This syllabus contains information about this course. Please read this carefully and keep it for future reference (in case you lose it, a copy of the syllabus will be posted on the class Moodle page). In case you have questions, please do not hesitate to ask your instructor or the course supervisor. A good time for questions is right after class or during office hours (posted on the moodle page).

**SECTION** | **CLASS TIMES** | **ROOM** | **CRN** | **INSTRUCTOR**
--- | --- | --- | --- | ---
1 | 10:00 – 10:50 | Math 103 | 30281 | Karel Stroethoff (course coordinator)
2 | 12:00 – 12:50 | Math 311 | 30308 | Omid Khormali

**Contact Info:**

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Office</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karel Stroethoff</td>
<td>Math 307</td>
<td><a href="mailto:karel.stroethoff@umontana.edu">karel.stroethoff@umontana.edu</a></td>
</tr>
<tr>
<td>Omid Khormali</td>
<td>Corbin 365</td>
<td><a href="mailto:omid.khormali@umontana.edu">omid.khormali@umontana.edu</a></td>
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</tbody>
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**Prerequisite:** Precalculus (M 151) or College Trigonometry (M 122) or appropriate placement score (ALEKS placement ≥ 5 or M03-Maplesoft Calculus score ≥ 15).

**Moodle Page:** [https://moodle.umt.edu/course/view.php?id=30396](https://moodle.umt.edu/course/view.php?id=30396)

This site will contain all information on this sheet plus more. Homework assignments and other information pertinent to this course (such as office hours and tentative schedule) will be posted at this website, which will be updated frequently, so you should visit it regularly.

**Text:** *Active Calculus*, by Matthew Boelkins, which is freely available in various formats from [https://activecalculus.org/](https://activecalculus.org/).

**Description:** Differential calculus, including limits, continuous functions, Intermediate Value Theorem, tangents, linear approximation, inverse functions, implicit differentiation, extreme values and the Mean Value Theorem. Integral Calculus including antiderivatives, definite integrals, and the Fundamental Theorem of Calculus.

**Graphing Calculator:** Recommended. You can use your favorite brand/model. In the classroom a TI-84 or TI-86 will be used or an online graphing calculator such as desmos. Please note that calculators or computers capable of symbolic algebraic computations are not allowed on exams.

**Learning Outcomes:** The learning goals for this course are:

- Understand the idea behind the definition of a limit. Use the rules associated to limits to determine the limits of transcendental, rational and piecewise defined functions.
- Understand the idea behind and the rules of infinite limits, limits at infinity, asymptotes, indeterminate forms and how to use L’Hopital’s Rule.
- Explain the limit definition of continuity.
- Explain the limit definition of the derivative of a function, how it relates to the function itself, and how to use it to compute derivatives.
- Use derivatives to find tangent lines to curves and velocity for particle motion.
- Apply the power, sum, product, quotient and chain rules of differentiation.
• Use the derivatives of exponential, logarithmic, trigonometric and hyperbolic functions.
• Explain implicit and logarithmic differentiation.
• Apply the Intermediate and Mean Value Theorems.
• Graphically analyze functions including using continuity and differentiation to determine local and global extrema, concavity, and inflection points.
• Use the derivative to solve related rate and optimization word problems.
• Explain Newton’s Method for estimating zeros of a function.
• Explain the Riemann integral, areas under graphs, antiderivatives and the Fundamental Theorem of Calculus.

Grading:

• Prerequisite Test: There will be Prerequisite Test given in class on January 24. This test is given to motivate you to brush up on the prerequisite material you will need to be successful in this class. Calculus Coreq classes are scheduled on Thursdays to provide additional practice (more information below).

• Midterms: There are three Midterm Exams scheduled for the evenings (6:00 pm – 7:30 pm) of February 13, March 12, and April 16 (Thursdays).

• Final Exam: There will be a common Final Exam on all material covered in the course. This exam is scheduled for Wednesday, May 6, 6:00 pm – 8:00 pm (note this is in the evening).

• Homework: There will be frequent homework assignments with a mix of online and written assignments. More information is below.

• Quizzes: There will be regular quizzes based on assigned homework and examples worked in class. There will be no make-ups for missed quizzes. The lowest quiz score will be dropped. Quizzes will be announced at least two class periods prior to a scheduled quiz.

• Differentiation Skills Test: Each student must pass the Differentiation Skills Test (DST) in order to pass the course. A score of 80% is required to pass this test. This test will be given for the first time in class on Friday, March 26 (this in-class DST will be counted as a quiz). The DST may be retaken outside of class and must be passed by May 1 (the last day of regular classes) in order to pass the course.

Assessment: 20% Homework
10% Quizzes
45% Prerequisite Test (6%) and three Midterm Exams (13% each)
25% Comprehensive Final Exam

Grade Scale:

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<tr>
<th>≥ 93%</th>
<th>90%</th>
<th>87%</th>
<th>83%</th>
<th>80%</th>
<th>75%</th>
<th>70%</th>
<th>65%</th>
<th>62%</th>
<th>58%</th>
<th>55%</th>
<th>&lt; 55%</th>
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<tbody>
<tr>
<td>A</td>
<td>A−</td>
<td>B+</td>
<td>B</td>
<td>B−</td>
<td>C+</td>
<td>C</td>
<td>C−</td>
<td>D+</td>
<td>D</td>
<td>D−</td>
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MAKE-UPS: Make-ups for tests will be given under special and extenuating circumstances such as a family emergency or illness, provided that documentation (from the Health Service or Doctor) is furnished by the student. It is your responsibility to notify your instructor as soon as you know that you will miss any test and to make sure that a make-up is scheduled: please send an email so that it will be convenient to get back to you in order to schedule a make-up. Early final exams will not be given.

HOMEWORK: Working hard on the homework is how you will succeed in this course, so please take the homework seriously. It is okay to work together with classmates on homework assignments, but you must write up your own solutions in your own words. There will be two components to your homework:

1. Online homework given through WeBWorK. To access this homework, go to the webpage https://lennes.math.umt.edu/webwork2/171-Calculus-I/ to bring up a login window. As username use your last name (lowercase); your initial password is the last 6 digits of your student ID (with no dashes). Please change your password after logging in the first time by clicking “Password/Email” from WeBWorK’s Main Menu.

2. Written homework will be collected regularly. With regard to the write-up of your written homework the following:

   - Answers alone do not suffice. It is important you show your work and provide explanations for your answers.
   - It should be legible. Please write clearly. If the grader cannot read it, you will not get credit for it.

Late homework will not be accepted. The two lowest homework scores will be dropped. A list of all assigned homework will be posted on the Moodle page for this class.

COREQUISITE CLASS: A calculus corequisite class “Calc I Plus” will be offered this semester. This one-credit class is numbered M 191. The following two sections are scheduled for this semester:

   M 191, Section 05 (CRN: 35347), Thursday, 10:00 – 10:50, room 311,
   M 191, Section 06 (CRN: 35348), Thursday, 12:00 – 12:50, room 311.

Instructor for these classes: Daniel Gent (Office: Corbin 354, Email: daniel.gent@umontana.edu).

These coreq sections will be workshop-style classes designed to give extra practice for topics covered in class. Anyone is welcome to register and you may attend even if you do not officially register. If you do not score high enough on the Prerequisite Test you will be required to take the coreq to stay in the course. If you are unable to attend a coreq section due to scheduling conflicts, the problems will be assigned to you as extra homework.

MATH LEARNING CENTER: Free tutoring is available in the Math Learning Center (MLC) located in room Math 011 in the basement of the Math Building. No appointment is needed — just drop in to get help. The hours the MLC is open:

MLC HOURS
   Monday–Thursday 10 am – 8 pm
   Friday 10 am – 1 pm
   Sunday 5 pm – 8 pm
Some Important Dates: (See here for more.)

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>Jan 13</td>
<td>First day Spring Semester instruction</td>
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<td>Jan 20</td>
<td>Martin Luther King, Jr. Day: No Class</td>
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<td>Jan 24</td>
<td>Prerequisite Test (in class)</td>
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<td>Feb 13</td>
<td>Midterm Exam 1, 6:00 pm – 7:30 pm</td>
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<tr>
<td>Feb 17</td>
<td>Presidents’ Day: No Class</td>
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<td>Mar 12</td>
<td>Midterm Exam 2, 6:00 pm – 7:30 pm</td>
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<td>Mar 16-20</td>
<td>Spring Break</td>
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<td>Mar 23</td>
<td>Last day to drop or change grading option from letter grade to Credit/No Credit or vice versa using paper form. After this date a student is allowed to make these changes only by petition.</td>
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<tr>
<td>Apr 16</td>
<td>Midterm Exam 3, 6:00 pm – 7:30 pm</td>
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<tr>
<td>May 1</td>
<td>Last day Spring Semester instruction; last day to drop by petition</td>
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<tr>
<td>May 6</td>
<td>Final Exam, 6:00 pm – 8:00 pm</td>
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Petitions for Late Drops and Late Change of Grading Option: After March 23 until May 1, you can petition to drop the course or to change the grading option (though not to Audit). Note that not all petitions are approved, and that documented justification is required. Examples of documented circumstances that may merit approval are: accident or illness, family emergency, or other circumstances beyond the student’s control. The only acceptable reasons for a late change of grading option are the ones listed above, and the following reasons are not considered sufficient for approval: protecting grade point average (GPA), forgetting to turn in a change slip, or changes needed to retain financial aid or eligibility to engage in sports.

Study Advise: (i) Read through the material to be covered in the lecture before coming to class. This will be very helpful for taking notes in class and you will get more out of the lecture. The course will move rapidly. Daily reading in the textbook with paper and pencil in hand to verify the calculations (math books are not read as novels!) and doing all assigned problems will go a long way towards success in this course. You should plan to spend 2 hours outside of class for each hour in class (and more if you have missed a class!).

(ii) Do not equate understanding what the instructor does in class with being able to work (or solve) a problem yourself. When a problem or concept is explained in class you may understand this, but that does not imply that you can do a similar problem. You must work out the homework problems from beginning to end (without any help, see (iii)). The best way to learn mathematics is to do, to ask, and to do again.

(iii) Before starting your homework go over the concepts and examples from class and from the textbook. Memorize the formulas, algorithms, definitions, notations, etc. Then work through a few problems which have answers in the back of the book. Do the rest of your homework without using the book or your class notes.

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. All students need to be familiar with the Student Conduct Code. The Code is available for review online at http://www.umt.edu/student-affairs/dean-of-students/default.php.

Accommodation: The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors and Disability Services for Students (DSS). If you have a disability that adversely affects your academic performance, and you have not already registered with DSS, please contact DSS in Lommassen Center 154 (Phone: 243-2243). We will work with you and DSS to provide an appropriate accommodation.