OKLAHOMA STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS

MATH 2163 - CALCULUS III - FALL 2006

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  - Office Hours: MW 10:30-11:20 and by appointment

- Class Time and Location:
  - Section 3: MWF 9:30-10:20 HES 303
  - Section 4: MWF 11:30-12:20 HES 303
- Textbook: James Stuart, *Calculus*, 5th edition, Brooks/Cole (2003).
- Prerequisites: MATH 2153 - Calculus II
- Course Page:
  - WWW: http://www.math.okstate.edu/~mschulze/calculus
  - PDF: 06F-MATH2163.pdf
- OSU Syllabus Attachment: http://osu.okstate.edu/acadaffr/aa/syllabusattachment-Fall.htm

LECTURE

The course covers chapters 13, 15, 16, and 17 from the textbook. It is your responsibility to understand and learn this material. The instructor's job is to guide you in your learning. The purpose of the lecture is to discuss and illustrate the main ideas and answer your questions. Therefore I strongly recommend that you read the sections to be covered in class before the lecture. Try to isolate what you do not understand and be prepared to ask questions during the lecture. Do not hesitate to ask and discuss, this is necessary for your progress in learning. It is your advantage and responsibility to attend the lecture. I will keep records of your attendance and expect a reasonable excuse for each class you miss.

HOMEWORK

In general one can not really understand an abstract concept without relating it to a series concrete examples. This is the purpose of the homework problems which I will assign for each lecture in the course schedule. Because of the abstract nature of mathematics, the importance of working on these problems can not be over emphasized. The assigned homework only represents the minimum necessary to follow the class. I strongly suggest you to work out as many exercises from the textbook as possible. You are welcome and encouraged to discuss the homework problems with each other. However you should turn in your own individual work. Copied or reproduced work, both copy and original, will not be accepted. Take the opportunity to practice and improve your ability of clear presentation, you will profit from this in your future professional life. Illegible or incomprehensible work can not be given credit. The homework is due at the beginning of the class meeting on Wednesday or of the following class meeting in case Wednesday is a holiday. Late submissions will not be accepted. Please hand in your homework as a single stapled stack of ordered pages with your name on the front page. Your homework will be checked for completeness and several problems will be selected for detailed grading. Your 3 lowest homework scores will not count for your final grade. The statistics section shows your homework performance.

QUIZZES

In general it is hard to catch up with the lecture once you fell behind. To avoid this problem and incite you to work continuously there will be occasional in-class quizzes throughout the semester. You will be asked to solve a short exercise similar to your homework problems or examples discussed in the lecture. No make-up quiz will be given for any reason, however your 3 lowest quiz scores will be dropped. This policy allows you legitimate absences such as medical emergencies or certain university-related activities. Books, notes, and electronic devices are not permitted during quizzes. The statistics section shows your quiz performance.

EXAMINATIONS

There will be 3 midterm in-class exams and a final exam. Dates will be announced at least one week in advance in class and on this page. It is very important that you take the examinations at the scheduled times. If you can not attend a scheduled exam, you must contact me before the exam. A make-up exam will be given only if you have a compelling reason like a family emergency or a severe illness. Books, notes, and electronic devices are not permitted during exams.

The following exam schedule is preliminary.

EXAM	Midterm 1	Midterm 2	Midterm 3	Final Exam
DATE	9/22	10/23	11/20	Section 3: 12/11, 8:00-9:50am Section 4: 12/15, 10:00-11:50am

The statistics section shows your exam performance.

GRADING

Your goal in this course is to understand abstract concepts and learn correct processes to solve certain types of problems. Therefore you may gain little credit for writing down the answer only. Your work must show clearly how you proceeded to find the answer or why your answer is correct. You will be given more credit for a correct procedure with a computational error as for the correct answer only. On tests it is important that you indicate clearly what is scratch work and what is to be graded. In particular the answer to a computational problem should be marked by the word *solution* or by drawing a rectangle around it.

The contributions to your total score are weighted as follows.

CONTRIBUTION	Homework	Quizzes	3 Midterms	Final Exam
WEIGHT	10%	15%	3 x 15%	30%

Your total score will be truncated to an integer percentage and determines your final grade as follows.

TOTAL SCORE	0-59%	60-69%	70-79%	80-89%	90-100%
FINAL GRADE	F	D	C	B	A

Curving may be applied in form of a linear adjustment to all scores on a particular exam. I reserve the right to decide borderline cases based on class attendance and subjective impressions such as effort and conscientiousness.

6 week grades are determined based on the above pattern where only one lowest quiz score is dropped and the 1st midterm counts for all 3 midterms and the final exam.

HONORS CONTRACTS

For students with honors contract there are X-tra homework problems. The due dates are the same as for the regular homework. However I ask you to hand in these problems separately.

FREE TUTORING ASSISTANCE

The Mathematics Learning Resource Center (MLRC) can provide tutoring and other services for this and other mathematics courses. It is located in the lower level of South Murray Hall, across from Theta Pond. Please remember that the tutor's task is to help you to learn, not to do your homework.

ACADEMIC INTEGRITY

I will respect OSU's commitment to academic integrity and uphold the values of honesty and responsibility that preserve our academic community. For more information, see http://academicintegrity.okstate.edu.

COURSE SCHEDULE

The following course schedule is preliminary. It contains homework with due dates as well as additional course material like Maple worksheets.

LESSON	DATE	SECTION: SUBJECT	HOMEWORK [HONORS CONTRACT]	DUE DATE	APPENDIX
1	8/21	13.2: Vectors	3,4cd,5cd,6df,8,12,14,16,20,22,25,26,31,39	8/28	Maple worksheet (PDF-version)
2	8/23	13.3: The Dot Product	1,5,6,8,10,11,16,20,22,24,26,28,38,39,41,44	8/28	
3	8/25	13.4: The Cross Product	1,7,9,11,14,16,22,28,30,34,39,45	8/28	
4	8/28	13.5: Equations of Lines and Planes	1,4,5,8,10,13,14,15,18,21,25,26	9/6	
5	8/30	13.5: Equations of Lines and Planes	27,30,32,34,36,39,47,54,65,68	9/6	Maple worksheet (PDF-version)
6	9/1	15.1: Functions of Several Variables	2,4,6,8,9,16,20,26,29,30	9/6	Maple worksheet (PDF-version)

-	9/4	Labor Day			
7	9/6	15.1: Functions of Several Variables	31,32,34,35,38,39,47,51,53,58,[X1]	9/11	Maple worksheet (PDF-version)
8	9/8	15.2: Limits and Continuity	1,6,7,9,12,15,18,24,31,36	9/11	
9	9/11	15.3: Partial Derivatives	6,17,19,29,30,39,41,51,54,70a	9/20	
10	9/13	15.4: Tangent Planes and Linear Approximation	3,4,5,10,13,16,17,19,[X2]	9/20	Maple worksheet (PDF-version)
11	9/15	15.4: Tangent Planes and Linear Approximation	23-28,30,31,34,40	9/20	
12	9/18	15.5: The Chain Rule	3,6,8,9,22,23	9/20	
13	9/20	Review for Midterm 1			
14	9/22	Midterm 1: 13.2-5, 15.1-5			Solutions
15	9/25	15.6: Directional Derivatives and the Gradient Vector	5,6,8,10,13,14,19,20	9/27	Maple worksheet (PDF-version)
16	9/27	15.6: Directional Derivatives and the Gradient Vector	26,28,30,40,48,49,[X3]	10/4	
17	9/29	15.7: Minimum and Maximum Values	2,4,8,10,20,30	10/4	
18	10/2	15.7: Minimum and Maximum Values	28,30,39,42,49,51	10/4	
19	10/4	15.8: Lagrange Multipliers	4,8,10,24,[X4]	10/11	
20	10/6	16.1: Double Integrals over Rectangles	1,5,9,12	10/11	
-	10/9	Fall Break			
21	10/11	16.2: Iterated Integrals	3,5,6,9,14,16	10/18	
22	10/13	16.3: Double Integrals over General Regions	2,6,9,11	10/18	
23	10/16	16.3: Double Integrals over General Regions	14,15,19,23	10/18	
24	10/18	13.6: Cylinders and Quadric Surfaces	1,4,7,9,13	10/25	
25	10/20	Review for Midterm 2			
26	10/23	Midterm 2: 15.6-8, 16.1-3			Solutions

27	10/25	13.6: Cylinders and Quadric Surfaces	14,21-28,29,33	11/01	
28	10/27	13.7: Cylindrical and Spherical Coordinates	3,9,13,23,27,54,56,[X5]	11/01	
29	10/30	16.4: Double Integrals in Polar Coordinates	1-10	11/1	
30	11/1	16.4: Double Integrals in Polar Coordinates	12,17,21,33	11/8	
31	11/3	16.5: Applications of Double Integrals	3,7,9,12,24,[X6]	11/8	Maple worksheet (PDF-version)
32	11/6	16.6: Surface Area	1,2,6,10	11/8	
33	11/8	Example session			Maple worksheet (PDF-version)
34	11/10	16.7: Triple Integrals	2,7,11,14	11/15	
35	11/13	16.8: Triple Integrals in Cylindrical Coordinates	8,12,15,34	11/15	
36	11/15	16.8: Triple Integrals in Spherical Coordinates	18,20,22,28,36	11/22	
37	11/17	Review for Midterm 3			
38	11/20	Midterm 3: 13.7, 16.4-8			Solutions
39	11/22	16.9: Change of Variables in Multiple Integrals	3,5,8,11,14,15	11/29	
-	11/24	Thanksgiving Break			
40	11/27	17.1: Vector Fields	3,6,24,25,29-32,[X7]	11/29	
41	11/29	17.2: Line Integrals	2,4,8,10,14	12/6	
42	12/1	Snow			
43	12/4	17.2: Line Integrals of vector fields 17.3: The Fundamental Theorem for Line Integrals	17.2: 17,18,21,40 17.3: 3,11,22,23	12/6	
44	12/6	17.3: The Fundamental Theorem for Line Integrals	5,8,9,15,18,29-32,33	-	
45	12/8	Review for Final Exam			

46	12/11 12/15	Final Exam, Section 3: 8:00-9:50am, HES 303. Final Exam, Section 4: 10:00-11:50am, HES 303.			Solutions

X-TRA HOMEWORK PROBLEMS

The following X-tra homework problems are intended for students with honors contract. For due dates see the course schedule.

X1)

Find a function of two variables with level curves similar to 15.1.32,35,31,36.

X2)

Write a Maple procedure L(f,a,b) that computes the linearization of the function f(x,y) at the point (a,b). Hint: Look up the keyword "procedure" in the Maple help system and use the Maple worksheet of lecture 10.

X3)

Solve 15.5.53-55. Formulate an analog of 15.5.53.(b) for a function f that satisfies $f(t^2x,t^3y)=t^nf(x,y)$. Can such a function be homogeneous? Explain your answer. Download Solutions.

X4)

Discovery Project on page 1000: Solve problems 1, 3.(a), 3.(b), and 4. Hint for problem 4: Remember what I explained about coordinate changes in the lecture. Download Solutions.

X5)

Solve 13.7.68. Hint: Change from spherical to rectangular coordinates and use the dot product to compute the angle.

X6)

Compute the volume of the intersection of the three cylinders in the discovery project on page 1076. Download Solutions.

X7)

Use Newton's Law of Gravitation to estimate the gravitational force between the earth and the moon.

GRADE STATISTICS

This section gives you an idea of how your performance relates to that of the other students.

HOMEWORK

Section 3	HW 1	HW 2	HW 3	HW 4	HW 5	HW 6	HW 7	HW 8	HW 9	HW 10	HW 11	HW 12	HW 13	HW 14	HW 15
Average raw %	84.2	85.4	89.2	89.3	92.6	76.6	87.7	87.1	96.7	94.6	83.6	82.3	76.3	89.2	89.4
Std. dev. raw %	19.8	16.1	10.5	15.1	9.3	22.2	13.5	16.0	10.2	9.2	13.2	16.0	19.9	16.4	13.0

Section 4	HW 1	HW 2	HW 3	HW 4	HW 5	HW 6	HW 7	HW 8	HW 9	HW 10	HW 11	HW 12	HW 13	HW 14	HW 15
Average raw %	84.1	80.3	89.0	86.7	90.9	76.9	90.2	81.5	97.3	91.3	81.7	80.0	79.0	90.6	83.0
Std. dev. raw %	17.6	23.1	12.8	13.0	10.3	17.2	12.3	19.0	5.5	11.1	17.2	21.4	21.4	14.0	18.9

QUIZZES

Section 3	Quiz 1	Quiz 2	Quiz 3	Quiz 4	Quiz 5	Quiz 6	Quiz 7
Average raw %	59.4	62.1	40.0	66.6	61.6	72.2	75.0
Std. dev. raw %	26.8	24.6	29.5	34.1	37.3	27.2	18.9

Section 4	Quiz 1	Quiz 2	Quiz 3	Quiz 4	Quiz 5	Quiz 6	Quiz 7
Average raw %	60.5	64.1	54.5	74.7	75.7	70.9	74.6
Std. dev. raw %	27.3	25.6	29.2	27.1	34.3	28.0	16.2

EXAMS

Section 3	Midterm 1	Midterm 2	Midterm 3	Final Exam
Average curved %	78.47	82.06	78.30	79.19
Std. dev. curved %	13.04	14.60	17.75	13.19

Section 4	Midterm 1	Midterm 2	Midterm 3	Final Exam
Average curved %	78.59	83.53	79.44	79.35
Std. dev. curved %	12.68	13.23	18.49	15.82

6 WEEK GRADES

Section 3	A	B	C	D	F
#	6	8	11	9	5

Section 4	A	B	C	D	F
#	4	11	14	2	8

FINAL GRADES

Section 3	A	B	C	D	F
#	9	9	7	7	1

Section 4	A	B	C	D	F
#	8	11	9	3	3

DISCLAIMER

The syllabus may be subject to future changes and it is your responsibility to be informed. Any change of the syllabus will be announced in class and appear on the present web page.