University of Virginia
Course Syllabus: Math 1320
Calculus II (4 Credits)
Spring 2019

Prerequisite: Math 1310 or AP Calculus credit (level AB). This material is covered in Chapters 1-6 of our text (which you should review as needed).

Course Description: Math 1320 is a second calculus course intended for students interested primarily in the natural sciences but is open to all students.

Because this is a second course in calculus, you already know that calculus provides two fundamental tools for analyzing functions: the derivative and the definite integral. In this course, you will learn additional techniques for computing integrals as well as additional applications of integrals. You will be introduced to mathematical modeling with differential equations, learning two integration-based techniques for solving such equation as well as one technique for finding approximate solutions. You will learn new ways of describing curves in the plane and will apply the tools of calculus to analyze these curves. You will study how to define as well as to represent functions by power series.

Course Objectives: Upon successful completion of this course, students will be able to

- Explain the Big Idea of Accumulation in terms of the definite integral, Series, and Power Series.
- Acquire the skills to calculate definite integrals, determine convergence (or radius of convergence)
  for series and Power Series, and to create Taylor Series.
- Be able to apply the ideas of accumulation to calculate areas, volumes, and lengths.
- Be able to apply and combine ideas of accumulation in new contexts not specifically covered in the text.

ICE and Preparing Before Class. We think it's super helpful to your learning if you begin to think about new material *before* you come to class. So we've spent quite a bit of time developing some tools to help you do just that.

- I=Inform. We're going to help "prime the pump" for new ideas/information by asking you to watch a couple of pre-class videos before each class period.
- C=Confirm. But of course we don't want you to watch videos passively. So we will ask you to confirm to yourself and to us how you understand the new ideas by taking a brief online quiz. *We will look at how you do on the prep problems and tailor the in-class experience to focus on what you need.*
- E=Extend. Class time will be spent extending your understanding. We will have much more time to help you wrestle with the harder concepts during class because of all the work you have done.

We know that this means that Math 1320 is going to be a bit more work up front. But we really believe that this cycle will pay off when you begin to work on the homework after class and prepare for the exams.

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

Midterm Exam 1:	25%
Midterm Exam 2:	25%
Final Examination:	30%
Homework:	20%

- WebAssign and written HW 10%
- Prep Problems , quizzes, and other classwork 10%

Midterm Exams: There will be two evening midterm exams given during the semester. The exams are common to all sections of MATH 1320. The dates of these exams are as follows:

Midterm Exam 1: Wednesday February 20th, 7-8:30 p.m.
Midterm Exam 2: Wednesday, April 10th, 7-8:30 p.m.
Final Exam: Thursday, May 2nd from 7-10p

Midterm conflicts: For those students who have a time conflict with another course for the mid-terms, a make-up exam will be given the following morning beginning at 7:20 am. If you have a direct conflict with the above listed exam times, please notify your instructor 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 urgency and at the discretion of the course director. Midterm and final exams will be graded in common, with all Math 1320 instructors participating.

Final Exam conflicts: The date/time of the final exam is determined by the University. All sections of MATH 1320 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. *Conflicts with travel schedules will not be considered a valid excuse to miss the exam.*

Homework There are two primary forms of homework: online homework via WebAssign and written problem sets.
Online homework via WebAssign Most homework for this course will be delivered through the WebAssign system. 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*.

Written homework. We will have 5 problem sets this semester. It's imperative that a student solve and communicate solutions to problems in a written fashion. While collaboration on written homework is permissible, written solutions should reflect only the student's understanding of the problem. Simply copying answers from another student will be considered an honor violation.

Quizzes There will be weekly quizzes during the fourth-hour discussion-section. These quizzes will be approximately 20 minutes in length and will be based on the textbook problems assigned. Two quizzes will be dropped at the end of the semester. No make-ups are given on the quizzes. Failure to attend the full fifty minutes of any fourth class hour will result in a grade of 0% for the quiz on that day.

Text: *Single Variable Calculus: Early Transcendentals*, 7th edition, by James Stewart (Publisher: Brooks/Cole Cengage Learning). An electronic edition of the text is provided through the on-line homework system WebAssign, to which you must have access. (Acquisition of a physical copy of the text is optional.) Any student who purchased WebAssign for Math 1310 at UVA may already have WebAssign access for this course via the same code used for Math 1310. Try your code!

If you must purchase WebAssign for Math 1320, you have several 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 (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.
(5) purchase Cengage Unlimited. A "Cengage Unlimited" subscription gives students 1 semester access to all Cengage products for $119.99. In addition, Calculus-I students who purchase Cengage Unlimited obtain life-of-the-edition WebAssign access to their course text, allowing them to use WebAssign for their sequence's Calculus II course at no additional cost. Thus, for any Calculus I student considering continuing to Calculus II, Cengage Unlimited is probably the best WebAssign purchase option. For a Calculus II student who uses Cengage materials for another course, Cengage Unlimited would be the best WebAssign purchase option.

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, found on the front page of Collab.

Topics/Content:

- Chapter 5: Integrals (5.1-5.5)
- Chapter 6: Applications of Integration (6.1-6.3)
- Chapter 7: Techniques of Integration (7.1, 7.5)
- Chapter 8 Arc length and area of a surface of revolution (8.1-8.2)
- Chapter 10: Parametric Equations and Polar Coordinates (10.1-10.4)
- Chapter 11 Infinite Sequences and Series (11.1-11.11)
- Chapter 9 Differential Equation (9.1-9.4, 9.6)

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.

Important Dates:

Monday, January 14	Classes Begin
Monday, January 21	MLK Holiday - No Class
Monday, January 28	Last Day for Adding Classes
Tuesday, January 29	Last Day to Drop a Class
Wednesday, February 20th, 7-8:30p	Exam 1
Monday, March 18	Last Day to Withdraw from a Course
Wednesday, April 10th, 7-8:30p	Exam 2
Tuesday, April 16	Last Day to Withdraw from the University and Return for Fall 2019 Semester
Wednesday, April 24	Last Day to Request Change in Examination Schedule
Tuesday, April 30	Classes End
Wednesday, May 1	Reading Day
Thursday, May 2nd, 7-10p	Final Exam

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