

M172 Calculus II – Fall 2017

Instructor information:

Instructors: Kelly McKinnie & Eric Chesebro, Associate Professors of Mathematics

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Course description:

Offered autumn and spring. Prereq., M 171. Techniques of Integration. Area computations. Improper integrals. Infinite series and various convergence tests. Power series. Taylor's Formula. Polar coordinates. Parametric curves.

Learning Outcomes: The purpose of courses M171 and M172 are to learn the basic concepts in differential and integral calculus. By the end of M172 students should be able to:

1. Use the integral to find the area between two curves, volumes of revolution, work and the average value of a function;
2. Apply integration by direct and trigonometric substitution, parts, and partial fractions. Trigonometric integrals;
3. Use the integral to find arc length
4. Explain and apply infinite sequences of real numbers, their monotonicity and boundedness, and the Monotonic Sequence Theorem;
5. Explain and apply convergent series of real numbers, geometric series, telescoping series, and the basic test for divergence;
6. Explain and apply the integral, comparison, limit comparison, and alternating series tests for series convergence;
7. Explain and apply absolute convergence and the ratio and root tests;
8. Explain and apply power series, radius of convergence, and the integration and differentiation of power series;
9. Explain and apply Taylor series and Taylor polynomial approximation of functions;
10. Explain and apply parametrized curves in rectangular and polar coordinates, their derivatives, arc lengths and enclosed areas.

Required textbook: Calculus (Single Variable), 6th edition, by Hughes-Hallett, Gleason, McCallum, et al. Available online and at the UM bookstore. The price at the bookstore is quite competitive, so I would recommend checking it out. Also available as an e-text at wiley.com.

Calculators: Calculators can be a useful tool for mathematics, making computations less tedious and aiding in exploration of sound mathematical intuition. However, we must be careful, many students rely too heavily on calculators which can hinder the development of reasoning, estimation, and mental mathematics skills. For these reasons, **calculators will NOT be allowed or needed on quizzes and exams.** In class we will use online tools for calculations and graphs.

Course Calendar:

Dates	Topic
Sept 21	Last day to drop, add, or make registration changes on CyberBear
Nov 2	Last day to drop classes w/o Dean's approval
Dec 12	Last class day and last day to petition to drop/add
Dec 18	Final exam scheduled Monday December 18, 6-8pm in Urey Lecture Hall, 101.

Required assignments and tests:

Homework: Working hard on the homework is how you will succeed in this class, so, take the homework seriously! It is OK to work together with your classmates on the homework assignments, but you are responsible for fully understanding the problem and solution. There will be three components to your homework.

1. Pre-class reading questions. Learning is a two-step process. First there is the transfer of information (from a source of knowledge, like an instructor or book, to the student), then there is the assimilation of that information by the student. Since the assimilation step is the more difficult of the two, we will try to tackle it during class time. This means that you will be **required** to do some of the transfer of information before class time. To help make this happen you will be required to answer reading questions prior to many class. The lowest 4 scores will be dropped. Before grading each question with a score between 0 and 1, I will ask myself "can I tell from the student's answer that s/he read the book and tried to answer the question correctly?". These assignments will be on Moodle.
2. Paper homework will be assigned weekly. Paper homework will be collected and graded for completion. The paper homework assignment will motivate in-class quizzes.
3. Online homework. To access the online homework, you can visit the website <http://lennes.math.umt.edu/webwork2> . From there you will be able to click on our class name (172-Calculus-II) and then login. Your user ID is your last name, your initial password is the last 6 numbers of your student ID. Please change your password. Let me know if you have problems logging in. If you registered for the class late I will need to manually enter you into the system.

Exams:

There will be 3 50 minute in-class exams during the semester. If you have a legitimate schedule conflict with an exam let me know as early as possible.

Final Exam:

The final exam will be held **Monday, December 18, 2017, 6:00 PM – 8:00 PM, Location Urey Lecture Hall, 101.** By enrolling in this course it is understood that you will be present for the final exam.

Course guidelines and policies:

Student Conduct Code

All students need to be familiar with the Student Conduct Code. You can find it in the "A to Z Index" on the UM home page.

Academic Honesty

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University.

Disability modifications

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and [Disability Services for Students](#). If you think you may have a disability adversely affecting your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommasson Center 154 or call 406.243.2243. I will work with you and Disability Services to provide an appropriate modification.

Grading policy

Item	Percentage
Pre-class reading Questions	5%
Homework/quizzes (online and written)	25%
In class mid-terms	50%
Cumulative final exam	20%