

COURSE SYLLABUS

Course: Calculus III
Number: Math 261 XH
Units: 3 Units

Course Description: Indeterminate forms, L'Hopital's Rule, improper integrals, infinite sequences and series, Taylor series, and polar coordinates

Prerequisites: Calculus I,II - Differential and Integral Calculus.

Detailed Syllabus:

0. Getting Started

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

1. Taylor's Expansion of a Function

1. Splines and Smooth Splines
2. Points of Contact
3. Application: Landing an Airplane
4. Taylor Expansion
5. Recognizing Familiar Expansions
6. Using Expansions for Approximations
7. Derivatives and Integrals of Expansions
8. Expansions At Other Points
9. Newton's Method
10. Calculating Limits: L'Hopital's Rule
11. Expansions and Solving Differential Equations

2. Sequences and Series

1. Sequences of Numbers
2. Series of Numbers
3. Convergence
4. Convergence of Taylor Expansions
5. Barriers: Radius of Convergence
6. Shared Convergence Intervals for Derivatives and Integrals of Functions
7. Applications: Drug Dosing

3. Power Series

1. Basic Definition
2. Solutions of Differential Equations

3. Convergence Intervals of Power Series

4. Ratio Test

4. Polar Coordinates

1. Basic Graphing

2. Recognizable Curves

3. Differentiation and Integration in Polar Coordinates