

AGEC 745: Agricultural Production Economics

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Course Description: Resource allocation, production selection, scale of operation of agricultural firms including risk and uncertainty associated with agricultural production.

Prerequisites: A basic understanding of differential calculus and a strong knowledge of microeconomic theory.

Course Objectives:

- **To develop a thorough understanding of the classical microeconomic theory of the firm under static certainty.**
- **To develop the ability to perform graphical and mathematical analyses using production economic theory.**
- **To provide experience in applying production economic theory to managerial and policy problems.**

Textbook: No textbook will be required for this course. The instructor will provide material as needed.

You will need a calculator for many of the assignments in this course. Also you will need to have access to some type of spreadsheet program with graphing capabilities. I would recommend using Excel, Lotus, or Quatro Pro.

Course Requirements:

Module Assignments	25%
Research Paper	25%
Mid Term Exam	25%
Final Exam	25%

Grading:

90% or Above	A
80% - 89%	B
70% - 79%	C
60% - 69%	D
Below 60%	F

***I reserve the right to curve grades up.**

Tentative Course Outline

I. Introduction

- A. Definitions**
- B. Assumptions**
- C. Calculus Review**

II. Technical Aspects of Production

A. The Production Function

B. The Factor Product Model

- 1. Concepts of Production Functions**
- 2. Law of Diminishing Marginal Returns**
- 3. Stages of Production**
- 4. Elasticity of Production (Single Input)**

C. The Factor-Factor Model

- 1. Isoquants**
- 2. Marginal Rate of Substitution**
- 3. Elasticity of Factor Substitution**
- 4. Isoclines and Ridgelines**
- 5. Factor Interdependence**
- 6. Elasticities of Production and Function Coefficient**
- 7. Homogeneous Production Functions**
- 8. Returns to Scale**

III. Economic Aspects of Production: The Input Perspective

A. Factor Product Model

- 1. Total Value Product, Average Value Product, Marginal Value Productivity**
- 2. Profit Function Concepts**
- 3. Factor Costs**
- 4. Profit and Maximum Profit**
- 5. Economic Region of Production**
- 6. Factor Demand**

B. The Factor-Factor Model

- 1. Profit Maximization**
- 2. Unconstrained Optimization**
- 3. Expansion Path**
- 4. Constrained Optimization**
- 5. Factor Demand Functions**

IV. Economic Aspects of Production: The Output Perspective

- A. Cost Functions**
- B. Relating Cost Functions to Production Functions**
- C. Revenue Functions**
- D. Profit Maximization**
- E. Product Supply Function**

V. Multiproduct Production

- A. Concepts and Terminology**
- B. Two Product Production With A Single Factor**
 - 1. Product Transformation Curve**
 - 2. Rate of Product Transformation**
 - 3. Profit Maximization**
 - 4. Constrained Revenue Maximization**

VI. Duality (Visited)

- A. Envelope Theorem**
- B. Hotelling's Lemma**
- C. Shepard's Lemma**
- D. Profit maximization**
- E. Cost Minimization**

TERM PAPER GUIDELINES

Term Paper

The term paper should cover a topic that is related to some aspect of production theory. The objective of the paper is to explain the theory in a manner so that others can learn about it by reading your paper. Also, discussion of empirical findings by researchers is acceptable.

Guidelines:

Length: The term paper should be at least 10 to 15 pages of double spaced text, not including tables, figures, etc.

Format: The term paper should follow American Journal of Agricultural Economics (AJAE) reference style and should have one inch margins everywhere. The papers should include the following sections.

- 1. Title page**
- 2. Abstract**
- 3. Introduction**
- 4. Explanation of theory**
- 5. Conclusions**
- 6. References**