

MATH 181 – Calculus I (4 Credits)

DESCRIPTION:

Differentiation and integration of algebraic and transcendental functions with applications.

Prerequisite: MATH 127 or MATH 128 with a grade of C or better; or a Satisfactory ACT/SAT/Placement Test Score.

OUTCOMES:

- a. Analyze the concept of function limits and continuity.
- b. Differentiate functions using fundamental rules.
- c. Perform differentiation techniques such as the general power rule, chain rule, product rule and quotient rule.
- d. Evaluate definite and indefinite integrals.
- e. Differentiate and integrate transcendental functions.
- f. Apply and extend all concepts.

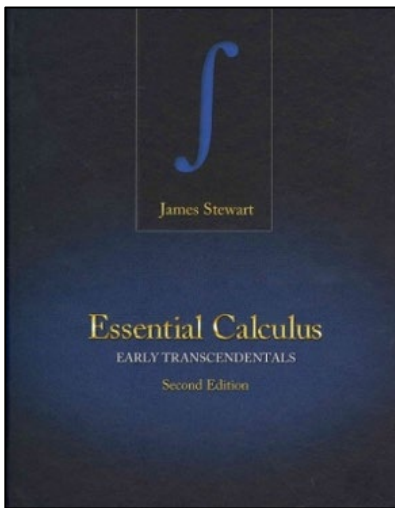
TEXT:

Title: *Essential Calculus: Early Transcendentals; 2nd Edition;

Author: James Stewart;

Publisher: Cengage;

ISBN-13: 9781133112280



*Note: Full-time instructors have the right to use no text or a different text.

OUTLINE:

- **Functions and Limits:** Functions, Limits of Functions, Continuity, Infinity (Stewart; Chapter 1)
- **Derivatives:** Derivatives, Rates of Change, Functions, Basic Differentiation Formulas, Product and Quotient Rules, Chain Rule, Implicit Differentiation, Related Rates, Linear Approximations (Stewart; Chapter 2)
- **Inverse Functions:** Exponential Functions, Inverse Functions and Logarithms, Derivatives of Logarithmic and Exponential Functions' Exponential Growth and Decay, Inverse Trigonometric Functions, Hyperbolic Functions, Indeterminate Forms and L'Hopital's Rule (Stewart; Chapter 3)
- **Differentiation:** Maximum and Minimum Values, The Mean Value Theorem, Derivatives and the Shapes of Graphs, Curve Sketching, Optimization Problems, Antiderivatives (Stewart; Chapter 4 (4.6: Newton's Method Optional))
- **Integrals:** Areas and Distances, Definite Integrals; Evaluating Definite Integrals, The Fundamental Theorem of Calculus, Substitution Rule (Stewart; Chapter 5)

EVALUATION:

Grades may be determined by student performance in one or more of the following areas: in-class tests, take-home tests, homework assignments, quizzes, special projects, papers, attendance, and class participation. Degree of importance and types of assessment used will depend on the instructor.

This course satisfies the math requirement in the General Education Core component for selected degree and certificate programs at CSN.