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OFFICIAL SYLLABUS

Math 150, Calculus I (Assumes 3 75 min/week)

(Adopted – Spring 2006; Committee: Z. Agustin , K. Fick , G. Pelekanos (Chair), S. Staples)

Textbook: Calculus 9th Ed. By Varberg, Purcell, Rigdon

Contents of the course:

Ch. 1. Limit (recommended time: 6 days)

1.1 Introduction to Limits
1.2 Rigorous Study of Limits
1.3 Limit Theorems
1.4 Limits Involving Trigonometric Functions
1.5 Limits at Infinity; Infinite Limits
1.6 Continuity of Functions

Ch. 2. The Derivative (recommended time: 9 days)

2.1 Two Problems with One Theme
2.2 The Derivative
2.3 Rules for Finding Derivatives
2.4 Derivatives of Trigonometric Functions
2.5 The Chain Rule
2.6 Higher-Order Derivatives
2.7 Implicit Differentiation
2.8 Related Rates
2.9 Differentials and Approximations

Ch. 3. Applications of the Derivative (recommended time: 8 days)

3.1 Maxima and Minima
3.2 Monotonicity and Concavity
3.3 Local Extrema and Extrema on Open Intervals
3.4 Practical Problems
3.5 Graphing Functions Using Calculus
3.6 The Mean Value Theorem for Derivatives
3.8 Antiderivatives
3.9 Introduction to Differential Equations

Ch. 4. The Definite Integral (recommended time: 6 days, 2 days on 4.1)

4.1 Introduction to Area
4.2 The Definite Integral
4.3 The First Fundamental Theorem of Calculus
4.4 The Second Fundamental Theorem of Calculus and the Method of Substitution
4.5 The Mean Value Theorem for Integrals and the Use of Symmetry

Ch. 6. Transcendental Functions (recommended time: 7 days)

6.1 The Natural Logarithm Function
6.2 Inverse Functions and Their Derivatives
6.3 The Natural Exponential Function
6.4 General Exponential and Logarithmic Functions
6.5 Exponential Growth and Decay
6.6 First-Order Linear Differential Equations (**OPTIONAL)**
6.8 The Inverse Trigonometric Functions and Their Inverses
6.9 The Hyperbolic Functions and Their Inverses

Any instructor should cover all of the material specified; additional sections are optional.