

MATH 252X: CALCULUS II SPRING 2020 SYLLABUS

Instructor: Gordon Williams

Contact Details: Chapman 306D, giwilliams@alaska.edu, 474-2756

Office Hours: MWR 1-3 PM, and by appointment. To make an appointment, just drop me an e-mail. You are also welcome to stop by my office at any time and see if I am free (even without a scheduled appointment); however, there is a possibility that I may be busy/away if you haven't set up an appointment. These office hours are subject to change.

Class Meetings: MWF 11:45-12:45 PM R 11:30-12:30 PM Chapman 106.

Note: You are required to register for MATH 252L CRN 36515 or 36516.

Textbook: *Calculus: Early Transcendentals* (for Calculus I-III) or *Single Variable Calculus: Early Transcendentals* (for Calculus I-II) by James Stewart, 8th edition.

ISBN-10: 1-285-74155-2, ISBN-13: 978-1-285-74155-0

Teaching Assistant: Wesley Voley.

TA e-mail: wrvoley@alaska.edu

Course Web Page: <http://classes.alaska.edu>

Prerequisites: a grade of C- or better in Math 251X Calculus I or its equivalent

Credits: 4.

Course type: In person

COURSE OVERVIEW AND GOALS:

The course description in the catalog reads as follows:

Further topics in single-variable calculus, including techniques of integration; applications of integration; convergence of sequences and series; parameterized curves; and polar coordinates.

Here's how I think of the course.

A. We continue where Calculus I left off...integration. We will learn several very sophisticated new methods of integration and we will see some new applications.

B. Next, we will skip to Chapter 11 on *Sequences and Series*. This will be a completely new topic for most students and an incredibly interesting and surprising one. There are many ways this relates to other topics in Calculus. As an example, even after we are done with Chapter 8: Techniques of Integration, there will be many lovely, continuous, simple functions we still cannot integrate. The ideas in Chapter 11 will give us powerful methods for thinking about these, as well as mechanisms for calculating good approximations.

C. We will end with a couple of new methods of representing curves: parametric curves and polar coordinates. In addition to enlarging our repertoire of curves, it is a foreshadowing of some crucial ideas in Calculus III.

Learning Outcomes: Students who have successfully completed this course should be able to:

- Evaluate integrals involving the following techniques: integration by parts, trigonometric integration, trigonometric substitution, partial fractions.
- Apply integration techniques to application problems such as area between curves, volumes, centroid, average value, surface area, and the use of integrals in fields like physics, engineering, or biology.

- Evaluate improper integrals.
- Approximate the value of an integral numerically.
- Demonstrate an understanding of the definition of sequences and series.
- Determine the convergence, absolute convergence, or divergence of a series using standard tests.
- Compute Taylor series and/or Maclaurin series for a given function.
- Approximate values of a function using a Taylor polynomial and bound the error in the estimate.
- Apply the methods of the calculus to parametric equations and functions given in terms of polar coordinates.

COURSE MECHANICS:

Class meetings will be run as an interactive lecture as much as is possible. At the beginning of most class days several of you will be randomly selected to present problems from the daily homework at the board. I will then ask if there are any questions – about homework or topics recently covered in class. Also, I will ask lots of questions of you and encourage you to participate. We will work problems in class too. Lectures will be supplemented with the frequent in-class worksheets or lab activities. You are expected to participate in the lecture by asking questions! I will call on people at random during class.

Attendance is expected and strongly encouraged. Students who miss more than eight classes may be dropped at the discretion of the instructor. There will be a sign-in sheet at the front of the room. Except in extreme emergencies, absences *must* be approved in advance.

Daily homework: There will be a selection of problems from the textbook assigned for each class *that you will not turn in*. Instead, a random selection of students will be chosen before each class, and index cards with their names will be waiting at the front of the classroom. If your card is at the front of the room, you have the first 5 minutes of class to put a solution on the board. The problems are first-come, first-serve, so early birds get to present their choice of problem. You get two free passes during the semester (coupons are on the last page of the syllabus), which you may use to skip having to present a problem on a particular day. I will keep track of whether you presented a credible solution or not (it need not be correct; credible but incorrect solutions are useful for class discussion!), and your grade in this area will depend on what percentage of the time you presented a credible solution.

Online homework will be assigned multiple times each week using the online tool WebAssign through Blackboard. These assignments will cover some of the essential practice exercises necessary to make progress in Calculus. All deadlines are final.

Written homework problems will be assigned regularly. These will be due on a weekly basis and will typically consist of two to three more challenging problems from each section. These problems are especially good practice for learning how to write up a solution to a problem, and a selection (probably all) of these problems will be graded for both style and correctness. Late written homework will not be accepted. You will submit this homework through Gradescope (<http://www.gradescope.com>).

Quizzes will be given weekly. Quizzes will typically take 20-30 minutes of class time during your recitation section, and grading will emphasize your ability to demonstrate clearly that your answer

is the correct one. Make-up quizzes will only be given for excused absences at the instructors discretion. Calculators will not typically be allowed.

Exams will be written without the use of calculators. There will be three midterms and a comprehensive final exam. The midterms are tentatively scheduled for Friday February 7th, Friday March 6th and Friday April 10th. **The Final Exam will be 3:15-5:15 p.m., Tuesday, April 28.** Please note that this time is different than that for other courses scheduled in our time slot. It is DMS policy that final exams cannot be given early or late.

Make-up Midterms will be given only for excused absences. If your absence is due to a planned event (for example, traveling with a UAF sports team), you must make arrangements before the exam. If your absence is due to illness or injury, you must notify me *as soon as you are able*.

Grades will be calculated according to the following rubric:

		Grade	Percentage Earned
Written homework	7.5%	A+	[97,100]
Online homework average	7.5%	A	[93,97)
Daily homework	5%	A-	[90,93)
Quiz average	15%	B+	[87,90)
Midterm 1	15%	B	[83,87)
Midterm 2	15%	B-	[80,83)
Midterm 3	15%	C+	[77,80)
Final Exam	20%	C	[73,77)
		C-	[70,73)
		D	[60,70)
		F	[0,60)

I reserve the right to lower the thresholds. Also, in an effort to reward the student who makes significant improvement over the course of the term, a stellar grade on the final may overcome a deficiency on an earlier exam and improve a student's final grade.

(TENTATIVE) SCHEDULE OF TOPICS:

dates	topics	dates	topics
Week 1	6.1-3	Week 9	Spring Break
Week 2	6.3-5	Week 10	11.4-6
Week 3	7.1-3	Week 11	11.6-8
Week 4	7.3-4, Review, Test 1	Week 12	11.9-10
Week 5	7.5-7.7	Week 13	11.11, Review, Test 3
Week 6	7.8, 8.1-2	Week 14	10.1-3
Week 7	8.3, 11.1-3	Week 15	10.3-4, Review
Week 8	11.3, Review Test 2	Week 16	Review, Final

MISCELLANEOUS OTHER ISSUES:

Tutoring is available at no extra cost, on a walk-in basis, in the Math Lab in Chapman 305. Hours will be announced and posted on the door. A good way to use the Math Lab is to simply go there to do your homework, so that if any questions arise you can get immediate help.

Student protections and services statement: Every qualified student is welcome in my classroom. As needed, I am happy to work with you, disability services, veterans' services, rural student

services, etc. to find reasonable accommodations. Students at this university are protected against sexual harassment and discrimination (Title IX), and minors have additional protections. As required, if I notice or am informed of certain types of misconduct, then I am required to report it to the appropriate authorities. For more information on your rights as a student and the resources available to you to resolve problems, please go the following site: <http://www.uaf.edu/handbook/>.

Late Withdrawal: This semester the last day for withdrawing with a W appearing on your transcript is Friday, March 27th. If, in my opinion, a student is not participating adequately in the class, I *may* elect to drop or withdraw this student. Inadequate participation includes but is not limited to: missing an exam, repeatedly failing to take quizzes or complete homework assignments, regularly missing class meetings or having a failing average (below 70%) at the withdrawal date.

Academic Honesty: Academic honesty violations, including cheating and plagiarism, will not be tolerated. It is a violation of the Student Code of Conduct and will be punished according to UAF procedures.

Courtesies: As a courtesy to your instructor and fellow students, please arrive to class on time, turn your cell phones during class, and pay attention.

Daily Homework Pass Coupons:

ONE FREE PASS

You may submit this pass to get out of having to present a Daily Homework at the board. You may exercise this option *twice* this term. To use your pass, just write your name and the date in the spaces below, and submit to your instructor when you exercise your pass.

NAME: _____

DATE: _____

ONE FREE PASS

You may submit this pass to get out of having to present a Daily Homework at the board. You may exercise this option *twice* this term. To use your pass, just write your name and the date in the spaces below, and submit to your instructor when you exercise your pass.

NAME: _____

DATE: _____