

**MAT 101
MATHEMATICS FOR SOCIAL SCIENCES
2009-10 Summer**

COURSE OUTLINE FROM TEXTBOOK

Text Book: Introductory Mathematical Analysis by E. F. Haeussler, R.S. Paul, and R. Wood, 11th Edition, 2006 or 12th Edition, 2008.

Grading: Quizzes: 30%; Mid-Term Exam: 35%; Final Exam: 45%; (%10 bonus).

Functions and Graphs (6 hr + Quiz 1)

- 2.1 Functions
- 2.2 Special Functions
- 2.3 Combinations of Functions
- 2.4 Inverse Functions
- 2.5 Graphs in Rectangular Coordinates
- 2.6 Symmetry
- 2.7 Translations and Reflection
- 4.1 Exponential Functions
- 4.2 Logarithmic Functions
- 4.3 Properties of Logarithms
- 4.4 Logarithmic and Exponential Equations

Limits and Continuity (5 hr + Quiz 2)

- 10.1 Limits
- 10.2 Limits (Continued)
- 10.3 Continuity (Bisection method)

Differentiation (8 hr + Quiz 3)

- 11.1 The Derivative
- 11.2 Rules for Differentiation
- 11.4 Product and Quotient Rules
- 11.5 The Chain Rule and the Power Rule
- 12.1 Derivatives of Logarithmic Functions
- 12.2 Derivatives of Exponential Functions
- 12.4 Implicit Differentiation
- 12.5 Logarithmic Differentiation
- 12.7 Higher Order Derivatives

Curve Sketching (9 hr + Quiz 4)

- 13.1 Relative Extrema
- 13.2 Absolute Extrema on a Closed Interval
- 13.3 Concavity
- 13.4 The Second Derivative Test
- 13.5 Asymptotes
- 13.6 Applied Maxima and Minima

MIT-TERM EXAM (JULY 30, 2010 FRIDAY)

Integration (9 hr)

- 14.2 The Indefinite Integral
- 14.4 Some Integration Formulas
- 14.5 Techniques of Integration: Substitution,
- 15.1 Integration by Parts,
- 15.2 Integration by Partial Fractions
- 14.6 Summation
- 14.7 The Definite Integral
- 14.8 The Fundamental Theorem of Calculus
- 14.10 Area
- 14.11 Area Between Curves
- 15.4 Average Value of a Function (Mean Value Theorem)
- 15.7 Improper Integrals

Multivariate Calculus (5 hr)

- 17.1 Functions of Several Variables
- 17.2 Partial Derivatives
- 17.4 Implicit Partial Differentiation
- 17.5 Higher Order Partial Derivatives
- 17.6 The Chain Rule
- 17.11 Multiple Integrals

Matrix Algebra (9 hr)

- 6.1 Matrices
- 6.2 Matrix Addition and Scalar Multiplication
- 6.3 Matrix Multiplication
- 6.4 Solving Systems by Reducing Matrices
- 6.5 Method of Reduction (Continued)
- 6.6 Inverses (Determinants)

FINAL EXAM (AUGUST 13, 2010 FRIDAY)

6 weeks x 9 hr = 54 hr