

University of Virginia
Course Syllabus: MATH 1210–006
A Survey of Calculus I
Fall 2017

Instructor: Christina Osborne
Office: Kerchof 119
E-mail: cdo5bv@virginia.edu

Class location: Nau Hall 211
Class meeting time: Mon/Wed 3:30 - 4:45pm

Office Hours: (*tentative*)

Mondays 4:45 - 6pm
Wednesdays 4:45 - 6pm
Thursdays 1:20 - 1:50pm
(and by appointment)

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.
- 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 and their applications.

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;

- by modeling and solving a variety of problems including some with real-world applications, students will develop problem-solving skills and strategies such as breaking complex problems into simpler subproblems and testing solutions for plausibility. They will also come to understand how theoretical results and concepts can be developed and then used as tools for problem solving as well as further investigation;
- be able to assess the quality of competing solutions to problems based on criteria such as clarity, efficiency, and elegance.

Am I in the right calculus class? Read the Mathematics Departments [Placement Information](#).

Textbook: 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 through the WebAssign Website,
- (2) purchase a single-term WebAssign-access card at the UVA Bookstore,
- (3) purchase a physical 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 via the gray button on the upper right, enter our class key: **virginia 0900 9276**.*

Assessments

Diagnostic Quiz: During class on Wednesday, August 30, 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 appearing on the first two or three WebAssign homework assignments.

WebAssign Homework: The 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 0900 9276**. 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 exams 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.

Other Coursework: This might include (but is not limited to) worksheets, graded textbook homework, group work, group projects, and quizzes. No late assignment will be accepted.

Exams: Recall that one objective of the course is improvement of your problem-solving skills. To motivate you to develop these skills as well as to give you an opportunity to show you understand how to choose and apply appropriate calculus tools in your problem solving, exams will include some problems that are somewhat different from those you’ve solved before (but for which you have learned tools and strategies that will produce solutions).

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:

Midterms Exam 1: Thursday, September 28th, 7-8:30 p.m.¹

Midterms Exam 2: Thursday, November 9th, 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 a.m. 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.

The **final exam** will be given Tuesday, Dec. 12th from 7:00 to 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. It is University policy that final exams may not be taken early. The final exam is comprehensive.

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

Diagnostic Quiz:	5%
WebAssign Homework	10%
Other Coursework:	10%
Midterm Exam 1:	20%
Midterm Exam 2:	25%
Final Examination:	30%

The number of percentage points you earn will be mapped to a letter grade as follows:

A+: [98, 100]	A: [93, 98]	A-: [90, 93]	B+: [87, 90]	B: [83, 87]	B-: [80, 83]
C+: [77, 80]	C: [73, 77]	C-: [70, 73]	D+: [67, 70]	D: [63, 67]	D-: [60, 63]

In borderline cases, your letter grade may be higher—the one assigned to the interval immediately above the one your point total lies in.

Policies

Attendance and Classroom Etiquette: Regular attendance is expected as is class participation. Please arrive on time, turn off your cell phone, and stay for the entire class period. Unless otherwise instructed, **you may not use any electronic devices during class**. Studies suggest that student multi-tasking during class through use of smart phones and laptops hinders classroom learning for both users and *nearby peers*. Recording class without the instructor's approval is not permitted - this includes, but not limited to, video recording, audio recording, and capturing pictures.

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.

¹ *Fall reading days begin two days later (Saturday the 30th) : No student may take any exam early and no student will be allowed to postpone Exam 1 until after reading days because they've already made travel arrangements.*

Honor Code: The Honor Code will be strictly observed in this class.² Please remember to pledge each quiz and exam.

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 instructors office hours as well as the [Mathematics Tutoring Center](#).
- 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, think about material discussed in class pertaining to the set—make sure you know and understand the definitions, theorems, concepts, and problem-solving principles emphasized in class.

Course Content

We will cover the following chapters of 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 (skipping 5.3)
- Chapter 6: Integration, up through 6.5.

Important Dates

Classes Start	Tuesday, August 22rd
Last day to add a course	Tuesday, September 5th
Last day to drop a course	Wednesday, September 6th
Midterm Exam 1	Thursday, September 28th, 7–8:30 p.m.
Last day to withdraw from a course:	Tuesday, October 17th
Midterm Exam 2	Thursday, November 9th, 7–8:30 p.m.
Last day of classes	Tuesday, December 5th
Final	Tuesday, December 12th from 7:00–10:00 p.m.

Other Notes

- Please note that the syllabus may be adjusted according to the instructor’s discretion during the semester.
- Students are responsible for all announcements made during class time, posted on the course Collab site, and given via email.
- Within the first three weeks of the semester, all athletic students should present the appropriate letter from their coach if they will be missing class during the semester due to an athletic event.

²Recent honor violations committed by calculus students include: falsifying a doctor’s note in order to postpone a scheduled exam; presenting a false excuse for postponing an exam; and, seeking to boost an exam score by correcting mistakes on a graded, returned exam and then reporting “grading errors” on the exam. Note that calculus instructors scan graded exams.