

## Syllabus for Mat2250, Fall, 2010

**Instructor:** Ming-Jun Lai

**Office:** Room 540 Boyd Graduate Studies Building

**Classroom:** Boyd Grad Studies Room 323

**Classtime:** 1:25p–2:15pm Monday, Wednesday and Friday

Thursday 9:30am–10:45am

**Office Hours:** 2:30–3:30pm Monday, Wednesday and Friday or by appointment

**Email Address:** mjlai@math.uga.edu

**Webpage:** [www.math.uga.edu/~mjlai/teaching.html](http://www.math.uga.edu/~mjlai/teaching.html)

**Phone Number:** 542–2065

**Text:** Hass, Weir, and Thomas, *University Calculus*

### Course Objectives

We learn how to compute limits, derivatives, and anti-derivatives of functions and how to use these concepts to do application problems. We shall also learn how to integrate a function for various functions.

### Academic Honesty

As a University of Georgia student, you have agreed to abide by the University's academic honesty policy, A Culture of Honesty, and the Student Honor Code. All academic work must meet the standards described in A Culture of Honesty found at: [www.uga.edu/honesty](http://www.uga.edu/honesty). Lack of knowledge of the academic honesty policy is not a reasonable explanation for a violation. Questions related to course assignments and the academic honesty policy should be directed to the instructor.

Dates      Section      Topics and Recommended Exercises

### Chapter 2: Limits and Continuity

8/16M	§2.1	Rates of Change and Tangents to Curves
	§2.1	#1, 3, 7, 8, 11, 12, 15, 19
8/18W	§2.2	Limit of a Function and Limit Laws
	§2.2	#1, 2, 3, 5, 9, 13, 19, 21, 22, 25, 27, 29
8/19T	§2.2:	#34, 35, 36, 39, 42, 49, 57, 64, 68, 69, 85
8/20F	§2.4	One-Sided Limits and Limits at Infinity
	§2.4	#1, 2, 7, 10, 12, 17, 19, 20, 21, 23, 25, 27
8/23M	§2.4:	# 34, 35, 39, 43, 47, 49, 51, 55, 69, 74 ( <b>HW DUE</b> )
8/25W	§2.5	Infinite Limits and Vertical Asymptotes
	§2.5	#1, 3, 9, 13, 14, 17, 18, 19, 23, 31, 35, 39, 42, 43, 44
8/26T	§2.6	Continuity
	§2.6	#1–4, 5–10, 11, 12, 13, 19, 25
8/27F	§2.6	#35, 36, 39, 46, 47, 58
8/30M	§2.7	Tangents and Derivatives at a Point
	§2.7	#1, 5, 7, 11, 13, 18, 23, 27, 28, 29, 30
9/1W		Review for Test I
		Additional and Advanced Exercises: #4, 5, 6, 14, 21
9/2T		<b>Test I</b> and ( <b>HW DUE</b> )

### Chapter 3: Differentiation

9/3F	§3.1	The Derivative as a Function
	§3.1	#1, 3, 6, 9, 10, 13, 17, 27–30, 31, 33, 43, 44
9/8W	§3.2	Differentiation Rules for Polynomials, Exponentials, Products, and Quotients
	§3.2	#1, 3, 5, 7, 11, 15
9/9T	§3.2	# 17, 18, 21, 23, 24, 27, 28,29, 33
9/10F	§3.2	# 35, 39, 43, 47, 49, 50, 53, 58, 62, 63
9/13M	§3.3	The Derivative as a Rate of Change
	§3.3	#1, 5, 7, 10, 11, 15 ( <b>HW DUE</b> )
9/15W	§3.3	17, 18, 21, 23, 26, 29
9/16T	§3.4	Derivatives of Trigonometric Functions
	§3.4	#1, 5, 8, 9, 11, 13, 16, 20, 25, 27, 35, 37, 47
9/17F	§3.5	The Chain Rule and Parametric Equations [N.B. Skip parametric formula for $d^2y/dx^2$ .]
	§3.5	#1, 3, 5, 9, 11, 15, 17, 19, 24, 27, 31, 35, 41, 45, 47
9/20M	§3.5	#50, 51, 55, 57, 59, 61, 71, 73, 81, 83, 86, 95, 99, 112, 115 ( <b>HW DUE</b> )
9/22W	§3.6	Implicit Differentiation
	§3.6	#1, 5, 11, 17, 19, 25, 39, 44, 51
9/23T	§3.7	Derivatives of Inverse Functions and Logarithms
	§3.7	#3, 11, 13, 21, 25, 27, 29, 32, 41, 51
9/24F	§3.7	#57, 61, 64, 65, 91, 93, 95,98
9/27M	§3.8	Inverse Trigonometric Functions
	§3.8	#1, 3, 7, 21, 23, 30, 33, 34, 42, 43, 48, 54( <b>HW DUE</b> )
9/29W	§3.9	Related Rates
	§3.9	#1, 2, 3, 5, 7, 9, 10, 11, 13, 14, 15, 17, 18, 19
9/30T	§3.9	#22, 23, 25, 30, 31, 35
10/1F	§3.10	Linearization and Differentials
	§3.10	#3, 8, 11, 15, 16, 39, 43, 45, 53, 54, 56, 61, 62, [65]
10/4M		Review for Test II
		Additional and Advanced Exercises: #6, 8, 19, 20
10/6W		<b>Test II</b> and ( <b>HW DUE</b> )

### Chapter 4: Applications of Derivatives

10/7T	§4.1	Extreme Values of Functions
	§4.1	#1–14, 15, 17, 19, 21, 25, 27, 29, 31, 33, 39
10/8F	§4.1	#41, 43, 49, 51, 55, 61, 66, 67, [70], 72
10/11M	§4.2	The Mean Value Theorem
	§4.2	#5, 6, 7, 9, 12, 13, 15, 19, 23, 25, 27, 31
10/13W	§4.2	#35, 39, 41, 45, 46, 59, 66a ( <b>HW DUE</b> )
10/14T	§4.3	Monotonic Functions and the First Derivative Test
	§4.3	#1, 3, 5, 7, 9, 13, 17, 21, 25, 31, 43, 47, 49, [58]
10/15F	§4.4	Concavity and Curve Sketching
	§4.4	#1, 3, 11, 15, 17, 21

10/18M	§4.4	#25, 30, 33, 37, 53, 59, 69;
10/20W	§4.4	p. 309: #55, 57, 59 ( <b>HW DUE</b> )
10/21T	§4.5	Applied Optimization
	§4.5	#1, 3, 4, 5, 7, 11, 12, 14
10/22F	§4.5	#20, [22], [24], [25], 27
10/25M	§4.5	#32, 33, 41, 44
10/27W	§4.6	Indeterminate Forms and L'Hôpital's Rule
	§4.6	#3, 5, 9, 15, 19, 21, 23, 25 ( <b>HW DUE</b> )
10/28T	§4.6	#47, 51, 53, 61, 63
11/1M	§4.7	Newton's Method
	§4.7	#1, 3, 5, 13, 16
11/3W	§4.8	Antiderivatives
	§4.8	#1, 5, 7, 13, 15, 19, 23, 31, 33, 39 ( <b>HW DUE</b> )
11/4T	§4.8	# 43, 45, 55, 59, 61, 65
11/5F	§4.8	#87, 89, 91, 95, 103, 117, 118, 119, 120
11/8M		Review for Test III
		Additional and Advanced Exercises: #13, 15, 17, 22, 35
11/10W		<b>Test III</b> and ( <b>HW DUE</b> )

### Chapter 5: Integration

11/11T	§5.1	Estimating with Finite Sums, Sigma Notation and Limits of Finite Sums
	§5.1	#1, 3, 5, 7, 11, 19, [21, 22]
11/12F	§5.2	#1, 3, 7, 9, 13, 15, 19, 29, 35, 39
11/15M	§5.3	The Definite Integral
	§5.3	#1, 3, 5, 9, 11, 13, 17, 19, 27, 31, 35
11/17W	§5.3	#55, 59, 63, 65, 66, [77], [79], [82] ( <b>HW DUE</b> )
11/18T	§5.4	The Fundamental Theorem of Calculus
	§5.4	#1, 3, 5, 7, 9, 11, 17, 23, 27, 29, 33, 35, 39
11/19F	§5.4	#41, 43, 45, 47, 49, 53, 55, 58, 61–64, 73, 75
11/29M	§5.5	Indefinite Integrals and the Substitution Rule
	§5.5	#1, 3, 5, 7, 9, 13, 17, 19, 22, 23, 29
12/1W	§5.5	#39, 43, 49, 51, 61, 67 ( <b>HW DUE</b> )
12/2T	§5.6	Substitution and Area Between Curves
	§5.6	#1, 3, 7, 13, 25, 27, 31, 39, 47, 51, 53, 55
12/3F	§5.6	#57, 67, 77, 81, 85, 89, 99, 103, [115, 116]
12/6M		Review for Test IV
		Additional and Advanced Exercises: #4, 5, 6, 30, 31, 32, Leibniz's Rule, 47, 48, 55
12/7T		<b>Test IV</b> and ( <b>HW DUE</b> )

### Final Examination Times

12/10	1:25–2:15pm → 12:00–3:00pm
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Note that Problems listed in brackets are best saved for the better students, as are the recommended “Additional and Advanced Exercises.”

**Grading Policy:**

TEST I	100 points
TEST II	100 points
TEST III	100 points
TEST IV	100 points
Home Work	200 points
Final Exam.	200 points
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Total	800 points

**Fixed Scale**

A	90+%	A-	87 – 90_%	B+	83 – 87_%	B	80 – 83_%
B-	77 – 80_%	C+	73 – 77_%	C	67 – 73_%	C-	63 – 67_%
D	53 – 63_%	F	< 53%				

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary