Instructor: Medvinsky Michael

General Learning Objectives of 1311:

The goal of Math 1311 is to master the basic tools for the study of functions $f(x) = y$, and become skilled in its use for solving problems in science and engineering.

Tentative Week-by-Week Guide of Textbook Sections. It will be Adjusted Based on the Progress of the Course

Week 1: 1.3, 1.5, 1.6, 1.7: Functions, Compositions, Exponential Function, Logarithms, Inverse Functions, Parametric Curves

Week 2: 2.1, 2.2, 2.3, 2.4, 2.5: Velocity, Limits, Limit Laws , Continuity

Week 3: 2.6, 2.7, 2.8, 3.1: Derivatives, Relationship between a Function and its Derivative. Derivatives of Polynomials and Exponential

Week 4: 3.2-3.6 , Product and Quotient Rules, Derivatives of Trig Functions, Chain Rule, Implicit Differentiation, Inverse Trig Functions

Week 5: 3.7, 3.8, 3.9, 4.1, 4.2: Log Functions, Log Derivatives, Linear Approximation, Differentials, Applications, Linear Approximation, Differentials, Related Rates, Max and Min Values

Week 6: 4.3, 4.5: Derivatives and Shapes of Curves, l'Hopital's Rule,

Week 7: 4.6, 4.7, 4.8, 5.1: Optimization, Newton's Method, Antiderivatives. Areas, Distances.

Week 8: 5.2, 5.3, 5.4, 5.5: The Definite Integral, Evaluating Definite Integrals, Fundamental Theorem of Calculus, Substitution Rule

Week 9: 5.6, 5.7, 5.8, 5.9: Integration by Parts. Additional Techniques of Integration. Approximate Integration

Week 10: 5.10, 6.1, 6.2: Improper Integrals, Areas Between Curves, Volumes.

Week 11: 6.2, 6.3, 6.4: Volumes, Volumes by Shells, Arc Length

Week 12: 6.5, 6.6: Average Values; Applications to Physics and Engineering

Week 13: 6.6, 6.7, 6.8 7.1, 7.2, 7.3 Modeling with Differential Equations, Direction Fields, Separable Differential Equations

Week 14: 7.3, 7.4, 7.5, 7.6, 8.1, 8.2: Exponential Growth and Decay, Sequences and Series, Review

Week 15: Review