

**Tennessee Tech University
Mathematics Department**

MATH 1831: Further Topics in Applied Calculus

I. COURSE DESCRIPTION FROM CATALOG:

Includes systems of linear equations, linear programming, exponential and logarithmic equations, partial differentiation, separable and linear differential equations. This course is designed to enhance students' understanding of calculus and its applications to Economics. Lec. 1. Cr. 1.

II. PREREQUISITE(S): none

III. COREQUISITE(S): MATH 1830

IV. COURSE OBJECTIVE(S):

This course seeks to give students a better understanding of Applied Calculus and its applications to the field of Economics.

V. TOPICS TO BE COVERED:

i) Systems of Linear Equations (approx. 3-4 weeks)

- (1) Substitution
- (2) Elimination
- (3) Matrix Operations
- (4) Inverse Matrices
- (5) Leontief Input-Output Model

ii) Linear Programming (approx. 2-3 weeks)

- (1) Linear Inequalities
- (2) Simplex Method
- (3) Optimization

iii) Exponential and Logarithmic Functions (approx. 3 weeks)

- (1) Definitions and Properties
- (2) Graphing
- (3) Exponential Equations
- (4) Logarithmic Equations

iv) Partial Differentiation (approx. 3 weeks)

- (1) Multivariate Functions
- (2) Partial Differentiation
- (3) Maxima and Minima

v) Differential Equations (optional topic; approx. 2-3 weeks)

- (1) Separation of Variables
- (2) Linear Differential Equation

VI. ADDITIONAL INFORMATION:

This course will **NOT** be submitted for approval to the University General Ed committee to satisfy the minimum general education requirements in mathematics.

VII. POSSIBLE TEXTS AND REFERENCES:

Calculus for Business, Economics, Life Sciences, and Social Sciences, 14th Edition, Barnett, Ziegler, and Byleen

VIII. ANY TECHNOLOGY THAT MAY BE USED:

iLearn, MyMathLab

IX. Student Academic Misconduct Policy:

Maintaining high standards of academic integrity in every class at Tennessee Tech is critical to the reputation of Tennessee Tech, its students, alumni, and the employers of Tennessee Tech graduates. The Student Academic Misconduct Policy describes the definitions of academic misconduct and policies and procedures for addressing Academic Misconduct at Tennessee Tech. For details, view the Tennessee Tech's Policy 217 – Student Academic Misconduct at [Policy Central](#).

X. Disability Accommodation:

Students with a disability requiring accommodations should contact the Accessible Education Center (AEC). An Accommodation Request (AR) should be completed as soon as possible, preferably by the end of the first week of the course. The AEC is located in the Roaden University Center, Room 112; phone 931-372-6119. For details, view the Tennessee Tech's Policy 340 – [Services for Students with Disabilities at Policy Central](#).