

**Instructor** Amites Sarkar  
**Text** Calculus: Multivariable (5<sup>th</sup> ed.)  
Hughes-Hallett et al.

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**Calculator** TI-85 or higher

### Course content

This course is an introduction to multivariable differential and integral calculus, extending the concepts and methods in MATH 124 and MATH 125 to functions of several variables. Therefore, to be successful in the course, you will first need to understand single variable calculus very well. To help with this, we will spend the first week reviewing some important concepts from single variable calculus, and the first quiz (see below) will test your understanding of this material only. After that, we will cover Chapters 12–15 and Sections 16.1–16.5 of the book.

### Exams

**Midterm 1** Friday 1 February  
**Midterm 2** Friday 1 March  
**Final** Thursday 21 March 8–10 am

### Grading

The midterms are each worth 20%, and the final is worth 30%. In addition, there will be six 30 minute quizzes on 11 January, 18 January, 25 January, 8 February, 15 February, and 22 February, which are worth 5% each. 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 10–10:50 on Mondays, Tuesdays, Wednesdays, Thursdays and Fridays, in 216 Bond Hall. My phone number is 650 7569 and my e-mail is amites.sarkar@wwu.edu

## **Course Objectives**

The successful student will demonstrate:

1. Understanding of, and ability to use, functions of two or more variables, as described by tables of values, algebraic equations, graphs, or contour diagrams.
2. A thorough understanding of the algebraic and geometric properties of linear multivariable functions.
3. Understanding of vector algebra and its use in solving geometric problems.
4. Understanding and proficiency in the use of partial and directional derivatives.
5. Competence in computing partial derivatives, including use of the chain rule for functions of several variables.
6. The ability to set up and solve constrained optimization problems using Lagrange multipliers.
7. Understanding of, and ability to use and compute, definite integrals of functions of several variables.

## **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.