Title of Course: Applied Economic Models

I. Catalog Description and Credit Hours of Course

Introduction to the process of data collection, model construction, hypothesis testing and prediction used by economists and social scientists. (3)

II. Prerequisites

MA134 College Algebra and
Any college-level statistics course and
EC101 Economic Problems and Policies or
EC215 Principles of Microeconomics or
EC225 Principles of Macroeconomics

III. Purposes or Objectives of the Course

After completing the course, the student will be able to:

1. Explain the sources and process of data collection and analysis.
2. Construct and test a model.
3. Distinguish between "good" and "bad" models.

IV. Expectations of Students

The average student should plan on spending two hours outside of class for each hour spent in class. Each student is expected to participate in class discussion and complete all assignments in a timely manner. Each student will complete a project that involves data collection, model construction, estimation, and explanation of results.

V. Text

### VI. Course Outline

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1. **Introduction and Purpose of Course**
   - The Research Project
   - Time Series and Cross-Section Data Sets
   - Sources of Data

2. **A Brief Review of Statistics**
   - Measures of central tendency and dispersion
   - Distribution Functions and their statistics
     - t and z statistics
     - F-statistic
     - Chi-square statistic
   - Hypothesis testing
   - Causality vs. Correlation

3. **Regression Analysis**
   - Ordinary least squares-Two Variables
   - The multiple regression Model
   - Prediction and Confidence Intervals
   - Violations of the assumptions
     - Heteroscedasticity
     - Autocorrelation
     - Simultaneous Equation Bias

4. **Data Transformations**
   - Logarithmic Transformation
   - First Differencing
   - Dummy Variables
   - Lagged Variables

5. **Applied Models**
   (The following are examples; actual models are to be chosen by instructor)
   - Microeconomic Models
     - The Production Function
     - The Cost Function
     - The Profit Function
     - Systems of Demand Functions
       - Price Elasticity
       - Income Elasticity
       - Cross-price Elasticity
   - Macroeconomic Models
     - Growth Models
ii. Consumption Function
iii. Investment Function
iv. Demand for Money

c. Economic Models of Social Issues
i. crime
ii. immigration
iii. education
iv. retirement
v. discrimination

VII. Basis of Student Evaluation
Tests: 40%
Project: 40%
Homework 20%