

PACIFIC UNION COLLEGE SYLLABUS

MATH 267

VECTOR CALCULUS

Spring 2007

COURSE DESCRIPTION: Functions of more than one variable including the general chain rule, line and surface integrals, divergence, curl, gradient, and Stokes' theorem.

PREREQUISITE: MATH 133, Calculus III.

OBJECTIVES: This course emphasizes skills as well as theory. Students will become comfortable extending the ideas of one variable calculus to functions involving more than one variable, as they unify the various integrals and derivatives into a coherent approach based on matrices and differential forms.

TEXT AND CALCULATOR: Colley, *Vector Calculus*, Pearson Prentice Hall, third edition, 2006. You will also find helpful a mathematics computer such as the TI 89 or TI92.

INSTRUCTOR: Lloyd Best (Lbest@puc.edu). Phone: office/965-6591; home/942-9680. Fax: office/965-7135.

OFFICE: CSH 238G. **HOURS:** Monday-Wednesday: 10-11, 1-3; Friday: 10-11.

CLASS EXPERIENCE AND ATTENDANCE: Each day you can look forward to interactive presentations of the day's lesson. Previous students have discovered that missing three or more class presentations makes it very difficult to pass the course. Some explanations presented in class are not in the text. In addition, announcements made during classes have the same force as statements in this syllabus. Changes to the listed homework assignments may be announced in class.

STUDYING WITH OTHERS: You are encouraged to study with other classmates. Comparing ideas and solutions helps to clarify understandings. Be sure that your written assignments reflect your own understanding and not just what someone else figured out. You probably don't "know" it if you can't write it out yourself.

LEARNING DIFFERENCES: PUC strives to accommodate students with documented learning differences. If you have a learning disability, or think you might have one, please check with the Teaching and Learning Center. The TLC staff will provide a diagnosis and will work with us to accommodate your situation.

GRADING: The final grade will be based on Homework (20%) and Tests (80%). Grades are posted on D2L.

A	A-	B+	B	B-	C+	C	C-	D+	D	D-
92%	88%	84%	80%	75%	70%	65%	60%	57%	53%	50%

HOMEWORK: Assignments will be announced in class. You are expected to show your work. Before working on the assignment you will need to carefully read the textbook. Pay careful attention to the textbook examples.

Late work is not accepted unless delayed by illness or other emergency. Any late work must be submitted directly to me the day you return to class.

TESTS: Tests must be taken at the scheduled time (see schedule). Only tests which are missed due to illness or emergency circumstances may be made up. If you must miss a test, you are required to notify me in advance.

ACADEMIC INTEGRITY: You are encouraged to work with others on assignments, but your work should reflect your own understanding. Homework which matches word-for-word with answers in the back of the book or with another student's work will be given no credit. All test work must be completely your own. A student involved in cheating (or assisting in cheating) should expect to be dismissed from the course with a failing grade. See PUC's Code of Academic Integrity (page 213 of the *General Catalog*) for details.

[This schedule is subject to revision. Changes may be announced in class.]

Date	Homework Due This Day	Agenda for Class
Apr 3	none	§1.1: Vectors in Two and Three Dimensions
Apr 4	H1.1: 7,10,11,16,21-25	§1.2: More About Vectors
Apr 5	H1.2: 7,9,10,13,16,21,22,24,28,29,34	§1.3: The Dot Product
Apr 6	H1.3: 3,6,7,8,12,13,15,16,20-22,25	§1.4: The Cross Product
Apr 10	H1.4: 6,7,15,18,25,35,38	§1.5: Equations for Planes; Distance Problems
Apr 11	H1.5: 1,5,6,8,9,14,15,18,20,23,28	§1.6: Some n -dimensional Geometry
Apr 12	H1.6: 2,5,6,7,8,10,11	§1.7: New Coordinate Systems
Apr 13	H1.7: 2,4,9,11,15,17,19-21,23,24,26,31,42A	§2.1: Functions of Several Variables: Graphs
Apr 17	Study for the test	TEST Chapter 1 [100 points]
Apr 18	H2.1: 1,3,6,8,11,15,18,30,34,38,39	§2.2: Limits
Apr 19	H2.2:	§2.3: The Derivative
Apr 20	H2.3:	§2.4: Properties; Higher-order Partial Derivatives
Apr 24	H2.4:	§2.5: The Chain Rule
Apr 25	H2.5:	§2.6: Directional Derivatives and the Gradient
Apr 26	H2.6:	§3.1: Parametrized Curves and Kepler's Laws
Apr 27	Study for the test	TEST Chapter 2 [100 points]
May 1	H3.1:	§3.2: Arclength and Differential Geometry
May 2	H3.2:	§3.3: Vector Fields: An Introduction
May 3	H3.3:	§3.4: Gradient, Divergence, Curl, the Del Operator
May 4	H3.4:	§4.1: Differentials and Taylor's Theorem
Mon-May 7	H4.1:	§4.2: Extrema of Functions
May 8	H4.2:	§4.3: Lagrange Multipliers
May 9	H4.3:	§4.4 Some Applications of Extrema
May 10-11	<i>Teacher Out of Town</i>	<i>No Class</i>
May 15	H4.4:	§5.1: Introduction: Areas and Volumes
May 16	Study for the test	TEST Chapters 3 & 4 [100 points]
May 17	H5.1:	§5.2: Double Integrals
May 18	H5.2:	§5.3: Changing the Order of Integration
May 22	H5.3:	§5.4A: Triple Integrals
May 23	H5.4A:	§5.4B: Triple Integrals, continued
May 24	H5.4B:	§5.5A: Change of Variables
May 25	H5.5A:	§5.5B: Change of Variables, continued
May 29	H5.5B:	§5.6: Applications of Integration
May 30	H5.6:	§6.1: Scalar and Vector Line Integrals
May 31	H6.1:	§6.2: Green's Theorem
June 1	H6.2:	§6.3: Conservative Vector Fields
June 5	H6.3:	§7.1: Parametrized Surfaces
June 6	H7.1:	§7.2: Surface Integrals
June 7	H7.2:	§7.3: Stokes' and Gauss's Theorems
June 8	H7.3:	Review
June 12	Tuesday, 9:45 a.m.	FINAL TEST Chapters 5 - 7 [100 points]