

## Math 5A-58592 Calculus I

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**Semester/Year:** Summer 2022

**Units:** 5

**Location:** ONLINE ONLY

**Zoom Office Hrs:** Mon & Wed 9am-10am,  
Tues & Thurs 12-1pm

**Instructor:** Kelly Winter

**Phone number:** (559) 638-0300 ext 3471

**Email:** Canvas Inbox

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**Length:** 6 weeks (June 6 – July 15)

**Prerequisite:** Math 3A or 4B and Math 4A

**Basic Skills Advisory:** Eligibility for  
English 1A or 1AH

**Final Exam:** Due Thursday, July 15th

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This class is online only and asynchronous. There are no mandatory zoom or class sessions.

### Welcome to Calculus I

Are you ready for an intense 6 weeks of Calculus! It is my desire to help each one of my students succeed and gain confidence in their calculus skills. I believe that all students can succeed if they stay organized, set aside consistent DAILY work time, complete all assigned work, ask questions, write good notes, and prepare for exams. I am here to guide you through the course, answer questions and encourage you to work hard.

There are many excellent resources available to you virtually through Reedley College. Other students in class are a good resource and I would encourage you to form small groups to study and do homework together virtually. If you have an unanswered question, please utilize the ZOOM sessions where I will be available to answer questions from Homework and notes, and prepare for exams.

Other available resources are:

- The Math Center is functioning ONLINE this summer. You can meet one-on-one with a tutor. We have great tutors available for Calculus. Please utilize this incredible resource. More information will be available on Canvas.

### Course Description

This course is an introduction to calculus, analytic geometry, differentiation and integration of polynomial, exponential, logarithmic and trigonometric functions. Topics include limits, curve sketching and applications.

### Student Learning Outcomes

MATH-5A SLO1: Evaluate limits using graphical, analytical, and tabular techniques.

MATH-5A SLO2: Calculate and interpret the derivatives of algebraic, trigonometric, and transcendental functions.

MATH-5A SLO3: Translate problems from the physical, life, and social sciences into mathematical models and apply appropriate techniques to solve

MATH-5A SLO4: Calculate the integrals of algebraic, trigonometric, and transcendental functions.

**Textbook** Open Stax Calculus Volume 1. This is a free textbook available online throughout the course in modules.

**MyOpenMath:** Our class will rely heavily on the use of online materials. To access our course materials and homework assignments, you will need to log in to MyOpenMath via Canvas. This is a FREE program that allows you to do your homework and assessments online with support. You will need to register the first time you click on an assignment.

**Scanning App:** You must also be able to scan your work from exams. There are many free scanning options on most smart phones. I know iPhones have a scanning option from the Notes app. I have also used the free app Genius Scan and Adobe Scan. Please make sure whatever scanning app you use that you can scan multiple pages into ONE document. It is very difficult to grade exams when I have to download multiple files for one assignment.

**Desmos.com:** We will utilize desmos.com for graphing. You may also use a graphing calculator to check work but you must be able to complete the work without one, and show your work for assignments and exams.

**Screencast-O-Matic:** This is a FREE video website that allows you to create a video of your computer screen. We will have a couple of assessments that require you to create a screen cast of your work. There are other websites that can do the same thing so if you are familiar with another video maker program you are welcome to use another.

**Communication Policy:** I will send a weekly video explaining the weeks assignments and expectations. These will be found in Canvas under **modules**. I will be available via **Zoom** for questions during the following dates/times (MW 9-10am, TTH 12-1). If you have questions outside of these times you can send me an email through Canvas inbox or set-up another time for a Zoom meeting. I will respond within 24 hours, and if I have not responded in this time, please re-send your email to make sure that I did receive it.

**Attendance Policy:** Your attendance is tracked by your participation and completion of materials online. By Wednesday, June 8 you must register for MyMathLab through Canvas and complete the first three assignments (1.1-1.3) or you may be dropped from the course. Please email me if you are having trouble and need additional time. My intention is to find out which students are not active in the course and give those "seats" to the students on my waitlist.

**Late Assignments:** Due dates are designed to keep you on track for completing the material on time. However, it is important that all assignments be completed even if late. Therefore, late work can be turned in until the day of the test for full credit. Exams must be completed by the due date. Only rare exceptions will be granted. Please contact me

**Exams and Final Exam:** There will be online tests in MyOpenMath, however, you must complete the test on paper with pencil, and work must be uploaded to the appropriate Canvas assignment using scanning apps such as Genius Scan or CamScanner. I will use your work to assign partial credit for the exams. You may request a make-up if you are unsatisfied with your grade. The test must be completed by the due dates. Test corrections can be done for partial credit as allowed by instructor. When you upload your work for the exam you may add a note for the questions that you missed and re-do them for partial credit. The final exam can be used to replace a test score.

### Assignment Point Values

Assignment	Value
Homework & Quizzes	25%
Chapter Exams	75%

### Final Grades

Letter Grade	%
A	89.5 -100
B	79.5 – 89.4
C	69.5 - 79.4
D	59.5 - 69.4
F	0-59.4

### Grading Policies/Rubrics

Please monitor your grade on Canvas. It is your responsibility to make sure that your grade is accurate. If there is a discrepancy, please email me ASAP.

### ACADEMIC DISHONESTY

Students at Reedley College are entitled to the best education that the college can make available to them, and they, their instructors, and their fellow students share the responsibility to ensure that this education is honestly attained. Because cheating, plagiarism, and collusion in dishonest activities erode the integrity of the college, each student is expected to exert an entirely honest effort in all academic endeavors. Academic dishonesty in any form is a very serious offense and will incur serious consequences.

**Cheating** is the act or attempted act of taking an examination or performing an assigned, evaluated task in a fraudulent or deceptive manner, such as having improper access to answers, in an attempt to gain an unearned academic advantage. Cheating may include, but is not limited to, copying from another's work, supplying one's work to another, giving or receiving copies of examinations without an instructor's permission, using or displaying notes or devices inappropriate to the conditions of the examination, allowing someone other than the officially enrolled student to represent the student, or failing to disclose research results completely.

**Plagiarism** is a specific form of cheating: the use of another's words or ideas without identifying them as such or giving credit to the source. Plagiarism may include, but is not limited to, failing to provide complete citations and references for all work that draws on the ideas, words, or work of others, failing to identify the contributors to work done in collaboration, submitting duplicate work to be evaluated in different courses without the knowledge and consent of the instructors involved, or failing to observe computer security systems and software copyrights. Incidents of cheating and plagiarism may result in any of a variety of sanctions and penalties, which may range from a failing grade on the particular examination, paper, project, or assignment in question to a failing grade in the course, at the discretion of the instructor and depending on the severity and frequency of the incidents.

*NOTE: If you have a verified need for an academic accommodation or materials in alternate media (i.e, Braille, large print, electronic text, etc.) per the Americans with Disabilities Act or section 504 of the Rehabilitation act please contact me as soon as possible.*

*Please refer to SCCC D polies for guidance on all matters relating to this course.*

**Objectives :** In the process of completing the course, the student will:

- I. Compute the limit of a function at a real number.
- II. Determine if a function is continuous at a real number.
- III. Find the derivative of a function as a limit
- IV. Find the equation of a tangent line to a function.
- V. Compute derivatives using differentiation formulas.
- VI. Use differentiation to solve applications such as related rate problems and optimization.
- VII. Use implicit differentiation.
- VIII. Graph functions using methods of calculus.
- IX. Evaluate a definite integral as a limit.
- X. Evaluate integrals using the Fundamental Theorem of Calculus.

## **Course Outline**

Math 5A Calculus I course outline (6 weeks)

Unit 0 Introduction to course materials, classmates and precalculus material

Unit 1 Limits

Week 1: The idea and definition of limits, and techniques for computing limits, Infinite limits and limits at infinity, Introducing the derivative and slope of the tangent line

Week 2: Instantaneous and average rate of change, and Exam 1 (start unit 2)

Unit 2 Derivatives 1

Week 3: Techniques of differentiation, product and quotient rules, Derivatives of trigonometric functions, the chain rule and implicit differentiation and Exam 2

Unit 3 Derivatives 2

Week 4: Derivatives of logarithmic, exponential, and inverse trigonometric functions, Analysis of functions and their graphs and maxima and minima, the mean value theorem, linear approximation, and differentials, L'Hopital's rule and Exam 3

Unit 4 Integration

Week 5: The indefinite integral, integration by substitution, and approximating areas under curves, The fundamental theorem of calculus and the definite integral, Evaluate the definite integral as a limit and Exam 4

Unit 5 Applications

Week 6: Related rates, optimization problems and applications to rectilinear motion, Rolle's Theorem and cumulative review, and Final exam.

## **Course Outline Details**

1. Definition and computation of limits using numerical, graphical, and algebraic approaches
2. Continuity and differentiability of functions
3. Derivative as a limit
4. Interpretation of the derivative as: slope of tangent line, a rate of change
5. Differentiation formulas: constants, power rule, product rule, quotient rule and chain rule
6. Derivatives of transcendental functions such as trigonometric, exponential or logarithmic
7. Implicit differentiation with applications, and differentiation of inverse functions
8. Higher-order derivatives
9. Graphing functions using first and second derivatives, concavity and asymptotes
10. Maximum and minimum values, and optimization
11. Mean Value Theorem
12. Antiderivatives and indefinite integrals
13. Area under a curve
14. Definite integral
15. Riemann sum
16. Properties of the integral
17. Fundamental Theorem of Calculus
18. Integration by substitution
19. Indeterminate forms and L'Hopital's Rule