

Syllabus for Mat2500, Spring, 2004

Call Number: 20-134

Period 6(1:25–2:15pm), Graduate Studies Building, Rm. 323

Instructor: Ming-Jun Lai

Office: Room 408 Boyd Graduate Studies Building

Office Hours: 2:30–3:30pm MWF or by appointment

Phone Number:542–2065

Text: *Calculus with Analytic Geometry*, Edwards & Penney, 6 th Edition, 1998.

Webpage: www.math.uga.edu/undergraduate/course-site.html

Course Objectives

In this course, you will learn the multivariate calculus, both differential and integral calculus. In addition, you will learn vector analysis. You will see many concepts such as *vectors*, *cross-product*, *partial derivatives*, *gradient*, *tangent plane*, *polar coordinates*, *parametric curves*, *line integrals*, *surface integrals*, etc. and many theorems such as Lagrange Multiplier Theorem, Green's Theorem, Divergence Theorem, Stokes Theorem, as well as many integral techniques for double and triple integrals.

Your Major Responsibilities

Attend the class regularly although a roll is not usually taken. Be a good citizen during the class. Do all assignments. In particular, do the home assignment after class so that you can understand the next class. Homework will be collected on Fridays. **Note that there is no way you can learn multivariate calculus without doing a lot of homework.** There are three tests and one final. When answering homework and test problems, please use correct notation (be especially careful about parentheses and equals signs), and use complete grammatical sentences in the English language where appropriate. Calculation without explanation is incomprehensible. Messy and confused writing usually reflects messy and confused thinking, so aim for clear thought! All work for the class is subject to the Academic Honesty Policy of the University of Georgia.

Tentative Schedule

Date	Sections	Topics	Home Work
1/9F	§9.2	Polar Coordinates	1,2, 5,7, 13,15,29,30
1/12M	§9.3	Area Computations	1,3, 7, 9, 17, 19, 29,31
1/14W	§9.4	Parameteric Curves	3,5,9,17,19, 21
1/16F	§9.5	Integrals in Parametric Curves	1,3,5,9,11,13,15,19
1/19M		No class (University Holiday)	
1/21W	§11.1	Vectors in \mathbf{R}^2	1,3,7,13,15,19,25, 27,29,31,37
1/23F	§11.2	Vectors in \mathbf{R}^3	3,5,19,22,25,41,43,47,53
1/26M	§11.3	Cross-Product	3,7,11,12,15,19,35
1/28W	§11.4	Lines and Planes	1,3,7,13,15,19,23,25,27,31,35,41,49,55
1/30F	§11.5	Curves in Space	1,3,7,9,13,17,19,23,31,33,36,49,55
2/2M	§11.7	Cylinders, Quadric Surfaces	5,11,18,31,35,41,45,51,53
2/4W		Review	
2/6F		Test I	
2/9M	§12.2	Functions of Several Variables	3,5,12,19,37,39,53,55,57
2/11W	§12.3	Limits, Continuity	3,7,11,17,19,21,23,30,37,40

2/13F	§12.4	Partial Derivatives	1,3,5,13,19,23,31,33,37,40,55,58
2/16M	§13.6	Differentials	1,3,15,17,21,23,25,29,31,35
2/18W	§12.5	Max. & Min. Problems	1,5,7,21,25,27,29,31,36,39,45,49
2/20F	§12.7	Chain Rule	1,3,5,7,11,17,23,27,33,35,38,47
2/23M	§12.8	Gradient Vectors	3,6,9,11,15,19,21,23,25,29,33,43
2/25W	§12.9	Lagrange Multipliers	1,5,9,15,17,21,23,37,41,47,53
2/27F	§12.10	Second Derivative Test	1,3,7,17,21,23,30,31
3/1M		Review	
3/3W		Test II	
3/5F	§13.1	Double Integrals	1,4,7,11,13,17,21,27,29,35
3/8–12		Spring Break	
3/15M	§13.4	Double Integrals (II)	1,3,5,9,12,19,25,31,29
3/17W		Problem session	
3/19F	§13.3	Area and Volume	11,21,27,29,35,41
3/22M	§13.4	Double Integrals(Polar Coordinates)	3,4,9,13,17,19,29,33
3/24W	§13.5	Applications	5,7,11,15,22,33,41,43,53
3/26F	§13.6	Triple Integrals	1,3,5,9,11,17,23,39,40
3/29M	§13.7	Cylindric & Spherical Coordinates	1,5,7,15,19,23,33,37
3/31W	§13.8	Surface Area	1,3,9,11,13,18
4/2F	§13.9	Change of Variables	1,3,5, 7,9,13,14
4/5M		Review	
4/7W		Test III	
4/9F	§14.1	Vector Fields	1,3,5,9,11,13,15,19,23,32,43
4/12M	§14.2	Line Integrals	1,3,5,7,9,13,17,33
4/14W	§14.3	Independence of Path	3,5,9,17,21,25,27,30
4/16F	§14.4	Green's Theorem	1,3,5,7,15,17,21,25
4/19M	§14.5	Surface Integrals (I)	1,3,5,7,11,15,23,29
4/21W	§14.5	Surface Integrals (II)	
4/23F	§14.6	Divergence Theorem	1, 7,11,13,15,16,17
4/26T	§14.7	Stokes' Theorem	1,3,7,9,15
4/28W		Review for Final	
5/7F		Final Exam. 8:00–11:00am	

Grading Policy:

TEST I	100 points
TEST II	100 points
TEST III	100 points
Final Exam.	200 points
HomeWork	100points

Total 600 points

Fixed Scale:

A	$\geq 90\%$
B	$\geq 80\%$
C	$\geq 65\%$
D	$\geq 55\%$
F	$< 55\%$