MATH 1340 - 1350

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Office Hours: Daily 7am – 7:25, 6th Period Conference, 2:30 – 2:50

Major Text: Larson, Hostetler and Edwards. *Calculus of a Single Variable.* 8th Edition
Boston/New York: Houghton Mifflin Company, 2006

Calculator: TI 83, TI 83 Plus, TI 84
Approach: Each topic is approached in an analytical, graphical, and tabular method.
Other technology includes the use of the Smartboard and its functions.

COURSE DESCRIPTION

   MATH 1340. Calculus and Analytic Geometry IA: Limits, the derivative, differentiation techniques and applications of the derivative. MATH 1340 covers the first half of topics from MATH 1310.

   MATH 1350. Calculus and Analytic Geometry IB: Integration, Differentiation and Integration of transcendental functions, Applications of integration (Area, Volume, Arc Length and Surfaces of Revolution). MATH 1350 covers the second half topics from MATH 1310.

ASSESSMENTS
- Formative Assessments
- Chapter Summative Assessments **(65%)**
- Final Summative Assessment **(15%)**
- Information Evaluation Skills
- Points earned from homework (100 pts over the entire semester) **(15%)**
- BGP Assessment Test **(5%)**

** Standard Grading Scale 90-100, 80-89, etc

BGP Learning Outcomes:
1. Interpret mathematical models such as formulas, graphs, tables, and schematics, and draw inferences from them.
2. Represent mathematical information symbolically, visually, numerically, and verbally.
3. Use arithmetical, algebraic, and graphical methods to solve problems.
4. Estimate and check answers to mathematical problems in order to determine reasonableness, identify alternatives, and select optimal results.
5. Recognize that mathematical methods are based on assumptions and have limits

BGP learning outcomes will be measured by the BGP Assessment Exam

COURSE CONTENT

   MATH 1340 (First Semester)

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Chapter 1: **Limits and Their Properties** *(2 weeks)*
    1.1   A Preview of Calculus
    1.2   Finding Limits Graphically and Numerically
            *Estimating Limits using Graphs and Tables on Calculator
            *Formal Definition of Limit
    1.3   Evaluating Limits Analytically
            *Evaluate Algebraically
            *Evaluate using the Squeeze Theorem
    1.4   Continuity and One-Sided Limits
            *Use Properties of Continuity
            *Understand and use the Intermediate Value Theorem
    1.5   Infinite Limits
            *Find vertical asymptotes of a graph

Chapter 2: **Differentiation** *(4 weeks)*
    2.1   The Derivative and the Tangent Line Problem
            *Limit Definition of Derivatives
    2.2   Basic Differentiation Rules and Rates of Change
    2.3   Product and Quotient Rules and Higher-Order Derivatives
    2.4   The Chain Rule
    2.5   Implicit Differentiation
    2.6   Related Rates
            *Use related to solve real-life problems

Chapter 3: **Applications of Differentiation** *(4 weeks)*
    3.1   Extrema on an Interval
    3.2   Rolle's Theorem and the Mean Value Theorem
    3.3   Increasing and Decreasing Functions and the First Derivative Test
    3.4   Concavity and the Second Derivative Test
    3.5   Limits at Infinity
            *Determine Horizontal Asymptotes
    3.6   Curve Sketching
    3.7   Optimization Problems
            *Solve applied minimum and maximum problems

COURSE CONTENT

MATH 1350 (Second Semester)

Chapter 4: **Integration** *(4 weeks)*
    4.1   Antiderivatives and Indefinite Integration
            *Write General Solutions
            *Find particular solutions of Differential Equations
    4.2   Area
            *Use Sigma Notation and Limit Definition

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4.3   Riemann Sums and Definite Integrals
4.4   The Fundamental Theorem of Calculus
         *Use the Mean Value Theorem for Integrals
         *Find Average Value over a closed integral
         *Use Second Fundamental Theorem of Calculus
4.5   Integration by Substitution

Chapter 5:   **Logarithmic, Exponential, and Other Transcendental Fncts** *(4 weeks)*
5.1   The Natural Logarithmic Function: Differentiation
5.2   The Natural Logarithmic Function: Integration
         *Use Log Rule for integration of rational functions
5.3   Inverse Functions
5.4   Exponential Functions: Differentiation and Integration
5.5   Bases Other Than e and Applications
         *Model compound interest and exponential growth

Chapter 6:   **Differential Equations**   *(2 weeks)*
6.1   Slope Fields
6.2   Differential Equations: Growth and Decay
6.3   Separation of Variables
6.4   First-Order Linear Differential Equations

Chapter 7:   **Applications of Integration** *(3 weeks)*
7.1   Area of a Region Between Two Curves
         *Accumulation Process and integration
7.2   Volume: The Disc and Washer Method
         *Known cross sections method
7.3   Volume: The Shell Method
7.4   Arc Length and Surfaces of Revolution