

MATH 2654

Calculus III

Fall 2018

Instructor: Dr Scott Gordon

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Time and Location: TR 2:00–3:15 (7 Anthropology), F 11:00–11:50 (306 Pafford)

Office Hours: 8:30–9:30 TR, 1:00–2:00 TR, 9:00–9:50 F, or by appointment.

Textbook: *Multivariable Calculus, 7th Ed.*, by James Stewart. We will cover Chapters 12–16.

Course Description: The calculus of vector functions and functions of multiple variables.

Homework Exercises: Problems assigned after each lesson will be divided into two categories: exercises and turn-in problems. Exercises will not be graded and are designed to help you understand the important concepts and prepare for the tests.

Turn-in problems: There will be approximately 200 points worth of turn-in problems assigned during the semester. Your work should include a clear and complete explanation of how you solved the problem and (in accordance with university's honor code) cite any outside sources. If a problem is turned in late, 50% of its point value will be deducted from your grade for each day past the due date.

Math Tutoring Center: The Math Tutoring Center (205 Boyd) is an excellent resource for help with this class. The tutoring center hours can be found on the Math Department's website under the "Students" tab.

Tests: There will be four tests during the semester worth 80 points each.

Rescheduling a tests: If you have a valid reason for missing a test, you may be allowed to reschedule, but you must make arrangements with me *in advance*.

Final: There will be a *cumulative* final exam worth 160 points on Tuesday 12/11, 2:00–4:00.

Grading: Your numerical grade will be your total points (on homework, tests, and the final) as a percentage of the total number of possible points. Your letter grade will be determined according the following grading scale: A: 88–100, B: 76–87, C: 64–75, D: 52–63, F: 0–51.

Withdrawal: September 29 is the last day to withdraw from the course with a grade of W.

Learning Outcomes: The student will be able to

1. Perform standard vector operations.
2. Differentiate and integrate vector functions.
3. Compute arclength and curvature of vector functions.
4. Use calculus of vector functions to analyze motion in 3-dimensional space.
5. Compute partial and directional derivatives of functions of multiple variables.
6. Apply the chain rule to vector functions and functions of multiple variables.
7. Find extreme values of functions of multiple variables.
8. Use Lagrange multipliers to find extreme values of functions of multiple variables subject to constraints.
9. Compute double and triple integrals in rectangular, polar, cylindrical, and spherical coordinates.
10. Compute line and surface integrals.
11. Apply Green's Theorem, Stokes' Theorem, and the Divergence Theorem.