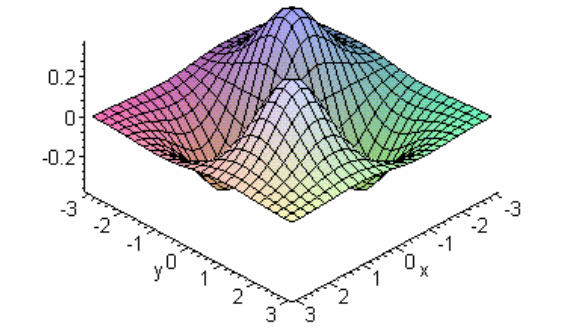
MTH 236 Calculus IV
Semester 092 (Winter 2010)
Course Syllabus



Instructor: Karen E. Donnelly
Office: Core 257
Office Phone: 6297
email karend@saintjoe.edu

Office Hours

Monday 2:00 p.m. -- 3:00 p.m.
Tuesday 10:00 a.m. – 12:00 p.m.
Wednesday 2:00 p.m. – 3:00 p.m.
Thursday 10:00 a.m. – 12:00 p.m.
Friday 10:00 a.m. -- 11:00 a.m.
Contact for appointment during other times.

Home page URL: www.saintjoe.edu/~karend

Purchasing Maple 13 with special discount:

As a Calc IV student, you are entitled to purchase Maple at a 25% discounted price (Approximately $74 instead of $99) from the Maplesoft Web Store (http://webstore.maplesoft.com). In addition to this you would then have access to two more benefits:
One free Maple educational tool and Online student resources
To do this, you will need to enter the promotion code where prompted.
Your Promotion Code: AP59045

Calculus Web Page URL: www.saintjoe.edu/~karend/m236

Text: Larson, Hostetler, and Edwards, *Calculus*, Eigth Edition, 2006. Houghton Mifflin Company. ISBN: 0-618-50298-X

Course Objectives:

1. To investigate the theory of vectors and the calculus of vector-valued functions.
2. To study the calculus of functions of several variables.
3. To become proficient in using the computer (Maple) as a mathematical tool for exploring vector-valued functions and functions of several variables.

Course Outline:

1. Vector-valued functions (Chapter 12)
2. Functions of two or more variables (Chapter 13)
3. Multiple integrals (Chapter 14)

Tentative Scheduled Test Dates:

Test # 1 – Feb 5th Test # 2 – March 5th
Test # 3: -- March 31st Test #4 – April 26th
Final Exam (comprehensive) -- Thursday May 6th 1:00 p.m.

Grade Distribution:

Assignments, Quizzes, Project	30%
Four Tests:	40%
Final Exam (comprehensive):	25%
Attendance and Participation:	05%

Grading Scale:

93%-100%	A	90%-92%	A-		
87%-89%	B+	83%-86%	B	80%-82%	B-
77%-79%	C +	73%-76%	C	70%-72%	C-
67%-69%	D+	60%-66%	D		
59% or Below	F				

Expectations and Requirements:

Special Note: If you are a student with a disability, please meet with me immediately to discuss the accommodations you will need during class activity, examinations, and out of class assignments in order to participate fully and demonstrate your abilities.

1. Academic Honesty: Plagiarism or other forms of academic dishonesty on any assignments, tests, or quizzes will not be tolerated. If the instructor finds that a student has engaged in dishonesty, the student may be referred to the Dean of Academic Affairs for appropriate action.

2. Quizzes and Exams: Students are expected to be present for all exams. ***No exams or quizzes may be made up*** unless the student has contacted the instructor and received permission **prior** to the date of the original exam or quiz. This includes students participating in athletics who must arrange to take the quiz or exam ***on or before*** *the scheduled date*.

3. Assignments: Assignments, unless otherwise specified by the instructor, are to be **completed individually**. While students are encouraged to **consult** each other for ideas for assignments, the solutions should be completed individually. Any help one student gives another should be instructional help only. If the instructor feels that a student has not completed an assignment individually, the instructor may question the student on that assignment. The student should be able to explain how he/she worked the problem and should be able to work similar problems. ***Late assignments will not be accepted without permission***. *If permission is given, the following penalties may be assigned:*

1 day late: 10% reduction; 2 days late: 20% reduction; 3 days late: 30% reduction
Not accepted after 3 days late.

Homework Guidelines:

- Write out complete answers NEATLY and CLEARLY.
- Number each exercise to the left.
- Problems should proceed in numerical order from top to bottom.
- You must show your work! Correct mathematical notation must be used. Partial credit is given when work is shown even if answer is incorrect. However, correct answers without any work shown will in general be given no credit.
- If the problem is a computation leading to a final answer, box the answer.
- ***Use pencil and eraser*** -- do not scratch out work.
- ***Staple*** your pages together before submitting.

Start homework early and see me for help with problems you don't know how to work! *It is inappropriate to ask how to do a problem in class the day it is due!!!!* My office is Core 257-- See my schedule for office hours or call or send email for an appointment. I am always delighted to help.

4. Class Preparation and Participation:

a) ***Keep up with reading assignments***. To receive the maximum grade on attendance and participation the student must read assignments ***prior*** to class, be prepared to ask and respond to questions, and be an actively engaged particpant in class.

b) Take good notes and ***review notes*** on a regular basis as well as promptly begin and continue work on assignments as they are assigned.

c) **Attendance is required**. If you must miss class due to illness or other valid excuse (e.g. athletic event) please send me email or telephone with an explanation prior to the class date.

d) **Electronic Equipment in class**. No devices with headphones may be used in class. All cell phones must be turned off during class. No laptops may be used in class unless permission is given by instructor.

5. Getting Help: Students who do not understand a concept should do the following:

a) Ask questions in class. (More than likely other students do not understand as well.)

b) Seek individual help from the instructor. I am more than willing to give you the extra help you may need. Come in during office hours or make an appointment. Tutoring (free) can also be arranged either through me or through counseling services.

c) Share with me any concerns you may have or any suggestions you have for the class structure that will help you learn more effectively.

The above content and requirements are tentative and subject to change according to time constraints and other factors as determined by the instructor.

Calendar (Tentative – Check for Updates

Date	Tests	Reading Assignment -- Complete by date given	Homework Due -- turn in at beginning of class on date given (See list below)
Wed. 01/13		Section 12.1: Vector-Valued Functions	
Fri. 01/15		Section 12.2: Differentiation and Integration of Vector-Valued Functions	
Mon. 01/18			
Wed. 01/20		Section 12.3: Velocity and Acceleration	
Fri. 01/22			
Mon 01/25		Section 12.4: Tangent Vectors and Normal Vectors	Exercise Set 3: Section 12.3
Wed 01/27			
Fri. 01/29		Section 12.5: Arc Length and Curvature	
Mon 02/01			Exercise Set 4: Section 12.4
Wed 02/03		Section 13.1 Functions of Several Variables	Exercise Set 5: Section 12.5
Fri 02/05	Test 1		Exercise Set 6: Section 13.1
Mon 02/08		Section 13.2: Limits and Continuity	
Wed 02/10			Exercise Set 1: Section 12.1
Fri 02/12		Section 13. 3: Partial Derivatives	
Mon 02/15		Section 13.4: Differentials	Exercise Set 2: Section 12.2
Wed 02/17			
Fri 02/19		Section 13.5: Chain Rules for Functions of Several Variables	Exercise Set 9: Section 13.4
Mon. 02/22		Section 13.6: Directional Derivatives and Gradients	
Wed. 02/24			Exercise Set 10: Section 13.5
Fri. 02/26			
Mon. 03/01		Section 13.7: Tangent Planes and Normal Lines	Exercise Set 11: Section 13.6
Wed. 03/03		Section 13.8: Extrema of Functions of Two Variables	Exercise Set 12: Section 13.7

Fri. 03/05	Test 2		
Mon 3/08 -Fri. 3/12		SPRING BREAK -- NO CLASS	
Mon. 03/15		Section 13.9: Applications of Extrema	Exercise Set 13: Section 13.8
Wed. 03/17			Exercise Set 14: Section 13.9
Fri. 03/19		Section 13.10: Lagrange Multipliers	
Mon. 03/22			
Wed. 03/24		Section 14.1: Iterated Integrals and Area in the Plane	Exercise Set 15: Section 13.10
Fri. 03/26		Section 14.2: Double Integrals and Volume	Exercise Set 16: Section 14.1
Mon. 03/29			
Wed. 03/31	**Test 3**		Exercise Set 17: Section 14.2
Fri. - Mon 4/02-05		GOOD FRIDAY EASTER MONDAY NO CLASS	
Wed. 04/07		Section 14.3: Change of Variables: Polar Coordinates	
Fri. 04/09		Colloquium Projects Run Through (Collloquium is on Tuesday 4/13)	
Mon. 04/12		Section 14.4 Center of Mass and Moments of Inertia	Exercise Set 18: Section 14.3
Wed. 04/14			
Fri. 04/16		Section 14.5 Surface Area	Exercise Set 19: Section 14.4
Mon. 04/19			
Wed. 04/21		Section 14.6: Triple Integrals and Applications	Exercise Set 20: Section 14.5
Fri 04/23		Section 14.7: Triple integrals using cylindrical coordinates	
Mon. 04/26	**Test 4**		Exercise Set 21: Section 14.6
Wed. 04/28			Exercise Set 22: Section 14.7
Fri. 04/30		Review Day	
Thurs. 05/06		Final Exam -- 1:00 p.m. Comprehensive.)	

Problem List

Ex. Set 1	p 837 Section 12.1: 2, 3, 4, 12, 16, 27, 32, 34, 40 (Use Maple), 42 (Use Maple), 46, 49, 62, 69, 70, 76, 78, 81, 83, 84
Ex. Set 2	p 846 Section 12.2: 4, 5, 9 (When sketching the vectors sketch with tail at point on curve (as in figure 12.8), 12, 13, 20, 23, 30, 37, 41, 47, 53, 54, 58, 64, 67
Ex. Set 3	p. 854 Section 12.3: 2, 5, 12, 15, 20, 22, 27, 28, 41, 42
Ex. Set 4	p. 863 Section 12.4: 2, 6, 10, 13, 20 (Approx by evaluating the point on the tangent line at t = .1), 25, 36, 41 (Use shortcut for N), 50, 56—use hint
Ex. Set 5	p. 875 Section 12.5: 2, 5, 10, 11, 16, 25, 28, 38, 43, 48
Ex. Set 6	p. 892 Section 13.1: 3, 4, 6, 12, 15, 20, 23, 52, 53, 56, 79, 82, 85
Ex. Set 7	p 902 Section 13.2: 7, 8, 10, 12, 16, 19, 20, 26, 27, 41, 46, 50, 63, 64, 65, 66
Ex. Set 8	p 912 Section 13.3 6, 11, 16, 29, 30, 35, 40, 47, 52, 62, 98
Ex. Set 9	p 921 Section 13.4: 1, 4, 12, 19, 26, 28, 31, 34, 37
Ex. Set 10	p 929 Section 13.5 1, 2, 6, 10, 17, 22, 23, 26, 35, 40, 51, 54
Ex. Set 11	p 940 Section 13.6: 2, 3, 10, 15, 16, 21, 22, 24, 28, 33, 38, 42, 55, 60, 63
Ex. Set 12	p 949 Section 13.7: 1, 2, 4, 7, 12, 17, 26, 32, 42, 43
Ex. Set 13	p 958 Section 13.8: 2, 4, 7, 10, 11, 12, 24, 25, 28, 33, 34, 46, 47, 53, 54, 56
Ex. Set 14	p 964 Section 13.9: 3, 8, 13, 18, 22
Ex. Set 15	p 974 Section 13.10: 2, 4, 6, 9, 12, 18, 20, 23, 28, 40
Ex. Set 16	p 988 Section 14.1: 3, 4, 8, 12, 17, 20, 22, 27, 33, 38, 41, 44, 53, 62, 63
Ex. Set 17	p 997 Section 14.2: 2,7, 10, 15, 18, 24, 28, 33, 36, 40
Ex. Set 18	p 1006 Section 14.3: 1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 14, 17, 18, 23, 24, 28, 32, 42
Ex. Set 19	p 1015 Section 14.4: 2, 7, 18, 29, 36
Ex. Set 20	p 1022 Section 14.5: 1, 4, 10, 12, 16, 22, 23, 30
Ex. Set 21	p 1032 Section 14.6: 3, 6, 10, 13, 16, 22, 23, 35
Ex. Set 22	p 1040 Section 14.7: 4, 13, 16, 18, 21, 33