



Beginning of Course Memo

APMA 1110: Single Variable Calculus II Sections 1 and 6

Fall 2017

How has calculus survived over three centuries? What can we use it for?

Can you find the value of the sine function on your calculator if the sine and cosine buttons are broken? How can you find the balance point of an irregular object, like FlatCOMman?



How can you describe the motion of an object in a plane or in space? The answers to these questions and more lie in calculus!

Throughout this course, in addition to learning the skills of calculus, we will work together to help you develop the work habits that are necessary for success as an engineering student and beyond. These habits will help you to learn independently and to be able to apply what you know to solve general problems, including those in everyday life.

What is success as a Calculus student?

At the end of this course you will be able to:

1. Solve integrals using a given toolbox of techniques.
2. Construct integrals to compute physical quantities like fluid force, work, center of mass, arc length, speed, area, and surface area of revolution.
3. Analyze parametric equations, polar equations, and conic sections for graphical features
4. Analyze sequences and series for convergence, and approximate and integrate functions using their Taylor series.
5. Describe how Taylor series, complex numbers, trigonometric functions, and exponential functions are related using Euler's Formula.
6. Demonstrate the ability to communicate mathematically both in written work and orally.
7. Demonstrate the ability to acquire knowledge through reading.

Words of Advice and Encouragement

Mathematics is learned by deep thought and by practice. Just as playing the piano and hitting a fastball cannot be learned by observation, the same is true for Calculus. Mathematics is not a spectator sport. Instead, you must practice.

As Michael Jordan has said, "I've missed more than 9000 shots in my career. I've lost almost 300 games. Twenty-six times, I've been trusted to take the game winning shot and missed. I've failed over and over and over again in my life. And that is why I succeed." Michael Jordan has also said, "Work ethic eliminates fear." You will encounter difficult problems that seem unsolvable at first. Do not be concerned by this as the same is true for me and for every other successful math student and professional. Often, you will need to work on a problem, set it aside, and try again later. When you eventually succeed in solving these problems, you will have achieved learning that lasts.

Together we will create a supportive learning environment in our class. There will be many opportunities for practice both in class and outside of class. Most of the time, the stakes will be low, but the practice will help you to excel when the stakes are higher (tests!). The more that you engage and persist, the more successful you will be.

How will your progress be evaluated?

Homework – There are two types of homework to help you to prepare and to apply your knowledge.

Pre-homework (5%) – Complete the assigned readings and/or watch any video provided before class according to the schedule below. Work through and submit the solutions for the assigned Webassign pre-homework problems before class. The goal of this practice is to prepare you for the work that will be done in class and to help you demonstrate your ability to learn by reading. Each Pre-homework assignment is equally weighted. There will be no extensions for completion of Pre-Homework, but approximately 5% of the pre-Homework point are eligible for forgiveness.

Homework (10%) – There are Webassign assignments for you to complete by Wednesday each week. These problems will help you to consolidate your learning. The Homework assignments are not equally weighted. You may request an extension for one Homework assignment during the semester as long as it is requested at least 6 hours before the midnight deadline.

Class Participation (10%) – Engineers generally work in groups. We will be doing group work in class throughout the semester. Our group work will contribute to a supportive learning environment. Working in groups allows you to ask and answer questions of your peers, providing an opportunity for you to develop your mathematical communication skills. Group work will also help to deepen your understanding of the concepts and applications. When a worksheet is provided in class, your group will submit one solution. Equal participation is necessary to maximize the benefit. Also, questions will be posted very often in class. You may discuss the questions briefly before answering.

Quizzes (5%) – There will be several short quizzes in class. The dates for these quizzes will be announced at least two days in advance. These quizzes will provide feedback to you on your ability to work independently.

Tests (45%) – There will be three tests in class to assess your mastery of the skills that you are learning. Check the schedule below for the test dates. There will be no make-up tests, unless truly exceptional circumstances arise which need to be duly documented to the instructor's satisfaction and announced early.

Final Exam (25%) – The final exam will assess your mastery of all of the skills that you will need to go forward in your study of calculus. Check the schedule below for the final exam date and time. Early examinations are not permitted by UVA policy.

Instructor: Meiqin Li

Albert Small Building, Room 112D

meiqinlitamu@gmail.com

Course Meeting:

Section 1, MWF 9:00-9:50am, THN E303; T 8:30-9:20 am, OLS 009

Section 6, MWF 10:00-10:50am, THN E303; TR 1:00-1:50 pm, CHEM 005

Office hours: T 9:30am-10:30am, W 2-4pm, TR 9:30-11:30am, and by appointment.

GTA workshops in THN A238:

Monday 12:30-16:30 Bingrong Sun

Tuesday 14:00-18:00 Bingrong Sun

Wednesday 14:00-18:00 Alex Chen

Thursday 15:00-19:00 Alex Chen

Required Resources:

Calculus, Early Transcendentals by Stewart, 8th edition with Webassign access

Honor Code:

We will contribute to a community of trust by adhering to the honor code.

You may give and receive assistance with homework, and the classroom work will be collaborative.

Tests and quizzes will be pledged.