

Day-by-day summary of course

Unit 1: (9/17 to 10/22) Describing phenomena using graphs, numbers, words and symbols. Making predictions and answering questions using mathematical analysis when the phenomena is described by a function. The main objectives of this unit are to develop a thorough knowledge of the concept of “function,” the representations of functions and the features of linear, exponential, power and polynomial functions.

Unit 2: (10/24 to 10/29) The concept of a limiting value - a tool for making mathematical sense of “infinitely large” and “infinitesimally small.” The main objectives of this unit are to appreciate that some functions are not defined at all points, but their behavior near

Unit 3: (10/31 to 12/7) Making sense of the idea of an “instantaneous rate of change.” Calculating the instantaneous rates of change of quantities and phenomena described by functions. Applications of the derivative.

Unit 4: (12/10 to 12/14) Approximating the value of a function when all that you know is the rate of change and the value of the function at a single point.

Day	Date	Topic	Text
Monday	9/17/01	First day of class. The concept of a function.	1.1, 1.2
Wednesday	9/19/01	Representations of functions. Recognizing functions.	1.3
Friday	9/21/01	Interpreting graphs of functions. Average rate of change.	2.1,3,4
Labs:	9/18/01	No lab.	
	9/20/01	No lab.	
Monday	9/24/01	Linear functions. Modeling data using linear functions.	4.2, 4.3
Wednesday	9/26/01	Exponential growth and exponential functions.	9.1, 9.2
Friday	9/28/01	Power functions. Asymptotes.	Notes.
Labs:	9/25/01	Modeling data using linear and exponential regression.	
	9/27/01	Gateway #1: Fundamental rules of algebra.	
Monday	10/1/01	Rates of change and concavity.	2.3
Wednesday	10/3/01	Interpreting and using function notation.	1.2
Friday	10/5/01	Combining functions 1: Arithmetic and composition.	3.1,2,3
Labs:	10/2/01	Newton’s Law of Cooling and the Galapagos Iguana.	
	10/4/01	Newton’s Law of Cooling and the Galapagos Iguana (cont.).	
Monday	10/8/01	NO CLASS - COLUMBUS DAY.	
Wednesday	10/10/01	Combining functions 2: Transformations of functions.	3.4
Friday	10/12/01	Inverse functions.	12.1,2,3
Labs:	10/9/01	Describing and analyzing biomedical data.	
	10/11/01	Describing and analyzing biomedical data (continued).	
Monday	10/15/01	Introduction to polynomial and rational functions.	Notes.
Wednesday	10/17/01	Review for Exam 1.	Notes.

EXAM 1: THURSDAY 10/18 7-9PM SCIENCE CENTER LECTURE HALL D

Friday	10/19/01	Quadratic functions.	6.2,3
Labs:	10/16/01	Optional lab: Review for Exam 1.	
	10/18/01	Optional lab: Review for Exam 1.	
Monday	10/22/01	Functions defined in pieces.	Notes.
Wednesday	10/24/01	The idea of a limiting value. Left and right hand limits.	7.1,2,3
Friday	10/26/01	Calculating limits of functions. Asymptotes revisited.	7.3,11.4
Labs:	10/23/01	Compound interest and the growth of investments.	
	10/25/01	Compound interest and the growth of investments (cont.).	
Monday	10/29/01	Average and instantaneous rates of change.	2.3, 5.1
Wednesday	10/31/01	The derivative function. Calculating derivatives.	5.2
Friday	11/2/01	Graphical and verbal interpretations of the derivative.	5.3,4
Labs:	10/30/01	The evolution of prices in a simple economy.	
	11/1/01	The evolution of prices in a simple economy (continued).	
Monday	11/5/01	Short-cut rules for calculating derivatives.	8.3
Wednesday	11/7/01	The product and quotient rules.	8.3
Friday	11/9/01	Polynomial, rational functions and their graphs.	11.1,2,4
Labs:	11/6/01	Thomas Malthus, population growth and necessary evil.	
	11/8/01	Gateway #2: Concepts of Derivatives.	
Monday	11/12/01	NO CLASS - VETERAN'S DAY.	
Wednesday	11/14/01	Solving exponential equations using logarithms.	13.1,2,3
Friday	11/16/01	Derivatives of exponential and logarithmic functions.	9.4,14.1
Labs:	11/13/01	The number 'e,' exponential functions and derivatives.	
	11/15/01	Gateway #3: Solving equations.	
Monday	11/19/01	Locating the maximum, minimum values of a function.	10.1
Wednesday	11/21/01	Modeling situations with functions. Optimization.	10.3
Friday	11/23/01	NO CLASS - THANKSGIVING BREAK.	
Labs:	11/20/01	Optional lab: Gateway make-up opportunity.	
	11/22/01	NO LAB - THANKSGIVING BREAK.	
Monday	11/26/01	More optimization.	10.3
Wednesday	11/28/01	Review for Exam 2.	
EXAM 2: THURSDAY 11/29 7-9PM SCIENCE CENTER LECTURE HALL D			
Friday	11/30/01	The second derivative and concavity.	10.2
Labs:	11/27/01	Optional lab: Review for Exam 2.	
	11/29/01	Optional lab: Review for Exam 2.	
Monday	12/3/01	The Chain Rule.	16.1,3
Wednesday	12/5/01	Applications of the Chain Rule: Related rates.	16.3
Friday	12/7/01	Applications of the Chain Rule: Implicit differentiation.	16.3
Labs:	12/4/01	Resource Wars: The Future of Global Conflict.	
	12/6/01	Gateway #4: Calculating derivatives.	
Monday	12/10/01	Quantities defined by their rates of change.	Notes
Wednesday	12/12/01	Estimating quantities based on the rate of change.	Notes
Friday	12/14/01	More quantitative analysis of differential equations.	Notes
Labs:	12/11/01	Optional lab: Gateway make-up opportunity.	
	12/13/01	Optional lab: Gateway make-up opportunity.	