

**Professor Jenny Baglivo**

Voicemail: 2-3772

Email: baglivo@bc.edu

Office: Maloney Hall, Room 574

Office Hours: M-W-F 10-10:40AM and 12-12:40PM  
and by appointmentText: *Multivariable Calculus, C&C, 4<sup>th</sup> Edition*  
*Plus Student Study Guide*  
by James Stewart, Brooks/Cole, 2005Course webpage:  
<http://www2.bc.edu/~baglivo/MT202/MT202.html>

**Class notes**, with room to work out solutions to all class examples and exercises, are located on the course webpage. The class notes are divided into 4 “notebooks” (notebook1 through notebook4). You should download and print (at least) the first notebook tonight.

**MATH2202** is an introduction to multivariable calculus generally taken by mathematics and science students. You are expected to have a working knowledge of the techniques of single variable calculus, including differentiation, integration, sequences and series.

In single variable calculus we study functions of the form  $y = f(x)$ , where the independent variable (the input)  $x$  and the dependent variable (the output)  $y$  are real numbers. In multivariable calculus, either the independent variable or the dependent variable or both are lists of real numbers. For example, let  $x$  be the longitude,  $y$  be the latitude, and  $z$  be the height above sea level. Further, let  $t$  represent time (measured from a convenient initial time). Then, we may be interested in studying a temperature function:

$$f(x, y, z, t) = \text{temperature measured at position } (x, y, z) \text{ and time } t.$$

This is an example of a *scalar-valued* function since the output is a real number (or *scalar*).

By contrast, the output of a *vector-valued* function is a list of real numbers (known as *vectors*). For example, we can represent wind speed and direction at a given position and time using a list of three real numbers, say  $(u, v, w)$ , and study a vector-valued function of the form:

$$\mathbf{f}(x, y, z, t) = (u, v, w) = \text{wind velocity vector at position } (x, y, z) \text{ and time } t.$$

**Exams, homework, grading, attendance:** Your final grade will be a weighted average of three in-class exams (54%), written homework and class participation (14%), and a comprehensive final exam (32%).

(1) *Examination schedule:*

| Date:                         | Material from:                        |
|-------------------------------|---------------------------------------|
| Friday, September 25          | Chapters 9, 10                        |
| Friday, October 23            | Chapter 11                            |
| Friday, November 20           | Chapters 11, 12                       |
| Tuesday, December 15, 12:30PM | Chapters 9 through 13 (comprehensive) |

There will be *no makeup examinations*. If you have a serious reason for missing an in-class exam, then you must let me know *prior* to the examination time. If you have a serious reason for missing the final exam, then you must inform the Dean’s office *prior* to the final exam time. (The Dean’s office will then let me know that you will miss the exam.)

(2) *Calculator use on exams:* You may use a basic scientific calculator only (no stored programs, no symbolic manipulation). You may not use any other type of electronic device, including cell phone devices. You should be able to complete the exam without even using your calculator.

(3) *Homework assignments:* There will be about twelve written problem sets. While I expect that students will discuss homework problems with their colleagues, each student must submit his or her own work. You must submit your homework *on time*, and you must *staple* multiple sheets together; ripped, folded, and torn sheets will not be accepted. “Carbon copy” homeworks will *not* be graded.

(4) *Class attendance:* Students are expected to come to class and to be *on time*. This applies to the M-W-F sessions and to the Tuesday evening sessions. The Tuesday evening sessions will focus primarily on problem solving, but will also include new material.

(5) *Policy on Cheating:* Academic integrity is central to the mission of higher education. Please observe the highest standards of academic integrity in this course. Please review the standards and procedures that are published in the university catalog and on the web, at:

<http://www.bc.edu/offices/stserv/academic/integrity.html>

Make sure that the work you submit is in accordance with university policies. If you have any questions, please consult with me. Violations will be reported to the Deans’ Office and reviewed by the University’s Committee on Academic Integrity. This could result in failure in the course or even more severe sanctions.

***Syllabus:***

| <b>Dates:</b>  | <b>Topics:</b>  | <b>Text sections:</b>         |
|--|---|-------------------------------|
| <b>8:</b> 31; <b>9:</b> <span style="border: 1px solid black; padding: 0 2px;">1</span> , 2, 4, <span style="border: 1px solid black; padding: 0 2px;">8</span> , 9, 11<br><b>9:</b> 14, <span style="border: 1px solid black; padding: 0 2px;">15</span> , 16, 18, 21, <span style="border: 1px solid black; padding: 0 2px;">22</span><br><b>9:</b> 23<br><b>9:</b> 25 | Vectors and the Geometry of Space<br>Vector Functions<br>Additional problems<br><b>Class exam 1</b> | 9.1-9.6<br>parts of 10.1-10.5 |
| <b>9:</b> 28, <span style="border: 1px solid black; padding: 0 2px;">29</span> , 30; <b>10:</b> 2, 5, <span style="border: 1px solid black; padding: 0 2px;">6</span> , 7, 9,<br><span style="border: 1px solid black; padding: 0 2px;">13</span> , 14, 16, 19, <span style="border: 1px solid black; padding: 0 2px;">20</span><br><b>10:</b> 21<br><b>10:</b> 23       | Differentiation and Optimization<br>Additional problems<br><b>Class exam 2</b>                      | 11.1-11.7                     |
| <b>10:</b> 26, <span style="border: 1px solid black; padding: 0 2px;">27</span> , 28, 30; <b>11:</b> 2, <span style="border: 1px solid black; padding: 0 2px;">3</span> , 4, 6,<br>9, <span style="border: 1px solid black; padding: 0 2px;">10</span> , 11, 13, 16, <span style="border: 1px solid black; padding: 0 2px;">17</span><br><b>11:</b> 18<br><b>11:</b> 20  | Optimization and Integration<br>Additional problems<br><b>Class exam 3</b>                          | 11.8; 12.1-12.8               |
| <b>11:</b> 23, <span style="border: 1px solid black; padding: 0 2px;">24</span> , 30; <b>12:</b> <span style="border: 1px solid black; padding: 0 2px;">1</span> , 2, 4,<br>7, <span style="border: 1px solid black; padding: 0 2px;">8</span> , 9   | Integration and Vector Fields   | 12.9; parts of 13.1-13.4      |
| Dec 15, 12:30PM  | <b>Comprehensive final</b>  |                               |

***Miscellaneous:*** Tutoring is available in the Mathematics Department, Maloney Hall Room 560, on a walk-in basis. We expect to begin the tutoring program during the second week of classes. I will give you more information as it becomes available. In addition, the Connors Family Learning Center, located in O’Neill Library, offers tutoring most afternoons and evenings, but you must sign up for those sessions in advance.

Finally, if you are a student with a documented disability seeking reasonable accommodations in this course, please contact the Connors Family Learning Center regarding learning disabilities and ADHD, or the Disability Services Office regarding all other types of disabilities, including temporary disabilities. Advance notice and appropriate documentation are required for accommodations.