

COURSE SYLLABUS

Course: Calculus II
Number: Math 162 XH
Units: 3 Units

Course Description: Antiderivatives; the definite integral with applications from geometry and physics; logarithmic, exponential, and inverse trigonometric functions; techniques of integration.

Prerequisites: Calculus I - Differential Calculus.

Detailed Syllabus:

0. Getting Started

1. Email and Chat
2. Learning About the Course
3. Fundamentals of LiveMath Maker

1. Integration

1. Measuring Area Under a Curve
2. Definition of the Integral
3. Properties of Integrals, Symmetry
4. Integrals of Data Functions
5. Numerical Methods: Rectangles, Trapezoids
6. Undefined Integrals
7. Numerical Calculation of Integrals

2. Fundamental Theorem of Calculus

1. Derivative of an Integral
2. Integral of a Derivative
3. Fundamental Formula
4. Distance, Velocity, and Acceleration
5. Improper Integrals
6. More Properties of Integrals
7. Applications: Measure Accumulation Totals
8. Indefinite Integrals and Antiderivatives

3. Computing Integrals

1. Algebraic Antiderivatives
2. Integrals of Standard Functions
3. Transforming Integrals: u-substitution
4. Measuring Area under Parametric Curves
5. Integrals of Polar Functions

4. Measurements via Slicing

1. Measuring Area via Slicing
2. Measuring Volume via Slicing
3. Density and Mass
4. Accumulation
5. Arc Length

5. Double Integrals

1. Measuring Area
2. Gauss-Green Formula
3. Measuring Volume with Double Integrals

6. Integration Techniques

1. Separable Differential Equations
2. Integration By Parts
3. DeMoivre's Theorem
4. Integration Patterns
5. Partial Fractions Technique
6. Trigonometric Integrals
7. Trigonometric Substitution