Official Course Description: This course is for students majoring in Chemistry, Computer Science/B.S., Geology, Geophysics, Mathematics, and Physics, as well as other students who have completed integral Calculus. Topics in this course include vectors in two and three dimensions, analytic geometry of three dimensions, parametric curves, partial derivatives, the gradient, optimization in several variables, multiple integration with change of variables across different coordinate systems, line integrals, and Green’s Theorem. Satisfies Core requirement for: Mathematics.

The table of contents of the notes (see below) gives a more detailed list of topics.

Instructor: Mark Reeder, Maloney 519, reederma@bc.edu

Office hours: Mon 2-3, Wed 2-3, Thurs 4-5 and by appointment.

Email is good for quick questions and hints.

Teaching Assistant: Cemre Yavuz, Maloney 537, yavuzc@bc.edu, Office hours TBA.

Discussion sections: In addition to the MWF lectures given by the instructor, there are once-a-week discussion sections meeting in Gasson 302.

MATH2251-02(11:00), MATH2251-03 (12:00), MATH2251-04 (2:00)

You must be registered in one of these sections. Discussion sections are led by the TA, and will include homework discussion, examples, and occasional new material. This is also a place for students to ask questions in a smaller group setting.

Course website: https://www2.bc.edu/mark-reeder/2202.html

Text: There is no textbook to purchase. The text for the course consists of the notes to appear here:

https://www2.bc.edu/mark-reeder/2202notes

These notes are in-progress and will be updated as the semester progresses.

Prerequisites: Differential and Integral Calculus of one variable along with all prerequisites for these courses. This is essential.

Homework: It will be assigned and collected every week, approximately. HOMEWORK WILL NOT BE ACCEPTED AFTER THE DAY IT IS DUE. Your lowest two homework scores will not count, so missing up to two assignments will not harm your grade. You can discuss homework problems with others, but what you hand in should be your own work. Write neatly and staple the pages in the upper left corner. Sloppy or unstapled homework may be rejected!

Exams: We will have two in-class exams on Friday February 15 and Friday March 29, along with a final exam Friday May 10 at 12:30 pm.
Electronics Resources for Learning and Homework: There are several no-cost options for visualizing geometry in three dimensions, such as

Mathematica (download via BC site license)

Geogebra 3D (geogebra.org)

Grapher (Mac only. You probably have it already in your Applications folder.)

VectorFieldGrapher, by Kevin Mehall (http://user.mendelu.cz/marik/EquationExplorer/vectorfield.html)

No Electronics on Exams: Exams will not involve difficult three-dimensional visualizations that might require computers. Therefore calculators, phones and other electronic devices will NOT be used on any exam. Using an electronic device on an exam will be considered as cheating. See www.bc.edu/integrity.

Make-up policy Unexcused absence from an exam results in a zero score. No exceptions. If you have a legitimate reason for missing an exam, you must arrange to take the exam before the scheduled day of the exam. If you are sick the day of the exam, or have a family emergency, etc. go to Health Services or your dean’s office; they will provide me with documentation of your illness or emergency.

If you are a student with a documented disability seeking reasonable accommodations in this course, please contact Kathy Duggan, (617) 552-8093, dugganka@bc.edu, at the Connors Family Learning Center regarding learning disabilities and ADHD, or Paulette Durrett, (617) 552-3470, paulette.durrett@bc.edu, in the Disability Services Office regarding all other types of disabilities, including temporary disabilities. Advance notice and appropriate documentation are required for accommodations.

Grades: The scores are weighted as follows. Homework: 30%, Exams: 20% each, Final: 30%. At the end of the course you will receive a number \( N \), using this formula:

\[
N = \left( \frac{3}{10} \times \text{HW \%} \right) + \left( \frac{2}{10} \times \text{Exam 1 \%} \right) + \left( \frac{2}{10} \times \text{Exam 2 \%} \right) + \left( \frac{3}{10} \times \text{Final \%} \right)
\]

Your grade will be determined by your value of \( N \), based on the following two rules: 1) Any student with the highest \( N \) gets an A. 2) Students with nearby \( N \)’s receive nearby grades. I will give estimates for your current grade after each exam is scored.

Advice:

1. Get started on the homework at least five days before it is due. Starting the night before may have worked for you in high school, but it won’t work in this class. Also you will get more out of office hours and discussion sections if you’ve worked on the problems first.

2. Do more problems than those assigned. I will provide extra problems, with solutions, for you to practice on without being graded.

3. Attend all discussions. These will have more examples, help with homework, and occasionally new material will sometimes be covered in recitations. At this point I see no problem if you attend a discussion section you are not registered in, but that policy could change if problems do arise.

4. Office hours, either with me or Cemre will be very helpful, perhaps even necessary for you to complete the homework. Do not expect much help from tutors, since they have not had Multivariable Calculus from our text-in-progress.

5. Ask questions! Any time, during lectures and discussions, and of course during office hours, ask questions! also by email for quick ones. Your fellow students will silently thank you for being brave enough to ask questions! It also helps me know what questions! Cemre and I should address.