

Instructor	Dr. Amites Sarkar
Text	Calculus Volume 2 (online edition) Strang, G. and Herman, E.
Class meetings	MTWRF 1 pm
Calculator	Helpful, but not required Any TI calculator will do.

Course content

This course is an introduction to integral calculus. I will assume you remember a bit of differential calculus, although I will provide a short review at the start.

In terms of the book, I will aim to cover Chapters 1 to 3, and maybe Sections 4.1 and 4.2.

Relation to overall program goals

Among other things, this course will (i) enhance your problem-solving skills; (ii) help you recognize that a problem can have different useful representations (graphical, numerical, or symbolic); (iii) increase your appreciation of the role of mathematics in the sciences and the real world; (iv) inform you about the historical context of the area of mathematics studied.

Exams

Midterm 1	Friday 10 October
Midterm 2	Friday 31 October
Midterm 3	Friday 21 November
Final	Tuesday 9 December 1–3 pm

Grading

The midterms are each worth 25%, the final is worth 30%, and there will be 30 minute quizzes on 3, 17, 24 October and 7, 14 November, which will be worth 5% each. **I will take your 2 best midterm and 4 best quiz scores.** If you feel too ill to take an exam, don't take it, but bring a doctor's certificate to me when you feel better and I will make arrangements.

Office hours

My office hours are 12–12:50 on Mondays, Tuesdays, Wednesdays, Thursdays and Fridays, in 216 Bond Hall. My e-mail is amites.sarkar@wwu.edu.

Course objectives

The successful student will be able to:

- understand the definite integral as a limit of Riemann sums
- estimate definite integrals using Left Hand Sums, Right Hand Sums, Midpoint, Trapezoid, and Simpson Rules
- understand under what conditions a technique for estimating an integral results in an overestimate or an underestimate
- find antiderivatives graphically
- use the FTC to evaluate definite integrals and to represent a particular antiderivative
- compute antiderivatives and definite integrals using substitution (including change of limits) and integration by parts
- compute antiderivatives and definite integrals of rational functions which may require a technique of partial fractions or trigonometric substitution
- determine whether an integral with an infinite limit of integration converges
- compute improper integrals
- use integration to compute an area, volume, arc length, center of mass, work, and quantities related to density and fluid pressure
- clearly communicate mathematical reasoning in writing, with organized logical steps, and using appropriate mathematical terminology, notation, and representations.