

# Sierra College

## Math 30

### Calculus I

## Spring Semester, 2019

#### Instructor:

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#### Course Identification:

Math 30, Calculus I  
Course Code #41695  
V301, TTh 2:00-4:05  
4 units

#### Office Hours:

MW 9:30 - 10:30 am,  
TTh 10:15 am - 11:15 am,  
I am available in the Math Center  
on Saturdays, 8 am to 1 pm.

#### Math Lab:

The Math Lab is located in V329  
This is free, walk in tutoring.  
M: 8 am – 5 pm  
T: 8 am – 7:20 pm  
W: 8 am – 7 pm  
Th: 8 am – 7:20 pm  
F: 8 am – 4 pm  
S: 8 am – 1 pm

#### Materials:

Text: Calculus, Early Transcendentals,  
8<sup>th</sup> edition by Stewart ; Cengage or  
A free online text located at:  
<https://openstax.org/subjects/math>

#### Prerequisites:

Completion of Math. 27 and either  
Math. 12 or Math. 29 with grades of  
"C" or better, or placement by  
matriculation assessment process.

**Calculator:** A scientific calculator is  
required. In addition, a graphing  
calculator is recommended. Either a  
graphing calculator or a computer  
algebra system will be used  
periodically in the classroom for  
demonstration purposes. The  
graphing utility device is an excellent  
tool for acquiring the understanding  
of many of the concepts of this course  
due to its ability to rapidly investigate  
both the numerical and graphical  
aspects of these concepts. However,  
no graphing calculator or ipods (or

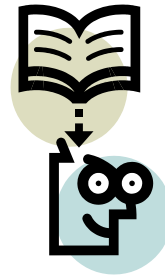
#### Withdraw Date:

February 10, without a W  
April 12, with a W

#### Holidays:

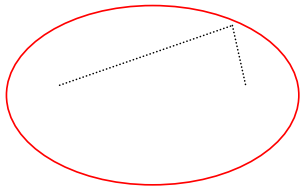
March 16 & 18, Spring Break

any other online devices) will be allowed on the exams and quizzes. But a scientific calculator, and only a scientific calculator, is allowed on exams and quizzes.



### Workload:

The material is treated with a scope and intensity that requires the student to study independently outside of class. This course requires a minimum of two hours of work outside the classroom for every one hour in class.



### Homework:

Homework will be assigned daily, but will not be collected. Instead, a quiz will be given each Thursday (except those days on which we have an exam) covering the material from the previous homework.

### Exams:

There will be three 100 point exams and a 150 point comprehensive final exam. The lowest of the four regular exam scores or the total quiz score will be dropped in the computation of the final course grade. The exam dates are given below:

- Exam I: February 21
- Exam II: March 14
- Exam III: April 4
- Ex IV: May 2
- Final Exam: Week of May 22

### Attendance:

Attendance is not incorporated in the final course grade. Nevertheless, a solid attendance record is necessary to succeed in a course that is rigorous and fast paced. While in the classroom, please be responsible with the use of your cell phone.

### Grading:

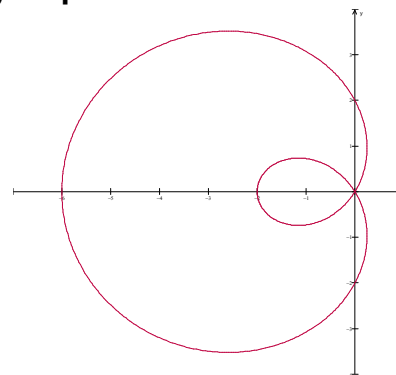
Quizzes: 100 pts  
Exams: 400 pts  
Final Exam: 150 pts

### Quizzes:

There will be more than 10 quizzes, worth 10 points each. Only the top 10 scores will be used in the computation of your final course grade.

### Group Work:

Working with other students outside of class is strongly encouraged. The Math Lab is an ideal location for working with your peers.



### Honesty Policy:

Cheating is of course forbidden. College

policy on cheating, as outlined in the student conduct code, will be strictly enforced.

### Drop/Refunds:

A student must drop him/herself in order to be eligible for a refund. Instructor drops do not generate refunds.

### Student Outcomes:

Through homework assignments, quizzes, exams, projects and classroom discussions, the student will:

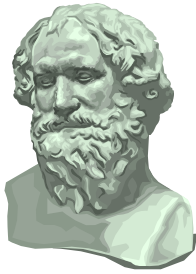
1. Evaluate limits of functions using limit laws, the definition of a limit, or L'Hopital's Rule; and utilize limits to determine continuity.
2. Calculate derivatives and integrals of algebraic and transcendental functions.
3. Translate, model, and solve applied problems utilizing derivatives and integrals.
4. Construct graphs of algebraic and transcendental functions using their derivatives.
5. Logically present clear, complete, accurate, and sufficiently detailed solutions to communicate.

### Other Services:

The college tutor lab, in which one-on-one tutoring arrangements can be made, is located in the LRC 402. The proctoring center is located in LRC 441. A student ID must accompany the student if services here are accessed.

### Topical Outline:

- I. Review
  - A. Algebra of Functions, Including Composition
  - B. Graphing Functions, Including Shifting and Scaling
  - C. Inverse Functions
  - D. Exponential and Logarithmic Functions
- II. Limits and Rates of Change
  - A. Discussion of the Tangent and Velocity Problems
  - B. Limit of a Function
  - C. Calculating Limits using Properties of Limits
  - D. Formal Definition of a Limit and  $\delta - \epsilon$  proofs
  - E. Continuity
  - F. Applications
    1. Tangents
    2. Velocities
    3. Other
- III. Derivatives
  - A. Definition of the Derivative of a Function
  - B. Differentiation Formulas
  - C. Derivatives of Functions
    1. Polynomials
    2. Exponential Functions
    3. Trigonometric Functions
    4. Inverse Trigonometric Functions
    5. Logarithmic Functions
  - E. Chain Rule
  - F. Implicit Differentiation
  - G. Higher Order Derivatives
  - H. Related Rates
  - I. Differentials: Linear & Quadratic Approximations
- IV. Curve Sketching and Additional Applications
  - A. Maximum and Minimum Values of a Function
  - B. Mean Value Theorem
  - C. Monotonic Functions and the First Derivative Test
  - D. Concavity and Points of Inflection
  - E. Limits at Infinity; Horizontal Asymptotes
  - F. Curve Sketching
  - G. Applied Maximum and Minimum Problems
  - H. Indeterminate forms and L'Hopital's Rule



- I. Newton's Method
- J. Antiderivatives
- V. Integration
  - A. Summation Notation
  - B. Area under a Curve
  - C. The Definite Integral
  - D. Fundamental Theorem of Calculus

**If You Want Your Work to Be Accepted and Graded, Then the Following Must Be Followed:**

- Remove any fringe from paper torn out of spiral notebook.
- Do not use graph paper unless it is used solely for graphing.
- All work must be clear and organized.
- A full name must be included.
- Any take home work must be turned in at the very beginning of class on the next class meeting. No late materials will be accepted.
- All paper turned in must be on paper that is approximately 8½ X 11.

**Harassment and Discrimination:**

Sierra College is committed to providing a safe learning environment, free of harassment and discrimination as described in District policies found on our website. It is my goal that you feel you can share information related to your life experiences in classroom discussions, in your written work, and in our one-on-one meetings and I will seek to keep information you share private to the greatest extent possible; however, I am required to report information about incidents of gender based discrimination, violence and harassment to the College's Title IX Coordinator.