Fall 2017 Syllabus for MTH 2280 – Business Calculus

Textbook: Applied Calculus, 5th edition, by Hughes-Hallett, Gleason, Lock, Flath, *et al*. Wiley.

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 44 days; the remaining 10 or 11 days of the semester are to be used by the instructor as desired – to give tests, cover additional sections of the textbook, etc. The number of 'days' per section and the 'suggested homework problems' are recommended, but individual instructor may make minor modifications to this syllabus as needed.

Chapter 1: Functions and Change – 8 days

Days	Section	Suggested Homework Problems
1	1.1 (What Is a Function?)	2, 16, 20, 21, 24
1	1.2 (Linear Functions)	4, 13, 14, 21, 22
1	1.3 (Average Rate of Change and Relative Change)	1, 2, 3, 4, 8, 11, 14, 18
2	1.4 (Application of Functions to Economics)	2, 4, 8, 13, 18, 24, 28, 35, 42
1	1.5 (Exponential Functions)	1, 2, 6, 8, 12
1	1.6 (The Natural Logarithm)	9, 10, 22, 26, 32, 33
1	1.7 (Exponential Growth and Decay)	4, 5, 8, 11, 15, 34, 35, 40

Chapter 2: Functions and Change – 6 days

Days	Section	Suggested Homework Problems
1.5	2.1 (Instantaneous Rate of Change)	3, 6, 9, 12, 20
1.5	2.2 (The Derivative Function)	2, 7, 23, 24, 29
1	2.3 (Interpretations of the Derivative)	3, 4, 8, 23, 29, 30, 52
1	2.4 (The Second Derivative)	2, 8, 9, 10, 12, 19, 21, 25, 30
1	2.5 (Marginal Cost and Revenue)	4, 5, 6, 10, 13, 16

Chapter 3: Shortcuts to Differentiation – 6 days

Days	Section	Suggested Homework Problems
1.5	3.1 (Derivative Formulas for Powers & Polynomials)	1, 2, 3, 5, 8, 14, 20, 21, 26, 27, 45, 53, 60
1.5	3.2 (Exponential and Logarithmic Functions)	2, 3, 12, 13, 24, 32, 36, 41, 44
1.5	3.3 (The Chain Rule)	2, 9, 12, 13, 16, 21, 22, 34, 39, 42, 44
1.5	3.4 (The Product and the Quotient Rules)	2, 3, 8, 22, 25, 34, 40

Chapter 4: Using the Derivative – 12 days

Days	Section	Suggested Homework Problems
2	4.1 (Local Maxima and Minima)	2, 4, 5, 15, 16, 17, 20, 25, 26, 28, 29
2	4.2 (Inflection Points)	2, 3, 4, 6, 10, 14, 18, 24, 25, 27, 28
2	4.3 (Global Maxima and Minima)	4, 6, 10, 17, 18, 20
2	4.4 (Profit, Cost, and Revenue)	1, 2, 5, 9, 10, 16, 19, 20, 23
1.5	4.5 (Average Cost)	3, 4, 5, 7, 8, 10
1.5	4.6 (Elasticity of Demand)	1, 4, 9, 12, 13, 16, 17
1	4.7 (Logistic Growth)	3, 4, 5, 6

Chapter 5: Accumulated Change: The Definite Integral – 6 days

Days	Section	Suggested Homework Problems
2	5.1 (Distance and Accumulated Change)	2, 3, 10, 13, 19, 29
1	5.2 (The Definite Integral)	2, 3, 6, 11, 14, 18, 19
1	5.3 (The Definite Integral As Area)	6, 7, 12, 13, 21
1	5.4 (Interpretations of The Definite Integral)	2, 3, 7, 8, 22, 29
1	5.5 (Total Change and the Fundamental Theorem of Calculus)	2, 7, 8, 10

Chapter 6: Antiderivatives and Applications – 6 days

Days	Section	Suggested Homework Problems
1.5	6.1 (Analyzing Antiderivatives Graphically and Numerically)	2, 14, 22, 23, 24, 26
1.5	6.2 (Antiderivatives and The Indefinite Integral)	1, 2, 7, 8, 40, 50, 53, 56, 62, 66, 67, 71
1.5	6.3 (Using the Fundamental Theorem of Calculus to find Definite Integrals)	5, 7, 8, 16, 25
1.5	6.4 (Application: Consumer and Producer Surplus)	2, 3, 4, 6, 8

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