Syllabus for MTH 2300 — Calculus I

DEPARTMENT OF MATHEMATICS AND STATISTICS, WRIGHT STATE UNIVERSITY

Text: James Stewart, *Calculus: Concepts and Contexts, 4th Edition*

Section	Week	Sample Homework Assignment
Chapter 2: Limits and Derivatives		
2.1 The Tangent and Velocity Problems	1	2, 4, 6
2.2 The Limit of a Function	1	2, 3, 5, 10, 14, 19, 24, 28
2.3 Calculating Limits Using the Limit Laws	1	1, 2, 4, 10, 14, 18, 22, **28**, 30, 32, 42
2.4 Continuity	2	1, 4, 6, 9a, 16, 27, 32, 34
2.5 Limits Involving Infinity	2	1, 4, 6, 9, 16, 24, 26, 30, 32, 54, 55
2.6 Derivatives and Rates of Change	3	4, 6, 11, 14, 18, 20, 28, 34, 36, 44, 48, 50
2.7 The Derivative as a Function	3	2, 4, 6, 8, 10, 12, 24, 36, 42, 43
2.8 What Does f' Say about f ?	4	2, 4, 8, 12, 16, 20, 22, 30
Chapter 3: Differentiation Rules		
3.1 Derivatives of Polynomials and Exponential Functions	4	8, 10, 16, 18, 22, 28, 46, 58, 59, 62
3.2 The Product and Quotient Rules	5	2, 4, 6, 12, 18, 24, 34, 42, 48, 49, 52
3.3 Derivatives of Trigonometric Functions	5	2, 6, 10, 14, 16, 24, 32, 36
3.4 The Chain Rule (skip "*Parametric Curves*")	6	10, 14, 18, 22, 26, 28, 42, 53, 55, 60, 71, 74
3.5 Implicit Differentiation (skip "*Orthogonal Trajectories*")	6	6, 12, 16, 24, 27, 30, 51
3.6 Inverse Trigonometric Functions and Their Derivatives	7	2, 4, 10, 14, 18, 22, 25, 30
3.7 Derivatives of Logarithmic Functions (*Logarithmic Differentiation Optional*)	7	4, 6, 12, 18, 22
3.8 Rates of Change in the Natural & Social Sciences	7	4, 6, 10, 16, 18, 20, 22, 25, 28, 34
3.9 Linear Approximations and Differentials (*Differentials Optional*)	8	2, 6, 8, 12, 16
Chapter 4: Applications of Differentiation		
4.1 Related Rates	8	6, 10, 14, 18, 22, 26, 30, 34, 38
4.2 Maximum and Minimum Values	9	4, 8, 12, 42, 44, 48, 52, 62, 64
4.3 Derivatives and the Shapes of Curves	9	2, 6, 8, 12, 16, 24, 38, 58
4.5 Indeterminate Forms and L'Hospital's Rule	10	1ace, 2ac, 3ac, 4ace, 6, 10, 14, 20, 30, 42, 64, 66
4.6 Optimization Problems	10	8, 10, 16, 18, 22, 32, 48, 52, 58
4.8 Antiderivatives	11	2, 6, 9, 12, 13, 23, 27, 29, **38**, 40, 44, 48, 50
Chapter 5: Integrals		
5.1 Areas and Distances	11	2, 12, 16, 20, **22**
5.2 The Definite Integral	11	6, 8, 10, 18, **30**, 32, 37, 42
5.3 Evaluating Definite Integrals	12	4, 6, 12, 16, 20, 22, 46, 50, 52, 54, 56, 61, **66**
5.4 The Fundamental Theorem of Calculus	12	1, 2, 4, 7, 10, 12, 19, 22, **24**

Common Final Examination: All sections of MTH 2300 take common final exams at the time given in the Registrar's schedule (http://www.wright.edu/registrar/forms-resources/exam-schedules). *This includes evening sections.* By registering for this course you accept responsibility for taking the common final exam as scheduled and bringing a photo ID. Calculators capable of symbolic calculus are not permitted on the common final.

Optional Sections: Instructors are free to include material from a limited number of additional sections in chapters 5-9. However such material will not be tested on the common final.

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Schedules and Assignments: Twelve weeks of material are listed, leaving two weeks for exams, review, optional sections, etc. Weeks are given only as a guide to the instructor; they are not a suggested schedule. Assignments are examples only but indicate the material eligible for the common final. Boldfaced problems require the use of a computer.

Wright State Core: MTH 2300 is an option for Element 2: Mathematics of the Wright State Core. It meets University Learning Objective 2: "Demonstrate Mathematical Literacy". It also addresses the learning outcomes for Element 2, which are:

a. Identify the various elements of a mathematical or statistical model
b. Determine the values of specific components of a mathematical/statistical model or relationships among various components
c. Apply a mathematical/statistical model to a real-world problem
d. Interpret and draw conclusions from graphical, tabular, and other numerical or statistical representations of data
e. Summarize and justify analyses of mathematical/statistical models for problems, expressing solutions using an appropriate combination of words, symbols, tables or graphs

Recommended Laboratory Notebooks for Mathematica:
These notebooks are available in 170MM and 270MM via the desktop icons "Math Shared" or "Math Alias". They can be downloaded from http://www.wright.edu/~richard.mercer/Calculus/Lab/Download/ .

NOTEBOOK	TEXT SECTION(S)
01 Graphs and Mathematica	
04 Tangent Lines	2.1, 2.6
06 Derivatives and Graphs	2.8
10 The Derivative	2.7
11 Limits and Derivatives	2.2
12 Limits and Infinity	2.5
13 Polynomial Functions	3.1
14 Transcendental Functions	3.1, 3.3
15 Algebra and Derivatives	3.2
16 The Chain Rule	3.4, 3.5, 3.6
20 Derivatives and Rates	3.8, 4.1
21 Linear Approximation	3.9
24 Newton's Method	4.7 (optional)
25 Optimization	4.6
27 Indeterminate Forms	4.5
28 Antiderivatives	4.8
31 Area	5.1
33 Riemann Sums	5.1
34 Areas and Limits	5.2, 5.3, 5.4