of limits, functions, derivatives, and integration. Why is Calculus so important? Because it represents the foundation of virtually all of the quantitative sciences. Physics, economics, biology, chemistry, engineering all rely on calculus to solve problems that cannot be tackled so easily just by means of simple algebra. When we deal with a system where events happen at random, we can use statistics to understand its overall behavior. But if we have a model which gives us a mathematical description of our system relating - for instance - the velocity of an object with time, or the concentration of a chemical species with distance, then it is useful to study these functions,  $v(t)$  or  $c(x)$ . Calculus allows us to do precisely this and to predict the behavior of our system in a precise, deterministic way. Indeed, the development of calculus goes hand in hand with that of the other applied sciences. Isaac Newton is known for the most famous physics law relating forces to acceleration,  $F = ma$ , and for the study of planetary motion, rotating fluids and gravitational motion on non-flat surfaces. In doing all this he used - and developed - many calculus tools himself, such as the product and chain rule of differentiation and the Taylor series. He and Gottfried Leibniz are considered the fathers of modern calculus.

### Evaluation:

Your grade will be based on three midterms (20 % of your grade) and a final cumulative exam (40 % of your grade). A grade of F will be given to those who do not show up for the

final exam. No make-up exams will be given, except for extreme circumstances, so talk to me within the first two weeks of class if there are time conflicts. The midterms will be on September 29<sup>th</sup>, October 27<sup>th</sup> and November 29<sup>th</sup>.

**Homework:**

Expect a lot of homework: math is like going to the gym, you will gain muscles only if you keep practicing and practicing. It would be great if you wanted to work out even more problems than what assigned to you, and just to become better. You will be asked to perform all your homework on a separate notebook which will be collected on the last day of class and used to determine borderline grades. Almost all test material will be taken straight from your homework, so if you are confident doing the homework, chances are you will perform well on the tests. Calculators are super-banned. Copying is not allowed. Please write out clearly on your tests, as it will make everyone's life easier.

**Requirements and Extra Help:**

If you got a grade of C-, C, or C+ in Math 104 or Math 105 or if you are repeating Math 150A you must attend a mandatory tutor lab, Math 150AL. Attendance is waived if you passed the lab course last semester. The lab course is graded on a credit/no credit basis and is open to anyone else who wants to attend. There is also an online tutoring center available Sunday - Thursday, 8 pm - 11 pm. You can post questions and the tutor should respond within 10 minutes. The website is here: <http://moodle.csun.edu/course/view.php?id=24028>

**Approximate Class Schedule:**

Week 1: Sections 1.1 - 1.3	Week 8 Sections 4.4 - 4.6
Week 2: Sections 2.1 - 2.3	Week 9: Sections 4.7 - 4.8
Week 3: Sections 2.4 - 2.5	Week 10: Sections 4.8 - 4.9
Week 4: Sections 3.1 - 3.3	Week 11: Sections 5.1 - 5.3
Week 5: Sections 3.4 - 3.5	Week 12: Sections 5.4 - 5.5
Week 6: Sections 3.7 - 3.9	Week 13: Sections 6.1 - 6.2
Week 7: Sections 4.1 - 4.3	Week 14: Sections 6.3 - 6.5

The date of final exam cannot be changed by the instructor. It will be a common final held on Friday, December 16<sup>th</sup> 2011 from 2 to 4 pm. The room will be announced later.