

Day-by-day summary of course

Unit 1: (2/3 to 2/10) 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. This will involve a review of some of the topics from the end of Math Xa and introduction of new ideas (such as equilibrium solutions and symbolic representations of solutions for differential equations).

Unit 2: (2/12 to 2/26) Through the study of Euler's method, you will be introduced to geometric series and infinite series in general. You will learn to decide when an infinitely long sum of numbers adds up to a finite total and when it doesn't.

Unit 3: (3/5 to 4/9) The integral. In this part of the course you will learn about connections between rates of change, functions, areas under curves and antiderivatives. You will learn how to calculate antiderivatives and how to use antiderivatives to calculate the total change in a quantity or the area under a curve. You will also learn about applications of integrals - such as calculating volumes.

Unit 4: (4/11 to 4/25) Trigonometry. You will learn to use trigonometric functions to represent periodic phenomena and solve problems involving right-angle triangles. You will learn to solve equations involving trigonometric functions through the use of *inverse* trigonometric functions. You will also learn about the derivatives and antiderivatives of functions that involve trigonometric functions (such as sine, cosine and tangent) and inverse trigonometric functions.

Unit 5: (4/28 to 5/2) In the very last week of the course you will return to the very first topic of the course - functions defined by their rates of change. In this last week of the course you will bring together much of the material that you have learned to study methods for finding the formula for function, starting with only the derivative and the value of the function at one point.

Monday	2/3/02	Quantities defined by their rates of change.
Wednesday	2/5/02	Slope fields and equilibrium solutions.
Friday	2/7/02	The idea of a symbolic solution for a differential equation.
Labs:	2/4/02	NO LAB.
	2/6/02	NO LAB.
Monday	2/10/02	Euler's method for approximating functions defined by their rate.
Wednesday	2/12/02	Finite geometric series.
Friday	2/14/02	Applications of finite geometric series: Mortgage calculations.
Labs:	2/11/02	Modeling the spread of a non-lethal disease.
	2/13/02	Modeling the spread of a non-lethal disease.
Monday	2/17/02	NO CLASS - PRESIDENTS DAY.
Wednesday	2/19/02	Infinite geometric series and the idea of convergence.
Friday	2/21/02	Infinite series in general.
Labs:	2/18/02	Can males be naturally enhanced?
	2/20/02	Can males be naturally enhanced?
Monday	2/24/02	The idea of a convergence/divergence test. n^{th} term and ratio tests.
Wednesday	2/26/02	Series, limits and area under a curve.
Friday	2/28/02	Euler's method for approximating functions and area under a curve.
Labs:	2/25/02	Gateway 1: Concepts of series.
	2/27/02	Optional lab: Review for Exam 1.
Monday	3/3/02	In-class review for Exam 1.

EXAM 1. MONDAY MARCH 3. 7:00-9:00 p.m. SCIENCE CENTER LECTURE HALL C.

Wednesday	3/5/02	Area under a curve and the total change in a quantity.
Friday	3/7/02	Integral notation.
Labs:	3/4/02	NO LAB.
	3/6/02	Optional lab: Gateway make-up opportunity.

Monday	3/10/02	The idea of an anti-derivative.
Wednesday	3/12/02	Using anti-derivatives to calculate areas and total changes.
Friday	3/14/02	Short-cut rules for finding anti-derivatives.
Labs:	3/11/02	Global impact of the 1986 Chernobyl disaster.
	3/13/02	Global impact of the 1986 Chernobyl disaster.
Monday	3/17/02	The technique of u-substitution.
Wednesday	3/19/02	The technique of u-substitution.
Friday	3/21/02	Applications of integrals: How much dough in a doughnut?
Labs:	3/18/02	Gateway 2: Calculating anti-derivatives.
	3/20/02	Optional lab: Gateway makeup opportunity.
Monday	3/24/02	NO CLASS. (Spring Break.)
Wednesday	3/26/02	NO CLASS. (Spring Break.)
Friday	3/28/02	NO CLASS. (Spring Break.)
Labs:	3/25/02	NO LAB. (Spring Break.)
	3/27/02	NO LAB. (Spring Break.)
Monday	3/31/02	Applications of integrals: Volumes of revolution.
Wednesday	4/2/02	Applications of integrals: Average value, slicing.
Friday	4/4/02	Applications of integrals: Slicing problems.
Labs:	4/1/02	The lifting power of a lighter-than-air aircraft.
	4/3/02	The lifting power of a lighter-than-air aircraft.
Monday	4/7/02	In-class review for Exam 2.
EXAM 2. MONDAY APRIL 7. 7:00-9:00 p.m. SCIENCE CENTER LECTURE HALL C.		
Wednesday	4/9/02	Functions defined by integrals.
Friday	4/11/02	Modeling periodic phenomena.
Labs:	4/8/02	NO LAB.
	4/10/02	Optional lab: Gateway makeup opportunity.
Monday	4/14/02	Circle and triangle definitions of trigonometric functions.
Wednesday	4/16/02	Solving equations with the inverse trigonometric functions.
Friday	4/18/02	Applications of triangle trigonometry.
Labs:	4/15/02	Evaluating evidence for the existence of extra-terrestrial life.
	4/17/02	Evaluating evidence for the existence of extra-terrestrial life.
Monday	4/21/02	Derivatives of functions involving sine and cosine.
Wednesday	4/23/02	Finding anti-derivatives for functions involving sine and cosine.
Friday	4/25/02	Derivatives, anti-derivatives with inverse trigonometric functions.
Labs:	4/22/02	The optimal firing angle for a cannon.
	4/24/02	Gateway 3: Trigonometry.
Monday	4/28/02	The idea of a symbolic solution for a differential equation II.
Wednesday	4/30/02	The technique of Separation of Variables.
Friday	5/2/02	Calculating a symbolic solution for the Logistic Equation.
Labs:	4/29/02	Optional lab: Gateway make-up opportunity.
	5/1/02	Optional lab: Gateway make-up opportunity.