Course Overview- Math 121-D. Benedetto Spring 2021

- **Transcendental and Inverse Functions, and L'Hôpital:**

  - Exponentials and Logarithms (Section 6.1-6.4) (Review)
  - Inverse Trigonometric Functions (Section 6.6)
  - Hyperbolic (and Inverse Hyperbolic Functions) (Section 6.7)
  - L'Hôpital's Rule and Indeterminate Forms (Section 6.8)

- **Integration Methods:**

  - Integration by Parts (Section 7.1)
  - Trigonometric Integrals (Section 7.2)
  - Trigonometric Substitution, Completing the Square (Section 7.3)
  - Partial Fractions (Section 7.4)
  - Integration Strategies (Section 7.5)
  - Improper Integrals (Section 7.8)

- **Sequences and Series:**

  - Sequences (Section 11.1) and Introduction to Series (Section 11.2)
  - Integral Test and p-Test (Section 11.3)
  - Comparison and Limit Comparison Test (Section 11.4)
  - Alternating Series (Section 11.5)
  - Absolute and Conditional Convergence, Ratio (and Root) Test(s) (Section 11.6)
  - Series Testing Strategy (Section 11.7)
  - Intoduction to Power Series, Interval/Radius of Convergence (Section 11.8)
  - Representing Functions as Power Series (Section 11.9)
  - Taylor and MacLaurin Series (Section 11.10)
    * Applications: New Integrals, Estimates, Sums, Limits, ~~Higher-Order Derivatives~~

- **Parametric Equations:**

  - Parametric Equations (Sketching) (Section 10.1)
  - Calculus on Parametric Curves (Section 10.2)
    * Slopes, Tangent Lines
    * Arclength
    * ~~Surface Area (both formulas)~~

- **Polar Coordinates:**

  - Introduction to Polar Coordinates (Section 10.3)
  - Area with Polar Coordinates (Section 10.4)