MATH 172 | CALCULUS I | Fall 2017
MTWThF 10:00 -10:50 am

Professor:	Dr. Chris Black
Office:	HEC #268, Des Moines Center
Office Hours:	by arrangement
Office Phone:	×3850
Email :	`blackc@cwu.edu` *(It is most reliable to reach me via email)*

Required Text:	*Calculus, Single Variable*, Rogawski & Adams, Custom Printing for CWU. The course will cover selected material from Chapters 1, 2, 3 and 4.
Calculator:	A graphing calculator is required for class work and homework, but is not allowed to be used during tests.

MATH 172 LEARNING OUTCOMES:

This course introduces students to the interpretations, techniques and applications of differentiation. Upon completion of MATH 172, students will be able to:

1. Investigate limits and continuity of functions;
2. Compute derivatives using the definition;
3. Differentiate a variety of functions using the basic differentiation rules;
4. Demonstrate conceptual understanding of the derivative of a function, including
   (a) graphical representation related to the slope of the tangent line,
   (b) numerical representation related to relative rates of change,
   (c) modeling rate of change problems, including related rates.
5. Use first and second derivatives to
   (a) describe the behavior of curves,
   (b) solve optimization problems, and
   (c) create complete graphs of functions without using technology;

COURSE PHILOSOPHY:

Calculus is the study of how things change, and the entire course springs from the one simple idea of the derivative. While much of the class will revolve around computational techniques and formulas for computing derivatives, we will strive to develop conceptual understanding of this main idea, looking for ways to see how it applies in both later mathematics courses and courses in other disciplines for which this course is a prerequisite.

Many of the tasks that we will learn in this course can be accomplished using technology. However, I have found that reliance on technology detracts from understanding of the material. We will use graphing calculators and technology sparingly to explore ideas, but we will not rely on them during tests.

Course Topics:

- ▷ Continuity and limits
- ▷ The concept of a derivative
- ▷ Differentiation methods
- ▷ Applications of derivatives

Homework:

I will assign and collect even numbered problems from the text. If you are unsure about how to complete a problem, try the odd-numbered problem before it and check your answer in the back of the text. I will answer a fwe brief questions about the previous day's homework – and **only** the previous day's homework – at the beginning of class.

Mastery Quizzes:

There are 10 mastery quizzes that will be administered over the course of the quarter. These 15-minute quizzes can be retaken as often as needed until mastery of the topic is demonstrated. The first attempt will be administered during class, and it is your responsibility to arrange for a retake when necessary. Mastery is indicated by a quiz with no more than one incorrect response. The mastery tests measure procedural fluency in the following topics:

1. functions and expressions: linear, quadratic, trigonometric, exponential
2. limits & continuity: polynomial functions
3. trigonometric limits and limits at infinity
4. calculating derivatives by the definition and the power rule
5. calculating derivatives by the product and quotient rules
6. higher derivatives
7. calculating derivatives by the chain rule
8. implicit differentiation
9. derivatives of exponential and logarithmic functions
10. graphing functions

Each of the 10 mastery quizzes is worth 20 points; you will be assigned a score of 0 until the test has been passed, at which point you will be assigned a score of 20. There is no partial credit on a mastery quiz.

How to Succeed in this Course:

Daily attendance is expected, and considered necessary for success. If you need to miss class for some reason, it is your responsibility to find out what occurred in class while you were absent, from either another student or the professor. You are responsible for any announcements made in class regarding assignments and tests, whether or not you are present.

During class, you are expected to be alert and engaged. We will often do individual or group work during class, which clarifies or strengthens your understanding of the material. You are expected to work cooperatively with others, and to possibly present your work to the class.

All work handed in for the courses must be legibly written with correct mathematical notation and sufficient explanation that another student could follow your reasoning. A complete explanation is required to receive full credit on exams.

Tests:

We will have three tests during the quarter.The tests will take the full period and are worth 100 points each. If you need to miss an test for a school-sponsored event such as a field trip or participation in sports, a make up test will only be offered if arranged in advance. Otherwise, no make-up tests will be given unless you can provide documentation for an extenuating circumstance such as hospitalization or incarceration.

Final Exam:

The final exam is cumulative and MUST be taken during the officially designated time. The final exam will consist of three sections that roughly correlate to the material covered on the three tests. If it is in your favor, one (and only one) test score can be replaced by the scaled score on the corresponding section of the final exam. The final exam is worth 150 points.

Grading:

Homework:	Scaled to 150 points total
Mastery Quizzes:	200 points total (10 of these)
In-Class Tests:	100 points each (3 of these)
Final Exam:	150 points
Participation, Attendance & Citizenship:	25 points

GeoGebra:

I will use GeoGebra software to display interactive demos during class. You may join the GeoGebra group for the course so that you can also access these files. This is not a required component of the course. To join the class GeoGebra group, go to `www.geogebra.org/groups` and enter the code that will be given to you in class.

Participation & Citizenship:

You are expected to be awake, alert and attentive during class, and to participate in group or pair activities as they arise. This may include presenting your work to the class at the board or using the document camera. Citizenship addresses your behavior and comportment with class members and the instructor. We each need to be respectful of other students and differing ideas within our learning community.

Honor and Respect:

Each of us should consider our placement at this institution to be a privilege. We need to have respect for one another, and for ourselves. In light of these facts, cheating in any form will not be tolerated. You are encouraged to work together on homework problems, however anything you turn in with your name on it should have been written by you alone. Any infractions may result in a zero for the assignment, a failing course grade, and the possibility of disciplinary action by the university.

Disability Services:

If you have a disability and require accommodations for this course, please speak with me privately as soon as possible so that your needs may be appropriately met. If you have not already done so, you will need to register with Disability Services. You can register with Disability Services at http://www.cwu.edu/disability-support/quick-links. If you have any questions or concerns, you can contact Adam Haizlip, Interim Associate Director for Westside Student Life, at 206-439-3800 extension 3818 or email Adam.Haizlip@cwu.edu.

I retain the right to change the policies contained in this syllabus as dictated by developments during the quarter.