

UAF DMS Guidelines for
MATH 230X Essential Calculus with Applications

Math 230X Syllabus Guidelines

10.4 Continuity	1-1½ days
10.5 Average Rate of Change	1 day
10.6 Instantaneous Rate of Change	1 day
10.7 Definition of Derivative and Power Rule	1-1½ days
10.8 Techniques for Finding Derivatives	1 day
10.9 Applications: Marginal Analysis	1 day
Exam over Chapter 10	
11.1 Product and Quotient Rules	1 day
11.2 The Chain Rule and General Power Rule	1-1½ days
11.3 Implicit Differentiation and Related Rates	2 days
11.4 Increasing and Decreasing Intervals	1 day
11.5 Critical Points and the First Derivative Test	1 day
11.6 Absolute Maximum and Minimum	1 day
12.1 Concavity and Points of Inflection	1 day
12.2 The Second Derivative Test	1 day
12.3 Curve Sketching: Polynomial Functions	1-1½ days
12.4 Curve Sketching: Rational Functions	1 day
12.5 Business Applications	1 day
12.6 Other Applications	1-2 days
Exam overs Chapters 11 and 12	
13.1 Derivatives of Logarithmic Functions	1 day
13.2 Derivatives of Exponential Functions	1 day
13.3 Growth and Decay	1-1½ days
13.4 Elasticity of Demand	1 day
13.6 Differentials	1 day
14.1 The Indefinite Integral	1 day
14.2 Integration by Substitution	1 day
14.3 Area and Riemann Sums	1-2 days
14.4 Fundamental Theorem of Calculus	1 day
14.5 Area Under a Curve with Applications	1 day
14.6 Area Between Curves with Applications	1 day
15.1 Integration by parts	1 day
15.2 Annuities and Income Streams	1 day
15.4 Numerical Integration	1 day
Exam over Chapters 13, 14, and 15	
Review Chapters 10-15	
Final over Chapters 10-15	

6. Types of Assessments

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for online work through HAWKES, mastery level should be no less than 75%
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must be cumulative and representative of the entire course
must include problems from each Assessment Criteria listed on the next page
Students are expected to know on their own (no formulas provided on the test for the following):

differentiation formulas
integration formulas

7. Assessment Criteria

Final exams should contain problems that demonstrate

7 - Algebra

simplify algebraic expressions involving negative and fractional exponents, compound fractions, and rational expressions

solve a problem using modeling with equations (eg. area, length, mixtures, distance, or rate)

Limits

evaluate a two-sided limit

evaluate a one-sided limit

evaluate an infinite limit

express with proper notation

find limits from graph

Continuity

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find domain and range

find intercepts

find critical and hypercritical points

find asymptotes

identify intervals where the function is increasing or decreasing

identify intervals where the function concave up or down

identify points that are extreme values or inflection points

Differentiation and integration

understand and use basic properties

find derivatives of more complicated functions

*Chain rule

*Logarithmic Differentiation

find integrals of more complicated functions

*Integration by Parts

*Numerical Integration

understand the fundamental theorem of calculus

Apply Derivatives to Applications (minimum of 2)

modeling with related rates

modeling with optimization

modeling with differentials

modeling with growth/decay

modeling with Elasticity

Apply Integrals to Applications (minimum of 2)

modeling average value

modeling surplus

modeling growth/decay

modeling area

modeling rate of flow

8. Grading Policy

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