

Course Outline for MATH 103 (All Sections) Integral Calculus with Applications to Life Sciences

Overview

This course in integral calculus complements technical content with applications and examples drawn primarily from life sciences. The course starts by calculating areas and approximating the area using thin stripes as an introduction to Riemannian sums, which then lead to the “Fundamental Theorem of Calculus”. Applications of integration include determining the center of mass, calculating volumes and lengths of curves. After introducing different techniques of integration further applications are discussed in the context of continuous probability distributions as well as differential equations. After an exploration of series and sequences the course ends with an introduction to Taylor polynomials.

Course prerequisites: One of MATH 100, MATH 102, MATH 104, MATH 110, MATH 111, MATH 120, MATH 180, MATH 184.

Notes for the course are available [here](#).

Everything in this outline and much more may be found on the course webpage [here](#).

Course Calendar

Jan. 4-8: Areas and simple sums
Jan. 11-15: Areas and Riemannian sums
Jan. 18-22: The Fundamental Theorem of Calculus
Jan. 25-29: Applications of the definite integral
Feb. 1-5: Volumes and Length
Feb. 10-12: Techniques of Integration
Feb. 15-19: Midterm break
Feb. 22-26: Techniques of Integration, Improper Integrals
Feb. 29-March 4: Continuous probability distributions
March 7-11: Differential Equations
March 14-18: Sequences
March 21-23: Series
March 30-April 1: Series, Taylor polynomials
April 4-8: Taylor Polynomials

Grading Scheme

Weekly Webwork Homework: 13%
Biweekly Old School Homework: 7%
Two Midterms: $2 \times 15\% = 30\%$
Final Exam: 50%

Note: In order to pass the course a minimum mark of 40% on the final exam is required.