

SYLLABUS FOR MATH 2250

Text: Hass, Weir, and Thomas,
University Calculus, Early Transcendentals, Second Edition

Fall, 2011

| <u>Section</u> | <u>Topics and Recommended Exercises</u> | <u># Days</u> |
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| Chapter 2: Limits and Continuity | | |
| 2.1 | Rates of Change and Tangents to Curves §2.1: #1, 3, 9, 10, 13, 15, 16, 19 | 1 |
| 2.2 | Limit of a Function and Limit Laws §2.2: #1, 2, 3, 5, 9, 12, 17, 21, 23, 28, 29, 30, 38, 45, 53, 64, 65, 81 | 2 |
| 2.4 | One-Sided Limits §2.4: #1, 2, 7, 10, 12, 17, 19, 20, 21, 23, 25, 27, 36, 39, 45, 46 | 1 |
| 2.5 | Continuity §2.5: #1–10, 11, 12, 13, 19, 25, 39, 40, 43, 54, 55, 66 | 2 |
| 2.6 | Limits Involving Infinity; Asymptotes of Graphs §2.6: #1, 13, 17, 37, 39, 45, 49, 50, 53, 54, 55, 59, 67, 69, 72, 73, 74, 81, 86 Additional and Advanced Exercises: #4, 5, 6, 14, 21 | 2 |
| Chapter 3: Differentiation | | |
| 3.1 | Tangents and the Derivative at a Point §3.1: 1, 5, 7, 11, 13, 18, 23, 27–30 | 1 |
| 3.2 | The Derivative as a Function §3.2: #1, 3, 6, 7, 9, 10, 13, 17, 27–31, 37, 45, 47, 53, 54 | 1 |
| 3.3 | Differentiation Rules §3.3: #1, 3, 5, 7, 11, 15, 17, 21, 30, 31, 32, 37, 39, 45, 51, 53, 55, 56, 59, 72, 76, 77 | 3 |
| 3.4 | The Derivative as a Rate of Change §3.4: #1, 5, 7, 10, 11, 15, 17, 18, 21, 23, 26, 29 | 2 |
| 3.5 | Derivatives of Trigonometric Functions §3.4: #1, 9, 12, 13, 15, 19, 22, 26, 33, 35, 43, 45, 57 | 1 |
| 3.6 | The Chain Rule §3.6: #1, 3, 5, 9, 11, 15, 17, 19, 27, 31, 35, 43, 47, 49, 52, 53, 61, 63, 65, 71, 83, 87, 97, 103 | 2 |
| 3.7 | Implicit Differentiation §3.7: #1, 5, 15, 19, 21, 27, 41, 46, 49 | 1 |
| 3.8 | Derivatives of Inverse Functions and Logarithms §3.8: #3, 11, 13, 21, 25, 27, 29, 32, 41, 51, 57, 61, 63, 65, 91, 93, 95, 98, 99 | 2 |
| 3.9 | Inverse Trigonometric Functions §3.8: #1, 3, 7, 21, 23, 30, 33, 34, 42, 43, 52 | 1 |
| 3.10 | Related Rates §3.10: #1, 2, 13, 15, 17, 19, 20, 21, 23–25, 27–29, 32, 33, 35, 39, 40 | 2 |
| 3.11 | Linearization and Differentials §3.11: #3, 8, 11, 15, 16, 39, 43, 45, 53, 54, 58, 61, 62, [63] Additional and Advanced Exercises: #6, 8, 19, 20 | 1 |

Chapter 4: Applications of Derivatives

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| 4.1 | Extreme Values of Functions | 2 |
| | §4.1: #1–14, 21, 23, 25, 27, 31, 33, 35, 37, 39, 53, 55, 57, 63, 65, 69 , 75, 80, 81, [84], 86 | |
| 4.2 | The Mean Value Theorem | 2 |
| | §4.2: # 9, 10, 11 , 15, 18, 19, 21, 25, 29, 31, 33, 37, 41, 45, 47 , 51, 52, 69, 76a | |
| 4.3 | Monotonic Functions and the First Derivative Test | 1 |
| | §4.3: #1, 3, 5, 11, 19, 23, 27, 33, 37, 43 , 63, 67, 69, [80] | |
| 4.4 | Concavity and Curve Sketching | 3 |
| | §4.4: #1, 3, 11, 17, 19, 23, 33, 49, 53 , 71, 77, 105, 111 ; p. 283: #55, 57, 59 | |
| 4.5 | Indeterminate Forms and L'Hôpital's Rule | 2 |
| | §4.5: # 3, 5, 9, 15, 19, 21, 23, 25, 51, 55, 57 , 75, 77 | |
| 4.6 | Applied Optimization | 3 |
| | §4.6: # 1, 3, 4, 5, 7, 11, 12, 14, 20 , [22], [24], [25], 27, 38 , 39, 49, 52 | |
| 4.7 | Newton's Method | 1 |
| | §4.7: #1, 3, 13, 16 | |
| 4.8 | Antiderivatives | 3 |
| | §4.8: # 1, 5, 7, 13, 15, 19, 23, 31, 33, 39, 43, 45, 55, 59, 61, 65, 89, 91, 93, 97, 105 , 119, 120, 121, 122 | |
| | Additional and Advanced Exercises: #13, 15, 17, 22, 35 | |

Chapter 5: Integration

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| 5.1–5.2 | Area and 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, 29, 33, 37, 55, 59, 71, 73, 74 , [83], [85], [88] | |
| 5.4 | The Fundamental Theorem of Calculus | 2 |
| | §5.4: # 1, 5, 7, 8, 9, 23, 29, 35, 39, 43, 45, 47, 51, 53, 55, 59, 65, 66, 67, 68, 72, 77 | |
| 5.5 | Indefinite Integrals and the Substitution Method | 2 |
| | §5.5: # 7, 9, 11, 13, 17, 19, 21, 24, 31, 51, 55, 61, 63, 73 | |
| 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, 20, 21, 22, Leibniz's Rule, 31, 32, 39 | |

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.” Problems listed in boldface are in the WeBWork problem bank for the course. Extra WeBWork problems are also provided for some of the sections for instructors to use as desired.

For instructors, please see <http://www.math.uga.edu/~curr/Advising/WeBWork.pdf> (from a math department IP address only).

To learn about using MyMathLab and an e-text version of the text, see <http://www.pearsonhighered.com/product?isbn=9780321694553>.