

**University of Virginia**  
**Course Syllabus: Math 1210-010**  
**Applied Calculus I (3 Credits)**  
**Fall 2015**

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**Instructor:** Mark Schrecengost

**Office:** Kerchof 121

**Office Hours:** Th 12:30-2:30, Fri 1-2 and by appointment

**Email:** mas3er@virginia.edu

**Course Location:** Clark Hall G004

**Course Meeting Time:** MWF 12:00-12:50

**Course Description:** Math 1210 is an introductory calculus course intended for students interested primarily in the life, managerial, and social sciences. Math 1210 is a coordinated course. This means that all sections cover the same material and take the same tests.

Calculus might be defined as a mathematical toolkit for analyzing functions. In virtually every area of human endeavor, functions are or can be used to further understanding and to assist in making predictions.

- A biologist might be interested in population as a function of time.
- A medical researcher might be interested in modeling blood pressure as a function of body weight or concentration of a drug in the bloodstream as a function of time since ingestion.
- A business executive might study the demand for a product as a function of its price, or, perhaps, as a function of size of marketing budget.
- An environmental scientist might be interested in the level of a toxin in a lake as a function of time.
- An aromachologist might be interested analyzing the ability of persons to concentrate as a function of level of a certain odor in their environment.
- A physicist might be interested in the position of a moving object as a function of time.
- An astronomer might be interested in star luminosity as a function of mass.
- A chemist might be interested in solution concentration as function of time.

Calculus provides two fundamental tools for analyzing functions: the derivative, which represents the rate of change of a function, and the definite integral, which can be used to compute the net change of a function over an interval. Derivatives and definite integrals are defined using the notion of “limit,” which is another tool of calculus.

This course introduces you to the tools of calculus.

**Course Objectives:** Upon successful completion of this course, students will

- be able to work confidently with functions represented verbally, numerically (by a table of values), graphically, or algebraically (by a formula) and be able to relate, as well as create, such representations;
- understand, be able to describe, and be able to apply the fundamental tools that calculus provides for analyzing functions: derivatives, which represent rates of change, and definite integrals, which can be used to compute net change;
- recognize when the tools of calculus can be applied to analyze a function and be able to communicate—with clarity and precision—the results of their analysis;
- be able to assess the quality of competing solutions to problems based on criteria such as clarity, efficiency, and elegance;

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- have further developed their problem-solving skills and strategies through modeling and solving a wide variety of problems, including some with real-world applications.

**Tips for success:**

- Use class time wisely: fully engage yourself in classroom discussions, asking and answering questions when appropriate.
- Seek understanding rather than trying to rely on memorized formulas.
- Take advantage of your instructor's office hours as well as help available in the Mathematics Tutoring Center (<http://people.virginia.edu/~psb7p/MTCsch.html>).
- It is nearly impossible to understand mathematics without working problems yourself. Thus, devoting sufficient time and attention to homework assignments is crucial to success in this course.
- Before beginning work on a homework-problem set assigned for a given section of the text, think about material discussed in class pertaining to the section--make sure you know and understand the definitions, theorems, concepts, and problem-solving principles emphasized in class. Try to work problems without looking at your notes or the exposition in the text. When you work homework problems without relying on notes, you're re-enforcing your understanding of the principles you reviewed just before beginning work on the problem set. Also, when you take this approach each homework assignment becomes a practice test.

**Am I in the right calculus class?** Read the Mathematics Department's [Placement Information](#).

**Text:** This course will cover chapters 1-6 (omitting some sections) of the course text *Applied Calculus for the Managerial, Life, and Social Sciences* by Soo T. Tan, 9th edition (Publisher: Brooks/Cole Cengage Learning). An electronic edition of the text is provided through the on-line homework system WebAssign, to which you must purchase access. Acquisition of a physical copy of the text is optional. You have a number of different purchase options: (1) purchase WebAssign single-term access on-line, which is the second option at <http://www.cengagebrain.com/course/site.html?id=1-1ZLX3QR> (the 1<sup>st</sup> and 2<sup>nd</sup> options at this site are not recommended), (2) purchase a single-term WebAssign-access card at the UVA Bookstore, (3) purchase a physical (loose-leaf) copy of the text, bundled with a multi-term WebAssign-access card, at the UVA Bookstore, or (4) purchase WebAssign via (1) or (2) and, if you want a hard-copy of the text, buy a used copy from the Bookstore. *There is a two-week "grace period" at the beginning of the term during which you have free WebAssign access to the text and course homework sets--go to <http://www.webassign.net/uva/login.html> and enter our class key "virginia 4033 4547".*

**Attendance Policy:** Regular attendance is expected as is class participation. Please arrive on time and stay for the entire class period. *Please silence all cell phones and other electronic devices during class.*

**Classwork:** At times throughout the semester we may have classwork where you will be expected to work individually or in small groups on problems. Additionally, in nearly every class there will be questions and examples presented in class. It is expected that for both types of classwork students will participate and engage in the material when asked, and students may also be asked to present their solutions to the class.

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**Homework:** Most homework for this course will be delivered through the WebAssign system: go to <http://www.webassign.net/uva/login.html> and enter our class key “virginia 4033 4547”. The system will give you immediate feedback and you will be allowed to attempt problems multiple times. You should record your work on a given problem by hand (just as if you were working through a test problem) and then enter your response into WebAssign. Keep in mind that when you respond to problems on tests and quizzes your work, as well as your answers, will be evaluated. When you have trouble with a homework problem, *be alert to what you learn as you work toward a solution*. WebAssign homework will typically be due on Friday at midnight.

There may also be times throughout the semester that, in order to facilitate greater practice certain topics, I may also assign written homework to be completed by hand. This will be incorporated as part of the homework part of the course grade. Late homework will not be accepted. At the end of the semester I will most likely drop 1-2 homework assignments when assigning the homework final grades.

**Midterm Exams:** There will be two evening midterm exams given during the semester. The exams are common to all sections of MATH 1210. The dates of these exams are as follows:

**Midterm Exam 1:** Wednesday, September 30<sup>th</sup>, 7-8:30 p.m.

**Midterm Exam 2:** Thursday, November 12<sup>th</sup>, 7-8:30 p.m.

For those students who have a time conflict with another course, a make-up exam will be given the following morning beginning at 7:20 am. If you have a direct conflict with either of the above listed exam times, please notify me as soon as possible and at least one week before the exam date. If proper notice cannot be given, then a request for the make-up exam will be honored only in cases of extreme emergencies and at my discretion. Midterm and final exams will be graded in common, with all Math 1210 instructors participating. Note that the makeup exam the following morning is only in the case of a scheduling conflict or extreme emergency. It is not to be used at the student's convenience.

**Final Examination:** The final exam will be given Thursday, December 10<sup>th</sup> from 7:00 pm – 10:00 pm. This is the time reserved for the MATH 1210 final exam by the University and all sections of MATH 1210 take the common final examination at the same time. Note that per University policy, the date and time of the final exam may not be changed without the proper paperwork from the Dean's Office. It is University policy that final exams may not be taken early. The final exam is comprehensive.

**Diagnostic Quiz:** At the end of the second week (that is, Friday, September 4), there will be a quiz (15-20 minutes) consisting of problems designed to test your “readiness for calculus” skills. Most of these problems will be similar to homework problems assigned during the first four class meetings. This quiz should be almost completely review material. It is designed to allow you to gauge your own preparedness for the course. Students scoring poorly on the diagnostic exam should consider talking with an academic advisor or dean to consider their options.

**Quizzes:** Students will be given weekly 10-15 minute quizzes. These quizzes will usually be given on Wednesday. They will be on the subject matter covered in the last week and will test the students' comprehension of the material as we move through the course. At the end of the course the lowest 1-2 quiz scores will be dropped when calculating the quiz grade.

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**Late work and Makeup policy:** Late homework will not be accepted. Students will be given ample time to complete assignments and will have time in office hours to ask questions about problems they may be having. Also, makeup quizzes will not be administered because of absence. Drop quizzes will ensure that your quiz grade will not be hurt by an isolated absence or two.

**Course Grade:** The course grade will be determined as follows:

WebAssign homework average:	15 points
Quiz average:	12 points
Diagnostic Quiz:	3 points
Midterm Exam 1:	20 points
Midterm Exam 2:	20 points
Final Examination:	30 points

Points earned in interval	Letter Grade
[98,100]	A+
[93, 98)	A
[90, 93)	A-
[87, 90)	B+
[83, 87)	B
[80, 83)	B-
[77, 80)	C+
[73, 77)	C
[70, 73)	C-
[67, 70)	D+
[63, 67)	D
[60, 63)	D-
Below 60	F

**Calculators:** Calculators will not be allowed for any quizzes or exams. Thus, as much as possible, try to complete homework problems without using a calculator. (For some homework problems, you will find a calculator or [Wolfram Alpha](#) to be helpful.)

**Learning Needs:** All students with special needs requiring accommodations should present the appropriate paperwork from the Student Disability Access Center ([SDAC](#)). It is the student's responsibility to present this paperwork in a timely fashion and follow up with the instructor about the accommodations being offered. Accommodations for test-taking (e.g., extended time) should be arranged at least 5 business days before an exam.

**Course Content:** We will cover the following topics from the course text:

- Chapter 1: Preliminaries
- Chapter 2: Functions, Limits, and the Derivative
- Chapter 3: Differentiation, skipping 3.4 and 3.7
- Chapter 4: Applications of the Derivative
- Chapter 5: Exponential and Logarithm Functions

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Chapter 6: Integration, up through 6.5.

**Important Dates:**

Last day to add a course: Tuesday, September 8<sup>th</sup>

Last day to drop a course: Wednesday, September 9<sup>th</sup>

Midterm Exam 1: Wednesday, September 30<sup>th</sup>, 7-8:30 p.m.

Last day to withdraw from a course: Tuesday, October 20<sup>th</sup>

Midterm Exam 2: Thursday, November 12<sup>th</sup>, 7-8:30 p.m.

Last day of classes: Tuesday, December 8<sup>th</sup>

Final Exam: December 10<sup>th</sup> from 7:00 – 10:00 p.m.

**Honor Code:** The Honor Code will be strictly observed in this class. Please remember to pledge each quiz and exam.

Any of the above policies or plans may be changed at any time during the semester at my discretion. Students will be informed of any changes.