

Calculus III
MA 242
Section: 002
Semester: 2026 Fall Term

Course Description

Third of three semesters in a calculus sequence for science and engineering majors. Vectors, vector algebra, and vector functions. Functions of several variables, partial derivatives, gradients, directional derivatives, maxima and minima. Multiple integration. Line and surface integrals, Green's Theorem, Divergence Theorems, Stokes' Theorem, and applications. Use of computational tools.

Student Learning Outcomes

1. Solve problems with lines, planes, and vectors in three dimensions.
2. Formulate and work with parametric and implicit equations for curves and surfaces in two and three dimensions.
3. Apply the concepts of differential calculus to functions with more than one input and/or output to solve problems involving geometry, rates of change, linearization, and optimization.
4. Set up and carry out multivariable integration to find lengths, areas, and volumes, to total density functions, and to take average values using appropriate coordinate systems.
5. Apply concepts in vector calculus to solve line and flux integrals and characterize conservative vector fields.
6. Accurately state and apply the integration theorems in two and three dimensions.
7. Identify concepts in multivariable calculus applicable to problems in science and engineering.
8. Communicate verbally and graphically about objects in three dimensions.

Student Performance Assessment

Grading

The student's numerical score will be determined by weighting course material as follows: 15% for WebAssign, 55% from four tests and 30% for the final exam. Final grades will be determined on the scale below.

We will use NC State's standard letter grading:

Low	Letter	High
$97 \leq$	A+	≤ 100
$93 \leq$	A	< 97
$90 \leq$	A-	< 93

$87 \leq$	B+	< 90
$83 \leq$	B	< 87
$80 \leq$	B-	< 83
$77 \leq$	C+	< 80
$73 \leq$	C	< 77
$70 \leq$	C-	< 73
$67 \leq$	D+	< 70
$63 \leq$	D	< 67
$60 \leq$	D-	< 63
$0 \leq$	F	< 60

Attendance

Attendance will be taken daily both in class and recitation. If you have no more than 4 unexcused absences and have taken all of the tests, then your lowest test grade will be replaced with your final exam grade assuming it is higher.

Course Materials Required to Purchase

ISBN: 9781337854580

Title: WEBASSIGN HOMEWORK NCSTATE CALCULUS 3

Author: NC STATE MATHEMATICS DEPARTMENT

Edition: 1

Required: REQUIRED

This course engages diverse scholarly perspectives to develop critical thinking, analysis, and debate and inclusion of a reading does not imply endorsement.

Students are responsible for reviewing the NC State University Policies, Rules, and Regulations (PRRs), which pertain to their course rights and responsibilities, including, but not limited to:

- [POL 04.25.05](#) Equal Opportunity and Non-Discrimination Policy Statement
 - [REG 02.20.01](#) Academic Accommodations for Students with Disabilities
- [POL 11.35.01](#) Student Conduct
 - [REG 11.35.05](#) Code of Student Conduct
 - [REG 11.35.02](#) Student Discipline Procedures
- [REG 02.20.03](#) Attendance Regulations
- [REG 02.50.03](#) Grades and Grade Point Average
- [REG 02.20.15](#) Credit-Only Courses
- [REG 02.20.04](#) Audits
- [REG 08.00.11](#) Online Course Material Host Requirements