

# Syllabus for MTH 2280 – Business Calculus

**Textbook:** Introductory Mathematical Analysis for Business, Economics, and the Life and Social Sciences, 13th edition, by Haeussler, Paul, and Wood. Pearson/Prentice Hall.

**Calculator:** a graphing calculator such as the TI-84 is required for this course. *Calculators capable of symbolic differentiation (for example, the TI-89) cannot be used in this course.*

**Wright State Core:** MTH 2280 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

**Topics:** This course has been divided into 48 days. It is suggested that the instructor cover a section in the recommended number of days (the remaining days are for review or tests), but an instructor may choose to cover sections in more or fewer days than is listed below.

## Part I: Review of Functions – 7 days

Days	Section	Suggested Homework Problems
1	3.1 (Lines)	3, 5, 8, 11, 12, 14, 23, 27, 30, 56, 60, 64, 65, 72
1	3.2 (Applications and Linear Functions)	5, 13, 16, 17, 20, 21, 24, 25, 27, 31
1	3.3 (Quadratic Functions)	7, 15, 22, 29, 30, 33, 38, 40
1	4.1 (Exponential Functions)	3, 8, 16, 21, 24, 28, 31, 34, 37, 42
1	4.2 (Logarithmic Functions)	1, 4, 5, 8, 9, 16, 17, 20, 23, 26, 31, 36, 41, 42, 46, 47, 58
1	4.3 (Properties of Logarithms)	3, 6, 9, 17, 18, 19, 21, 22, 24, 35, 38, 43, 47, 52
1	4.4 (Logarithmic & Exponential Equations)	3, 6, 11, 14, 19, 20, 27, 28, 32, 33, 43, 46

## Part II: Limits and Continuity – 4 days

Days	Section	Suggested Homework Problems
2	10.1 (Limits)	2, 4, 6, 7, 12, 15, 23, 24, 29, 30, 33, 35, 39, 42
1	10.2 (Limits, continued)	1, 2, 3, 7, 16, 24, 27, 31, 32, 34, 35, 56
1	10.3 (Continuity)	1, 4, 9, 10, 12, 17, 20, 24, 25, 30, 31

## Part III: Differentiation – 15 days

Days	Section	Suggested Homework Problems
2	11.1 (The Derivative)	2, 5, 10, 11, 12, 20, 24, 25, 27
2	11.2 (Rules for Differentiation)	5, 17, 31, 39, 49, 53, 56, 58, 61, 64, 70, 75, 80, 83, 85
2	11.3 (The Derivative as a Rate of Change)	2, 7, 9, 13, 16, 22, 24, 27, 30, 39, 41, 45
2	11.4 (The Product Rule and the Quotient Rule)	9, 11, 12, 16, 20, 21, 29, 30, 51, 55, 61, 66, 70, 71
2	11.5 (The Chain Rule)	4, 5, 8, 13, 22, 28, 33, 41, 46, 58, 59, 63, 66, 71, 73, 80
1	12.1 (Derivatives of Logarithmic Functions)	7, 8, 17, 20, 28, 29, 43, 46, 48, 49
1	12.2 (Derivatives of Exponential Functions)	3, 10, 18, 20, 21, 23, 26, 35, 40, 41
1	12.3 (Elasticity of Demand)	3, 6, 9, 11, 12, 14, 15, 18, 25
1	12.4 (Implicit Differentiation)	4, 5, 13, 14, 23, 24, 28, 39
1	12.7 (Higher Order Derivatives)	2, 7, 9, 16, 20, 21, 24, 36, 38, 39

Part IV: Curve Sketching, Extrema, and Optimization – 10 days

Days	Section	Suggested Homework Problems
2	13.1 (Relative Extrema)	1, 2, 5, 13, 18, 26, 31, 42, 54, 57, 60, 66, 69, 70
1	13.2 (Absolute Extrema on a Closed Interval)	3, 4, 7, 8, 9, 11, 12
2	13.3 (Concavity)	3, 4, 17, 20, 23, 24, 41, 45, 51, 63, 64, 67
1	13.4 (The Second Derivative Test)	3, 6, 7, 8, 9, 11, 12, 14
2	13.5 (Asymptotes)	8, 11, 13, 20, 26, 31, 34, 39
2	13.6 (Applied Maxima and Minima)	5, 7, 12, 13, 14, 16, 18, 27, 41

Part V: Integration – 5 days

Days	Section	Suggested Homework Problems
1	14.1 (Differentials)	3, 4, 6, 12, 13, 38, 39, 45
1	14.2 (The Indefinite Integral)	4, 10, 15, 17, 24, 31, 35, 36, 40, 41, 50
1	14.3 (Integration with Initial Conditions)	2, 6, 9, 10, 15, 16, 20
1	14.4 (More Integration Formulas)	3, 6, 7, 10, 17, 22, 27, 28, 33, 44, 53, 75
1	14.5 (Techniques of Integration)	2, 9, 10, 15, 20, 23, 34, 38, 57, 60, 61

Part VI: Definite Integration – 7 days

Days	Section	Suggested Homework Problems
2	14.6 (The Definite Integral)	1, 4, 8, 13, 18, 19
1	14.7 (The Fundamental Theorem of Calculus)	7, 8, 15, 24, 25, 28, 29, 55, 60, 61
2	14.9 (Area Between Two Curves)	3, 6, 13, 16, 35, 41, 48, 50, 53
1	14.10 (Consumers' and Producers' Surplus)	2, 3, 7, 9, 10
1	15.4 (Average Value of a Function)	1, 2, 6, 7, 10, 11