

## Math 122 ♦ Calculus II ♦ Fall 2007

### Class Meetings

Section B: MTWF, 10:00 – 10:50 AM, in Lovejoy 302

Section E: MTWF, 2:30 – 3:20 PM, in Mudd 405

### Instructor

Otto Bretscher, Mudd 407

E-mail: [obretsch@colby.edu](mailto:obretsch@colby.edu)

Office Phone: 859-5848; Home Phone: 873-4182

Web Page: [www.colby.edu/~obretsch](http://www.colby.edu/~obretsch)

Office Hours: MTWF, 11:00 – 12:30; MTWF 1:30 – 2:20 PM; and by appointment

### Problem Sets

Problem sets will be due on Monday by 4:00 PM, starting September 17. The grader will announce policies regarding late homework and other relevant matters.

### Tests

There will be three exams, given on September 25, October 17, and November 14, from 7:00 PM to 9:00 PM. Location to be announced.

### Grading

Course grades will be based upon three exams (counting 18% each), the final exam (30%), and the problem sets (16%). Active class participation will earn you up to four extra points.

### Class Attendance

Students are expected to attend all of their classes and are responsible for any work missed. Failure to attend can lead to a warning, grading penalties, and dismissal from the course with a failing grade.

If you anticipate missing a class, for whatever reason, your absence is excused as long as you send me an e-mail in advance.

Without advance notice, students are excused only in the case of a critical emergency (verified by the Dean of Students Office) or illness (verified by the Colby Health Center).

### Texts

*Multivariable Calculus*, W. G. McCallum et al., Wiley, 2005 (Fourth Edition)

A supplement on *Series* (or the Math 121 text)

### Calculators

A graphing calculator isn't required, but it can be useful (to check your answers in the problem sets, for example). Calculators will not be allowed in exams.

### Calculus After Hours

There is an evening lab for all calculus courses, offered Sunday through Thursday from 7:30 PM until 9:30 PM, in Mudd 405. Professors and math majors will be available to help you with the problem sets and explain ideas that are troubling you. Many of my students in the past have found this program to be a “life saver”. Check it out!

## **Syllabus**

(following McCallum's text)

### **Chapter 12 : Functions of Several Variables**

- 12.1 Functions of Two Variables
- 12.2 Graphs of Functions of Two Variables
- 12.3 Contour Diagrams
- 12.4 Linear Functions
- 12.5 Functions of Three Variables

### **Chapter 13 : A Fundamental Tool: Vectors**

- 13.1 Displacement Vectors
- 13.2 Vectors in General
- 13.3 The Dot Product
- 13.4 The Cross Product

### **Chapter 14: Differentiating Functions of Several Variables**

- 14.1 The Partial Derivative
- 14.2 Computing Partial Derivatives Algebraically
- 14.3 Local Linearity and the Differential
- 14.4 Gradients and Directional Derivatives in the Plane
- 14.5 Gradients and Directional Derivatives in Space
- 14.6 The Chain Rule
- 14.7 Second Order Partial Derivatives

### **Chapter 15: Optimization: Local and Global Extrema**

- 15.1 Local Extrema
- 15.2 Optimization
- 15.3 Constrained Optimization: Lagrange Multipliers

### **Chapter 16: Integrating Functions of Several Variables**

- 16.1 The Definite Integral of a Function of Two Variables
- 16.2 Iterated Integrals
- 16.3 Triple Integrals
- 16.4 Double Integrals in Polar Coordinates
- 16.5 Integrals in Cylindrical and Spherical Coordinates

### **Chapter 9: Sequences and Series**

- 9.1 Sequences
- 9.2 Geometric Series
- 9.3 Convergence of Series
- 9.4 Tests for Convergence
- 9.5 Power Series and Interval of Convergence

### **Chapter 10: Approximating Functions Using Series**

- 10.1 Taylor Polynomials
- 10.2 Taylor Series
- 10.3 Finding and Using Taylor Series