Catalog Description: Prereq. Math 121, or appropriate score on placement exam. Introductory course surveying the principal ideas of differential and integral calculus with emphasis on applications and computer software. Mathematical modeling in discrete and continuous settings. Intended primarily for students who do not plan to take higher calculus.

Goal: The purpose of this class is to show how certain mathematical concepts (and, in particular, notions of a function, derivative, integral, differential equation, etc.) can be naturally used to describe and analyze real life phenomena that involve change. After introducing and studying these concepts we will use them as tools for making and solving simple mathematical models. Some models will be formulated in terms of differential equations. We will use analytical methods and computer programs for exploring these models. Most examples will be drawn from the economics, the life sciences, and other disciplines. The students will learn the skills of differentiation, integration, simple model building and analysis.

Professor / Course coordinator: Leonid Kalachev

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Teaching Assistants: Michael Gilliam and Liam Rafferty. Information on their offices, office hours, etc., will be announced in class and on the course website.

Office hours: Leonid Kalachev: MWF 11 a.m. – noon, Room Math 309. The three TA’s will also have office hours, and you are welcome to go to any one of these (not just the TA for your section) for help.


Website: All the information pertinent to this course will be posted on the course website. In particular, the list of home work assignments, current lecture topics information, etc., will be placed there.

Schedule: The main content will be most of Chapters 1 – 7 and Chapter 10 of the text book. A tentative day by day schedule will be posted on the website.

Grading Policies: There will be three tests of 100 points each (the lowest of the three scores will be dropped). There are no make-up tests. There will be ten quizzes of 10 points each (the lowest two of the ten scores will be dropped). There are no make-up quizzes. After one test is missed, a second missed test will count as a zero except in case of verified illness, or other circumstance pre-approved by the course coordinator. An illness is verified by giving prior notice (for instance, by sending an E-mail to instructor), and by providing a note from the health service (or other physician). It is best to follow the notification/verification procedure for any test missed because of illness. When a test is returned, there is one week from the date of return for contesting the grading. After that period the grade will be accepted as final. There will be 120 point Final exam on Tuesday, May 6, from 10:10 a.m. to 12:10 p.m. A picture ID will be necessary to turn in the Final exam. Total maximal number of points (for 2 exams + 8 quizzes + final) is 400.

The grading scale is:

\[ [360, 400) \rightarrow A, \ [320, 360) \rightarrow B, \ [260, 320) \rightarrow C, \ [220, 260) \rightarrow D, \ [0, 220) \rightarrow F. \]

Exceptions to the above rules regarding taking tests, etc., may be made by the course coordinator on an individual basis. Also, extraordinary performance on the final may, at the instructor’s discretion, be the basis for raising a grade.
Hard working students will have an option which avoids taking the final. To not take the final (and get an A grade) one must meet all of the following criteria:

1. You must take all three tests given during the semester, and on every test the score must be above or equal to 90 points.
2. You must take all ten quizzes given during the semester.
3. The sum of all the points for tests and quizzes must belong to the A-interval $[360, 400]$.

This option does not automatically take effect; you must confirm your eligibility at the end of the semester with your TA or the coordinator!

**HW assignments and tests policies:** Home work assignments from the textbook will be given during the lectures. These assignments will not be graded and they do not need to be handed in. Instead, to check your work on the assigned problems, 8-minute quizzes will be administered during practice sessions with a small number of selected problems similar to those assigned. All the tests and quizzes are closed book, open note. That is, any notes you make during the lectures or at home (reading the text book or solving HW assignment problems) may be used during the tests and quizzes. Calculators/computers are also allowed in tests and quizzes. While out of class group discussions and group work on HW assignments are both encouraged, during the tests you must show your own individual work; you must not help others, and you must not seek help from others. 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. All students need to be familiar with the Student Conduct Code. The Code is available for review online at [http://www.umt.edu/SA/VPSA/index.cfm/page/1321](http://www.umt.edu/SA/VPSA/index.cfm/page/1321).

**Important dates:** Tests: February 22, March 21, April 25. Quizzes: January 31, February 7, February 14, February 28, March 6, March 13, April 3, April 10, April 17, May 1. Final Exam: on Tuesday, May 6, in NULH.

**Software, Calculators, Computers:** You are encouraged to use any hardware (calculators/computers) and software of your choice in this class. While all the assignments and tests may be done by hand, using, e.g., graphing and analytical manipulation capabilities of scientific calculators/computers will be helpful. Handouts on the usage of some particular software will be given during practice sessions.

**On reserve:** There will be a copy of the text book in the library on reserve.

**Drop policies:** You may drop the course on Cyberbear by February 11 and by a drop-slip by March 4 no questions asked. All late drop petitions (after March 4) will be denied unless they are related to health reasons.

**Important Note.** You should not be in this class if you are majoring in Mathematics, Chemistry, Physics, Computer Science or any other major which requires Math 152-153.