# Math 302 • Vector Calculus • Spring 2007

#### **Class Meetings**

MA 302B: MWF, 11:00 – 11:50 AM, in Lovejoy 203 MA 302C: MWF, 12:00 – 12:50 PM, in Lovejoy 203

#### Instructor

Otto Bretscher, Mudd 403 E-mail: obretsch@colby.edu Office Phone: 859-5848; Home Phone; 873-4182 Office Hours (tentative): MWF, 10:00 – 10:50 AM; MW 1:00 – 2:00 PM; Tuesday 5:00 – 7:00 PM; and by appointment

#### **Problem Sets**

Problem sets will be due on Wednesday by 2:00 PM, starting February 14. The grader will announce policies regarding late homework and other relevant matters.

#### Tests

There will be three exams, given in class on February 28, March 21, and April 25. You will be allowed a double-sided, hand-written reference sheet for the exams.

#### 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).

#### Text

The text for this course is *Vector Calculus* by Susan J. Colley, Prentice Hall (third edition)

#### Calculators

A calculator isn't required, and calculators will not be allowed in exams.

# Syllabus

We will closely follow the text, Vector Calculus, by Susan Colley.

Chapters 1, 2, 4, and parts of 5 of the text present material that you have seen in Math 122 (or 161/162), maybe with slightly different notations. Use these parts of the text for review and as a reference.

In Math 302, we will work through Chapters 3, 5, 6, and 7 of the text.

## **Chapter 3: Vector-Valued Functions**

- 3.1 Parametrized Curves and Kepler's Laws
- 3.2 Arc length and Differential Geometry
- 3.3 Vector Fields: An Introduction
- 3.4 Gradient, Divergence, Curl and the Del Operator

### **Chapter 5 : Multiple Integration**

- 5.1 Introduction: Areas and Volumes (a brief review)
- 5.2 Double Integrals (a brief review)
- 5.3 Changing the Order of Integration (a brief review)
- 5.4 Triple Integrals
- 5.5 Change of Variables
- 5.6 Applications of Integration

#### **Chapter 6 : Line Integrals**

- 6.1 Scalar and Vector Line Integrals
- 6.2 Green's Theorem
- 6.3 Conservative Vector Fields

#### **Chapter 7 : Surface Integrals and Vector Analysis**

- 7.1 Parametrized Surfaces
- 7.2 Surface Integrals
- 7.3 Stokes' and Gauss's Theorem

	Monday	Tuesday	Wednesday	Friday
10:00 – 10:50 AM	Office Hour		Office Hour	Office Hour
11:00 – 11:50 AM	Math 302B		Math 302B	Math 302B
12:00 – 12:50 PM	Math 302C		Math 302C	Math 302C
01:00 - 01:50 PM	Office Hour		Office Hour	Office Hour
07:00 - 09:00 PM		Office Hours		

# Otto's Schedule Spring 2007