MATH 150 CALCULUS WITH ANALYTIC GEOMETRY I FALL 2025

INSTRUCTOR

Dr. Collins

WEBSITE

www.collinscalculusclass.org

OFFICE

During class and via Zoom.

OFFICE HOURS

During class and by appointment, I am very available for zoom sessions. The link is on my website.

CONTACT

The REMIND APP is best, you will join the group on the first day.
E-mail collinscalculusclass@gmail.com for HW assignments only.

LECTURE

Lectures are on YouTube, the link is on my website.

PREREQUISITES

Math 141 (Precalculus) with a grade of "C" or better, or equivalent.

TEXT

None, see Class Policy.

DESCRIPTION

This course is a primary introduction to university-level calculus. The topics of study include analytic geometry, limits, differentiation and integration of algebraic and transcendental functions. Emphasis is placed on calculus applications. Analytical reading and problem solving are required for success in this course. This course is intended for the transfer student planning to major in mathematics, computer science, physics, chemistry, engineering, or economics.

COURSE LEARNING OUTCOMES

Students should be able to apply math definitions, properties and appropriate techniques in a variety of problem solving situations.

Students will be able to demonstrate knowledge of the interrelatedness of the concepts within a particular course and among different courses.

Students will be able to demonstrate an ability to communicate mathematical reasoning in the context of solving a problem with clarity and detail.

Students will be able to choose and apply appropriate mathematical tools and technology to various problems.

STUDENT LEARNING OBJECTIVES

Upon successful completion of the course the student will be able to:
Evaluate various types of limits graphically, numerically, and algebraically, and analyze properties of functions applying limits including one-sided, two-sided, finite and infinite limits.
Develop a rigorous epsilon-delta limit proof for simple polynomials.
Recognize and evaluate the "limit" using the common limit theorems and properties.
Analyze the behavior of algebraic and transcendental functions by applying common continuity theorems, and investigate the continuity of such functions at a point, on an open or closed interval.
Calculate the derivative of a function using the limit definition.
Calculate the slope and the equation of the tangent line of a function at a given point.
Calculate derivatives using common differentiation theorems.
Calculate the derivative of a function implicitly.
Solve applications using related rates of change.
Apply differentials to make linear approximations and analyze propagated errors.
Apply derivatives to graph functions by calculating the critical points, the points of non-differentiability, the points of inflections, the vertical tangents, cusps or corners, and the extrema of a function.
Calculate where a function is increasing, or decreasing, concave up or concave down by applying its first and second derivatives respectively, and apply the First and Second Derivative Tests to calculate and identify the function's relative extrema.
Solve optimization problems using differentiation techniques.
Recognize and apply Rolle's Theorem and the Mean-Value Theorem where appropriate.
Apply Newton's method to find roots of functions.
Analyze motion of a particle along a straight line.
Calculate the anti-derivative of a wide class of functions, using substitution techniques when appropriate.
Apply appropriate approximation techniques to find areas under a curve using summation notation. 19. Calculate the definite integral using the limit of a Riemann Sum and the Fundamental Theorem of Calculus. Apply the Fundamental Theorem of Calculus to investigate a broad class of functions.
Apply integration in a variety of application problems: including areas between curves, arclengths of a single variable function, and volumes.
Estimate the value of a definite integral using standard numerical integration techniques which may include the Left-Endpoint Rule, the Right-Endpoint Rule, the Midpoint Rule, or the Trapezoidal Rule. 22. Calculate derivatives of inverse trigonometric functions, and hyperbolic functions.
Calculate integrals of hyperbolic functions and of functions whose anti-derivatives give inverse trigonometric functions.

QUESTIONS

Problems with residency or registration should be resolved with Karina Sandoval (ksandoval@sdccd.edu) Student Services, I-400, 7250 Mesa College Drive, San Diego, 92111.

CLASS POLICY

Since there is no physical text, access and familiarity with my website will be crucial to your success in this course. You will visit the Math 150 tab which will direct you to the Math 150 homepage. All of the necessary material will be provided here to include the syllabus, class notes, worksheets, important dates, HW problems and any video links. You will read through the notes and watch any accompanying videos BEFORE class. Class sessions are intended to supplement and/or clarify any issues, I will not be providing an entire lecture again. Every Sunday by 5pm you will email me a picture of your completed HW for the sections covered that week. This will constitute your HW grade outlined below. Class attendance is mandatory unless you have spoken to me previously. Each class meeting will have a short required activity that will be graded.

EVALUATION

There will be 4 tests and a final exam. There will be NO make-ups on tests except in cases of extreme emergency. If you have an emergency then YOU MUST NOTIFY ME BEFORE THE TEST BEGINS. Every class session will have a required graded activity. There are no make ups on these activities so attendance is mandatory. Each activity will be 10 points and your final average in the class will be adjusted based on your activity grade. A completion rate of 95% or higher will result in adding 2 points to your average; from 90% to 94% results in no change to your average; and below 90% will result in a deduction of 2 points from your final average. Your homework grade will be calculated as follows: every assignment will be emailed and graded as either a 0, 1 or 2. A (0) means a significant portion of the assignment was not done; a (1) means most of the assignment was attempted; and a (2) means all problems were attempted with most complete and correct. At the end of the semester your final average in the class will be adjusted based on the HW you have completed. A HW completion rate of 95% or higher will result in adding 2 points to your average; from 90% to 94% results in no change to your average; and below 90% will result in a deduction of 2 points from your final average.

Any evidence of plagiarism on any assignment will result in a 0 for that assignment. Any infraction after that will result in a 0 for the COURSE, no exceptions.

Test 1 through Test 4	100 points each
Final	100 points
Activities	see above
HW	see above
Total	500 points

KEEP IN MIND THAT YOU NEED A C OR BETTER TO ENROLL IN MATH 151

IMPORTANT DATES

To withdraw without a W, the deadline is September 12th. The last day to withdraw from the course is October 24th.

ATTENDANCE

Attendance is required and you are responsible for all material covered. There are NO make-ups on any material unless you have spoken to me previously with regards to an excused absence. Exam make-ups will only be given in extreme emergencies and only if

you contact me BEFORE the test begins. If you happen to miss a class, contact a fellow student to find out what was covered, check the website or contact me. It is the student's responsibility to drop all classes in which he/she is no longer attending. It is at my discretion to withdraw a student after the add/drop deadline due to excessive absences. Students who remain enrolled beyond the withdrawal deadline will receive an evaluative letter grade in this class. This is an SDCCD class and it is critical you read and understand the following references. They can be found in the college catalog online or at the Office of Student Affairs (Room H-500).

Policy 3100: Student Rights, Responsibilities, and Administrative Due Process
Procedures 3100.1: Student Grievance Procedures
Procedures 3100.2: Student Disciplinary Procedures
Procedures 3100.3: Honest Academic Conduct Procedures

"Stay on Track to Keep Your Financial Aid! To continue to receive financial aid, you must meet the Financial Aid Satisfactory Academic Progress (SAP) requirement. Meeting SAP means that you maintain a 2.0 cumulative GPA, have successfully completed 67 percent of your coursework attempted within your educational plan, and will graduate on time. Failure to meet these requirements could result in the loss of your financial aid. For more information, including the appeals process, please visit https://www.sdccd.edu/students/financial-aid-scholarship/index.aspx

. If you have any questions or need assistance, please get in touch with the Financial Aid Office at cityaid@sdccd.edu / mesaaid@sdccd.edu / miraaid@sdccd.edu."

ACCOMMODATION OF DISABILITY

Students that have any disability, either permanent or temporary, which might affect their ability to perform in this class should contact me as soon as possible so that I can adapt methods, materials or tests as needed to provide for equitable participation.