

Syllabus for MATH 1272: Calculus II (Spring 2016)

Lecture 010

Schedule: 9:05 – 9:55 Monday, Wednesday, Friday, Anderson Hall 210.

Office hours: 10:00 – 11:00 Monday, 10:00 – 11:00, 1:00-2:00 Wednesday, Vincent Hall 459.

Instructor: Craig Westerland

- Vincent Hall 459
- cwesterl@umn.edu
- <http://www.math.umn.edu/~cwesterl>
- 612.625.0523

Course webpage: <http://www.math.umn.edu/~cwesterl/docs/1272Spring2016.html>

Discussion TAs:

- Discussions 011 and 014: Jiguang Shen, shenx179@umn.edu, 322 Vincent Hall.
- Discussions 012 and 016: Pak Yeung Chan, chanx305@umn.edu, 360 Vincent Hall.
- Discussions 013 and 015: Ashley Earls, earls006@umn.edu, 503 Vincent Hall.

Text: Stewart, *Calculus: Early Transcendentals*, volume 1, 7th edition, chapters 7-13.

Prerequisites: MATH 1271 or equivalent with grade of at least C-.

Summary of topics: Techniques of integration, including integration by parts, simple trig substitutions, partial fractions. Basic numerical integration; improper integrals; arc length; area of surface of revolution. Separable differential equations, Euler's method, exponential growth and decay. Parametric curves and polar coordinates. Review of conic sections. Sequences and series, comparison and ratio tests, Taylor series and polynomials. Vectors in three dimensions, dot product, cross product, lines, planes, cylinders, quadric surfaces; cylindrical and spherical coordinates.

Goals for the course: Calculus is both a beautiful mathematical subject in its own right, and incredibly useful in the physical sciences. In this course, we will address both of these aspects. While Calculus I introduced the main players in the story – the derivative and the integral – and how they relate, the focus of Calculus II is on their use, both within mathematics, and in applications. Broadly speaking, the class has four goals:

- Learning how to integrate complicated functions.
- Using integration techniques to solve differential equations, especially those coming from physical or social systems.
- Using sequences and series to compute/approximate numbers or functions.
- Studying geometric objects in two and three dimensions using tools from calculus.

Assessment: Has three components:

- 15%** Ten weekly quizzes, in discussion on Thursdays that are not exam days, the first week, or the last week. No make-ups, highest seven scores count.
- 45%** Three 50-minute exams, in discussion: Thursday 18 February, Thursday 24 March, Thursday 21 April.
- 40%** Final exam: **Monday, May 9, 1:30 pm-4:30 pm**, locations TBA.

The final grade distribution for each discussion in all lectures of MATH 1272 will be determined by its students' performance on the common final exam. An individual student's final grade within that distribution depends on all of the work of the course, including the work graded individually by that discussion's TA.

By University policy, a grade of A represents achievement that is outstanding relative to the level necessary to meet course requirements. A grade of B represents achievement that is significantly above the level necessary to meet course requirements. A grade of C represents achievement that meets the course requirements in every respect. A grade of D represents achievement that is worthy of credit even though it fails to meet fully the course requirements. Extra credit is not intended to be part of this course.

Calculator policy: Only scientific calculators are allowed on quizzes, exams, and the final exam. Scientific calculators are inexpensive, have one-line displays and cannot display graphs of functions, perform symbolic manipulations, or store text in memory. If you are unsure whether your calculator is allowed, check with the lecturer or with your TA before the day of the quiz or exam. Cellphones and internet-connected devices are not allowed on quizzes, exams, and the final exam.

Tutoring resources: Aside from the lecturer's and TAs' office hours, students might take advantage of tutoring that is offered through Smart Learning Commons and the Multicultural Center for Academic Excellence. The Undergraduate Office in the School of Mathematics maintains a list of private tutors available for hire.

Academic dishonesty: See the Student Conduct Code, a link to which is posted on the course website, for general information. Academic dishonesty, including use of an unapproved electronic device, will result in a report to the Office for Student Conduct and Academic Integrity, and penalties can include a grade of zero on the task in question and/or a failing grade in the course.

Policy Statements: on grade definitions, scholastic dishonesty, student conduct, sexual harassment, equity, diversity, equal employment, affirmative action, mental health and stress management services, and academic freedom and responsibility are available via links in part B of the document:

<http://policy.umn.edu/Policies/Education/Education/SYLLABUSREQUIREMENTS.html>

If you have a letter detailing accommodations, notify the lecturer and your TA as soon as possible.

Student Learning Outcomes: A student in MATH 1272, as in any mathematics course, will develop the following skills, identified in the University's Student Learning Outcomes:

- identify, define, and solve problems
- locate and critically evaluate information
- master a body of knowledge and mode of inquiry
- communicate effectively

Topics: Here is a *loose* plan of the subject, keyed to the relevant sections of the text.

1/20-22: 7.1, 7.2	3/21-25: Review, 11.1, 11.2
1/25-29: 7.3, 7.4	3/24: <i>Second exam</i> (ch. 9 & 10)
2/1-5: 7.5, 7.8	3/28-4/1: 11.3, 11.4
2/8-12: 8.1, 8.2, 8.3	4/4-8: 11.5, 11.6
2/15-19: Review, 9.1, 9.2	4/11-15: 11.8, 11.9,
2/18: <i>First exam</i> (ch. 7 & 8)	4/18-22: Review, 11.10, 12.1
2/22-26: 9.3, 9.4, 9.5	4/21: <i>Third exam</i> (ch. 11)
2/29-3/4: 9.6, 10.1, 10.2	4/25-29: 12.2, 12.3, 12.4
3/7-11: 10.3, 10.4, 10.5	5/2-5/6: 12.5, 12.6, review
3/14-18: <i>Spring break</i>	5/9: Final exam