

SYLLABUS FOR MATH 2250
Text: Hass, Weir, and Thomas, *University Calculus*
 Fall, 2006

<u>Section</u>	<u>Topics and Recommended Exercises</u>	<u># Days</u>
Chapter 2: Limits and Continuity		
2.1	Rates of Change and Tangents to Curves §2.1: #1, 3, 7, 8, 11, 12, 15, 19	1
2.2	Limit of a Function and Limit Laws §2.2: #1, 2, 3, 5, 9, 13, 19, 21, 22, 25, 27, 29, 34, 35, 36, 39, 42, 49, 57, 64, 68, 69, 85	2
2.4	One-Sided Limits and Limits at Infinity §2.4: #1, 2, 7, 10, 12, 17, 19, 20, 21, 23, 25, 27, 34, 35, 39, 43, 47, 49, 51, 55, 69, 74	2
2.5	Infinite Limits and Vertical Asymptotes §2.5: #1, 3, 9, 13, 14, 17, 18, 19, 23, 31, 35, 39, 42, 43, 44	1
2.6	Continuity §2.6: #1-4, 5-10, 11, 12, 13, 19, 25, 35, 36, 39, 46, 47, 58	2
2.7	Tangents and Derivatives at a Point §2.7: #1, 5, 7, 11, 13, 18, 23, 27, 28, 29, 30 Additional and Advanced Exercises: #4, 5, 6, 14, 21	1
Chapter 3: Differentiation		
3.1	The Derivative as a Function §3.1: #1, 3, 6, 9, 10, 13, 17, 27-30, 31, 33, 43, 44	1
3.2	Differentiation Rules for Polynomials, Exponentials, Products, and Quotients §3.2: #1, 3, 5, 7, 11, 15, 17, 18, 21, 23, 24, 27, 28, 29, 33, 35, 39, 43, 47, 49, 50, 53, 58, 62, 63	3
3.3	The Derivative as a Rate of Change §3.3: #1, 5, 7, 10, 11, 15, 17, 18, 21, 23, 26, 29	2
3.4	Derivatives of Trigonometric Functions §3.4: #1, 5, 8, 9, 11, 13, 16, 20, 25, 27, 35, 37, 47	1
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, 50, 51, 55, 57, 59, 61, 71, 73, 81, 83, 86, 95, 99, 112, 115	2
3.6	Implicit Differentiation §3.6: #1, 5, 11, 17, 19, 25, 39, 44, 51	1
3.7	Derivatives of Inverse Functions and Logarithms §3.7: #3, 11, 13, 21, 25, 27, 29, 32, 41, 51, 57, 61, 64, 65, 91, 93, 95, 98	2
3.8	Inverse Trigonometric Functions §3.8: #1, 3, 7, 21, 23, 30, 33, 34, 42, 43, 48, 54	1
3.9	Related Rates §3.9: #1, 2, 3, 5, 7, 9, 10, 11, 13, 14, 15, 17, 18, 19, 22, 23, 25, 30, 31, 35	2

3.10	Linearization and Differentials	1
	§3.10: #3, 8, 11, 15, 16, 39, 43, 45, 53, 54, 56, 61, 62, [65]	
	Additional and Advanced Exercises: #6, 8, 19, 20	

Chapter 4: Applications of Derivatives

4.1	Extreme Values of Functions	2
	§4.1: #1-14, 15, 17, 19, 21, 25, 27, 29, 31, 33, 39, 41, 43, 49, 51, 55, 61, 66, 67, [70], 72	
4.2	The Mean Value Theorem	2
	§4.2: #5, 6, 7, 9, 12, 13, 15, 19, 23, 25, 27, 31, 35, 39, 41, 45, 46, 59, 66a	
4.3	Monotonic Functions and the First Derivative Test	1
	§4.3: #1, 3, 5, 7, 9, 13, 17, 21, 25, 31, 43, 47, 49, [58]	
4.4	Concavity and Curve Sketching	3
	§4.4: #1, 3, 11, 15, 17, 21, 25, 30, 33, 37, 53, 59, 69; p. 309: #55, 57, 59	
4.5	Applied Optimization	3
	§4.5: #1, 3, 4, 5, 7, 11, 12, 14, 20, [22], [24], [25], 27, 32, 33, 41, 44	
4.6	Indeterminate Forms and L'Hôpital's Rule	2
	§4.6: #3, 5, 9, 15, 19, 21, 23, 25, 47, 51, 53, 61, 63	
4.7	Newton's Method	1
	§4.7: #1, 3, 5, 13, 16	
4.8	Antiderivatives	3
	§4.8: #1, 5, 7, 13, 15, 19, 23, 31, 33, 39, 43, 45, 55, 59, 61, 65, 87, 89, 91, 95, 103, 117, 118, 119, 120	
	Additional and Advanced Exercises: #13, 15, 17, 22, 35	

Chapter 5: Integration

5.1-5.2	Estimating with Finite Sums, Sigma Notation and Limits of Finite Sums	2
	§5.1: #1, 3, 5, 7, 11, 19, [21, 22]; §5.2: #1, 3, 7, 9, 13, 15, 19, 29, 35, 39	
5.3	The Definite Integral	2
	§5.3: #1, 3, 5, 9, 11, 13, 17, 19, 27, 31, 35, 55, 59, 63, 65, 66, [77], [79], [82]	
5.4	The Fundamental Theorem of Calculus	2
	§5.4: #1, 3, 5, 7, 9, 11, 17, 23, 27, 29, 33, 35, 39, 41, 43, 45, 47, 49, 53, 55, 58, 61-64, 73, 75	
5.5	Indefinite Integrals and the Substitution Rule	2
	§5.5: #1, 3, 5, 7, 9, 13, 17, 19, 22, 23, 29, 39, 43, 49, 51, 61, 67	
5.6	Substitution and Area Between Curves	2
	§5.6: #1, 3, 7, 13, 25, 27, 31, 39, 47, 51, 53, 55, 57, 67, 77, 81, 85, 89, 99, 103, [115, 116]	
	Additional and Advanced Exercises: #4, 5, 6, 30, 31, 32, Leibniz's Rule, 47, 48, 55	

This syllabus allows 8 days for tests and review (based on a 60-day semester). Problems listed in brackets are best saved for the better students, as are the recommended "Additional and Advanced Exercises."