

MATH 191: CALCULUS WITH ANALYTIC GEOMETRY LL

Citrus College Course Outline of Record

Heading	Value
Effective Term:	Fall 2025
Credits:	5
Total Contact Hours:	90
Lecture Hours :	90
Lab Hours:	0
Hours Arranged:	0
Outside of Class Hours:	180
Total Student Learning Hours:	270
Prerequisite:	MATH 190.
District General Education:	A3. Mathematics
Transferable to CSU:	Yes
Transferable to UC:	Yes - Approved
Grading Method:	Standard Letter, Pass/No Pass

Catalog Course Description

A second course in differential and integral calculus of a single variable: integration; techniques of integration; infinite sequences and series; polar and parametric equations; applications of integration. Primarily for science, technology, engineering & math majors. 90 lecture hours.

Course Objectives

- Evaluate indeterminate forms using L'Hopital's Rule.
- Find derivatives of transcendental functions.
- Evaluate definite and indefinite integrals using a variety of integration formulas and techniques.
- Use integration to solve applications such as work or length of a curve.
- Evaluate improper integrals.
- Apply convergence tests to sequences and series.
- Represent functions as power series.
- Graph, differentiate and integrate functions in polar and parametric form.

Major Course Content

1. Derivatives and integrals of inverse functions and transcendental functions such as trigonometric, exponential or logarithmic.
2. Indeterminate forms and L'Hopital's Rule.
3. Additional techniques of integration including integration by parts and trigonometric substitution.
4. Numerical integration; trapezoidal and Simpson's rule.
5. Improper integrals.
6. Additional applications such as work, volumes, arc length, area of a surface of revolution, moments and centers of mass, separable differential equations, growth and decay.
7. Introduction to sequences and series.
8. Multiple tests for convergence of sequences and series.
9. Power series, radius of convergence, interval of convergence.

10. Differentiation and integration of power series.
11. Taylor series expansion of functions.
12. Parametric equations and calculus with parametric curves.
13. Polar curves and calculus in polar coordinates.

Examples of Outside Assignments

1. Students will evaluate integrals by applying appropriate integration techniques (Improper integrals, integration by parts, trigonometric substitution and partial fractions).
2. Students will prove the convergence or divergence of an infinite series using the appropriate test of convergence (integral test, p-series test, comparison test, ratio test and/or alternating series test).

Instruction Type(s)

Lecture, Online Education Lecture

IGETC Area 2: Mathematical Concepts and Quantitative Reasoning

Yes