### Instructor
Frank Bäuerle, Ph.D.
**Office:** McH 4163  
**Hours:** W: 1:00-3:00pm, F: 9:30-11:00am
**Phone:** 459-2964  
**Fax:** 459-3260  
**e-mail:** bauerle@ucsc.edu

### Textbook
**Title:** Vector Calculus, 6th ed.  
Author: Marsden/Tromba  
Publisher: Freeman

Available for Purchase at the Bay Tree Bookstore, Slugbooks or online.

### Sections
Section attendance is mandatory, but enrollment in section is not required.

### Class web site is @
http://count.ucsc.edu/~bauerle

### Requirements for Math 23A
To be eligible to enroll in Math 23A you **must** meet one of the following criteria:

- Passing Score in Math 19B or Math 20B
- Transfer credit (contact our undergraduate adviser at mathadvising@ucsc.edu)
- Sufficiently high score on the AP BC or IB test.

### Homework
Homework assignments are from the textbook and problems are
assigned based on what sections we cover in lecture. TA’s are in charge of handling the homework sets. The list of assigned problems and due dates will be posted on the class web site. Further details will be announced in class and on the class web site.

**Grading Policy**

**Homework (15%)**
**Midterm (35%), Friday May 1st, 8-9:10am**
**Final (50%), Monday, June 8th, 8-11am**

From these scores I will produce an overall score for each student which may be put on a curve in the sense that the score ranges for a particular grade may be modified to a different or larger intreval than on the traditional grading scale.
For instance, an overall score of around 65% may be sufficient to pass the class (no guarantee of course.)

**Tentative Lecture Schedule**

<table>
<thead>
<tr>
<th>Mon Mar 30</th>
<th>Wed Apr 1</th>
<th>Fri Apr 3</th>
<th>Mon Apr 6</th>
<th>Wed Apr 8</th>
<th>Fri Apr 10</th>
<th>Mon Apr 13</th>
<th>Wed Apr 15</th>
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<tbody>
<tr>
<td>Intro, 1.1</td>
<td>1.2</td>
<td>1.2,1.3</td>
<td>1.3,1.4</td>
<td>1.4,1.5</td>
<td>1.5</td>
<td>2.1</td>
<td>2.2</td>
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<td>Fri Apr 17 2.3</td>
<td>Mon Apr 20 2.3</td>
<td>Wed Apr 22 2.4</td>
<td>Fri Apr 24 2.4</td>
<td>Mon Apr 27 2.4,2.5</td>
<td>Wed Apr 29 Review</td>
<td>Fri May 1 Midterm</td>
<td>Mon May 4 2.5,2.6</td>
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<td>Wed May 6 2.6</td>
<td>Fri May 8 3.1</td>
<td>Mon May 11 3.2</td>
<td>Wed May 13 3.2,3.3</td>
<td>Fri May 15 3.3</td>
<td>Mon May 18 3.3,3.4</td>
<td>Wed May 20 3.4</td>
<td>Fri May 22 3.4,3.5</td>
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<td>Mon May 25 Mem Day</td>
<td>Wed May 27 4.1,4.2</td>
<td>Fri May 29 4.3</td>
<td>Mon Jun 1 4.3,4.4</td>
<td>Wed Jun 3 4.4</td>
<td>Fri Jun 5 Review</td>
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<td>FINAL Mon Jun 8 8-11am</td>
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</table>
1. The Geometry of Euclidean Space

1.1 Vectors in Two- and Three-Dimensional Space
1.2 The Inner Product, Length, and Distance
1.3 Matrices, Determinants, and the Cross Product
1.4 Cylindrical and Spherical Coordinates
1.5 n-Dimensional Euclidean Space

2. Differentiation

2.1 The Geometry of Real-Valued Functions
2.2 Limits and Continuity
2.3 Differentiation
2.4 Introduction to Paths
2.5 Properties of the Derivative
2.6 Gradients and Directional Derivatives

3. Higher-Order Derivatives: Maxima and Minima

3.1 Iterated Partial Derivatives
3.2 Taylor's Theorem
3.3 Extrema of Real-Valued Functions
3.4 Constrained Extrema and Lagrange Multipliers
3.5 The Implicit Function Theorem

4. Vector-Valued Functions

4.1 Acceleration and Newton's Second Law
4.2 Arc Length
4.3 Vector Fields
4.4 Divergence and Curl