COLLEGE: College of Agricultural Sciences

DEPARTMENT: Agriculture

PROGRAMME: Agricultural Economics and Extension

COURSE COMPACT for:

Course

Course code: AEC 312

Course title: Principles of Agricultural Production Economics

Credit unit: 2

Course status: Compulsory

Lecturer's Data

Name of the lecturer (s): Prof. J. O. Olukosi, Dr. A. G. Adeyonu and Mr. B. O. Ajiboye

Qualifications obtained: (B. Sc. Agric,. B. Agric., M.Sc., Ph.D)

Department: Agricultural Economics & Extension

College: College of Agricultural Sciences

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Office Location: New College Building, Room A013, A005, and A004 respectively.

Consultation Hours: Tuesday – Thursday 4pm – 5pm

INTRODUCTION TO THE COURSE

Course Description

AEC 312 is an introductory course to the basic concepts and tools of agricultural production economics. Emphasis will be placed on theory of production economics and its application to agricultural industry. Taking farmer as a producing unit, the course looks at how a farmer can maximize his /her profit given the available resources. It will feature– Economics versus Agricultural Economics, Consumption versus Production economics, Goals and objectives of

farm manager, pure competition as basic model of farm-firm behavioural pattern. Production with one and two variable inputs, Profit maximization with one variable input and one output. Production with two variable inputs. Maximization subject to budget constraints. Costs, returns and profits on the output side.

Course Justification

Agriculture is plagued with a lot of problems, yet the sole aim of the farmer is to maximize profit, but the resources required are limited in supply. Agricultural production economics is based on the principles of optimization and minimization. It is concerned with conditions which are necessary to be fulfilled if the producer has to satisfy his objective. The production economist is to be concerned with factor relating to economic efficiency in the use of the agricultural resources in different locations and regions around him. He provides guidance and advice to farm families and agricultural industry on how to use their resources including time most efficiently in production in other to achieve their productive objectives and welfare.

Course objectives

At the end of this course, students are expected to understand:

(i) Key terms used in production economics and the factors employed in agricultural production.

(ii) How to maximize profits with or without budget constraints.

(iii) Costs, Returns and Profits on the Output Side.

Course Content

Economic principles underlying market exchange processes with particular reference to the theory of price mechanism in a market economy. Utility theory and the concept of indifference curves. The derivation of Engel's curves and household demand curves. The income and substitution effects of price change on normal and inferior goods. The nature of demand for agricultural products. The principle of revealed preference and concept of index numbers as indicators of individual welfare changes. The derivation of farm-firm production functions. The nature of the demand and supply curves for agricultural inputs. Market equilibrium analysis under various market structures, specifically under perfect competition,

monopoly, monopolistic competition, duopoly and oligopoly. The marginal productivity theory of distribution in perfectly competitive markets. Theory of resource employment.

Course Expectations

Students are expected to derive maximum benefits from the course by looking at production as it relates to agriculture. They are thus expected to grasp as many concepts as possible and to be able to apply as many basic models in solving problems that are related to agricultural revolution which is the vision of Landmark University. Therefore, for a student to follow easily, it is expected that as a prerequisite, the student would have offered and passed the following courses:

1. Principles of Agricultural Economics 1 & 2
2. Intermediate level Mathematics with calculus.

Also, the course requires that each student meets the basic requirement for attendance, attending to given assignments and participation in class discussions. It is also advisable that each student should have an exercise book for answering assignments and tutorial questions, separate from their normal notebooks, as they would be required to submit the same for continuous assessment from time to time. Finally, the course requires that each student for the course has a calculator that he/she must bring to the class for every lecture.

Methods of Grading: The grading system is shown below:

S/N	GRAING	SCORE (%)
1.	Continuous Assessments • C.AI • C.AII (Mid-Semester Test) • C.AIII	 7% 15% 8%
2.	Final Examination	70%
3.	Total	100

Course Delivery Strategies:

Lecturing method complimented with tutorials will be adopted. PowerPoint presentation and the use of white marker board for the drawing of diagrams, charts and graphs**.** Homework assignments would be given to students periodically to enable them practise the exercises given in class. In addition, tutorial sessions would be arranged to put students through in any area they do not understand.

Course Duration

Two hours per week for12 weeks (24hours)

LECTURE CONTENT

Module 1

Week 1

Topic: Introduction to production economics

Objectives: At the end of the lesson, students should be able to:

(i) differentiate between economics and agricultural economics.

(ii) state the goals and focus of Agricultural Production Economics.

Description:

First hour: Meaning of economics and agricultural economics; differences between the two

Second hour: Goals and focus of agricultural production economics

Study Questions:

1. What is economics and agricultural economics?
2. Differentiate between economics and agricultural economics.
3. List the goals of agricultural production economics

Reading List:

(i) Berkely Hill (1990). An Introduction to Students of Agriculture. 2nd edition. Pergamon Press PLC, Oxford, OX3 0BW, England

(ii) John P. Doll and Frank Orazem (1992). Production Economics: Theory with Applications Wiley Press, USA.

(iii) Debertin D. L. (2012). Agricultural Production Economics. 2nd edition. Amazon Createspace). Free pdf download.

(iv) Olukosi, J. O. and Ogungbile A. O. (2008). Introduction to Agricultural Production Economics: Principles and Applications. AGITAB PUBLISHERS LTD., ZARIA.

Week 2

Topic: Production with one variable input

Objectives: At the end of the lesson, students should be able to:

(i) know the definition and types of production function.

(ii) understand fixed versus variable inputs and the length of run as well as the law of diminishing returns.

Description:

First hour: Definition of production function, state the types of production function

Second hour: Definitions of variable and fixed inputs, length of run and law of diminishing returns

Study Questions:

1. What is production function? Mention the types of production function
2. What are variable and fixed inputs? Give examples.
3. Explain length of run.
4. State the law of diminishing return

Reading List:

(i) Berkely Hill (1990). An Introduction to Students of Agriculture. 2nd edition. Pergamon Press PLC, Oxford, OX3 0BW, England

(ii) John P. Doll and Frank Orazem (1992). Production Economics: Theory with Applications Wiley Press, USA.

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Week 3

Topic: Production with one variable input contd

Objectives: At the end of the lesson, students should be able to:

(i) explain Neo-classical production function.

(ii) know marginal physical product and average physical product

Description:

First hour: Explanation of Neo-classical production function

Second hour: Explanation of marginal physical product, average physical product and the marginal product function.

Study Questions:

1. With the aid of an annotated diagram, describe neoclassical production function
2. What is marginal physical product and average physical product

Reading List:

(i) Berkely Hill (1990). An Introduction to Students of Agriculture. 2nd edition. Pergamon Press PLC, Oxford, OX3 0BW, England

(ii) John P. Doll and Frank Orazem (1992). Production Economics: Theory with Applications Wiley Press, USA.

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Week 4

Topic: Production with one variable input contd

Objectives: At the end of the lesson, students should be able to:

(i) understand MPP and APP for the Neoclassical function with sign, slope and curvature.

(ii) explain a single-input production elasticity and elasticities of production for a Neo-classical production function.

Description:

First hour: Discussion of MPP and APP for the Neo-classical production function

Second hour: Explanation a single-input production elasticity of production for a Neo-classical production function.

Study Questions:

1. From a Neoclassical production function, derive the MPP, APP and elasticity of a Neo-classical production function.

Reading List:

(i) Berkely Hill (1990). An Introduction to Students of Agriculture. 2nd edition. Pergamon Press PLC, Oxford, OX3 0BW, England

(ii) John P. Doll and Frank Orazem (1992). Production Economics: Theory with Applications Wiley Press, USA.
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Module 2

Week 5

Topic: Profit maximization with one variable input and one output

Objectives: At the end of the lesson, students should be able to:

(i) understand Total Physical Product Versus Total Value of the Product.
(ii) explain Total Factor or Resource Cost, Value of the Marginal Product and Marginal Factor Cost.

Description:

First hour: Discussion of Total Physical Product Versus Total Value of the Product.

Second hour: Explanation of Total Factor or Resource Cost, Value of the Marginal Product and Marginal Factor Cost.

Study Questions:

1. What is Total Physical Product and Total Value of the product? Differentiate between them
2. Discuss fully; Total Factor or Resource Cost, Value of the Marginal Product and Marginal Factor Cost

Reading List:

(i) Berkely Hill (1990). An Introduction to Students of Agriculture. 2nd edition. Pergamon Press PLC, Oxford, OX3 0BW, England
(ii) John P. Doll and Frank Orazem (1992). Production Economics: Theory with Applications Wiley Press, USA.
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Week 6

Topic: Profit maximization with one variable input and one output contd

Objectives: At the end of the lesson, students should be able to:

(i) derive VMP and MFC.

(ii) calculate the exact level of input use to maximize outputs or Profits.

Description:

First hour: Derivation of VMP and MFC

Second hour: Calculation of the exact level of input use to maximize outputs or profits

Study Questions:

1. Derive VMP and MFC
2. Show the exact level of input use to maximize outputs or profits using the information in the table

Reading List:

(i) Berkely Hill (1990). An Introduction to Students of Agriculture. 2nd edition. Pergamon Press PLC, Oxford, OX3 0BW, England

(ii) John P. Doll and Frank Orazem (1992). Production Economics: Theory with Applications Wiley Press, USA.

(iii) Debertin D. L. (2012). Agricultural Production Economics. 2nd edition. Amazon Createspace). Free pdf download.

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Week 7

Topic: Production with two variable inputs

Objectives: At the end of the lesson, students should be able to:

(i) Draw the production function and derive the isoquant curve.

(ii) Explain input substitution.

Description:

First hour: Drawing of production function and derivation of isoquant curve

Second hour: Discussion of input substitution

Study Questions:

1. Show how you will derive an isoquant curve from a production function

2. Discuss input substitution

Reading List:

(i) Berkely Hill (1990). An Introduction to Students of Agriculture. 2nd edition. Pergamon Press PLC, Oxford, OX3 0BW, England

(ii) John P. Doll and Frank Orazem (1992). Production Economics: Theory with Applications Wiley Press, USA.

(iii) Debertin D. L. (2012). Agricultural Production Economics. 2nd edition. Amazon Createspace). Free pdf download.

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Week 8

Topic: Production with two variable inputs contd

Objectives: At the end of the lesson, students should be able to:

(i) identify ridge lines in isoquant curves.

(ii) know MRS and the marginal products

Description:

First hour: Drawing of production function and derivation of isoquant curve

Second hour: Discussion of input substitution

Study questions

1. Draw isoquant curves and indicate ridge lines

2. Show MRS and the marginal products on the isoquant curves.

Reading List:

(i) Berkely Hill (1990). An Introduction to Students of Agriculture. 2nd edition. Pergamon Press PLC, Oxford, OX3 0BW, England

(ii) John P. Doll and Frank Orazem (1992). Production Economics: Theory with Applications Wiley Press, USA.

(iii) Debertin D. L. (2012). Agricultural Production Economics. 2nd edition. Amazon Createspace). Free pdf download.

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Module 3

Week 9

Topic: Production with two variable inputs (contd)

Objectives: At the end of the lesson, students should be able to:

(i) derive partial and total derivatives.

(ii) discuss the marginal rate of substitution.

Description:

First hour: Derivation of partial and total derivatives

Second hour: Discussion of marginal rate of substitution

Study questions

1. Show how to derive partial and total derivatives
2. Discuss fully marginal rate of substitution

Reading List:

(i) Berkely Hill (1990). An Introduction to Students of Agriculture. 2nd edition. Pergamon Press PLC, Oxford, OX3 0BW, England

(ii) John P. Doll and Frank Orazem (1992). Production Economics: Theory with Applications Wiley Press, USA.

(iii) Debertin D. L. (2012). Agricultural Production Economics. 2nd edition. Amazon Createspace). Free pdf download.

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Week 10

Topic: Maximization subject to budget constraints

Objectives: At the end of the lesson, students should be able to:

(i) explain the budget constraint and draw the isoquant map.

(ii) interact with expansion path and state the general expansion path conditions.

Description:

First hour: Discuss the budget constraint and draw the isoquant map

Second hour: Explanation of the expansion path ways and conditions

Study questions

1. Draw the isoquant map and show the budget constraint

2. List the general expansion path conditions

Reading List:

(i) Berkely Hill (1990). An Introduction to Students of Agriculture. 2nd edition. Pergamon Press PLC, Oxford, OX3 0BW, England

(ii) John P. Doll and Frank Orazem (1992). Production Economics: Theory with Applications Wiley Press, USA.

(iii) Debertin D. L. (2012). Agricultural Production Economics. 2nd edition. Amazon Createspace). Free pdf download.

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Week 11

Topic: Costs, returns and profits on the output side

Objectives: At the end of the lesson, students should be able to:

(i) state the basic definitions and concepts of costs, returns and profits

(ii) mention the rules of profit maximization.

Description:

First hour: Discussion of basic definitions and concepts of costs, returns and profits

Second hour: Explanation of rules of profit maximization

Study questions

1. Write short notes on costs, returns and profits

2. State the rules of profit maximization

Reading List:

(i) Berkely Hill (1990). An Introduction to Students of Agriculture. 2nd edition. Pergamon Press PLC, Oxford, OX3 0BW, England

(ii) John P. Doll and Frank Orazem (1992). Production Economics: Theory with Applications Wiley Press, USA.

(iii) Debertin D. L. (2012). Agricultural Production Economics. 2nd edition. Amazon Createspace). Free pdf download.

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Week 12

Topic: Costs, returns and profits on the output side contd

Objectives: At the end of the lesson, students should be able to:

(i) state the relationships between cost function and production function.

(ii) know the supply function of the firm.

Description:

First hour: Explanation of the relationship between cost function and production function

Second hour: Discussion of the supply function of the firm.

Study questions

1. How is cost function related to production function?
2. Draw an annotated diagram of the supply function of the firm

Reading List:

(i) Berkely Hill (1990). An Introduction to Students of Agriculture. 2nd edition. Pergamon Press PLC, Oxford, OX3 0BW, England

(ii) John P. Doll and Frank Orazem (1992). Production Economics: Theory with Applications Wiley Press, USA.

(iii) Debertin D. L. (2012). Agricultural Production Economics. 2nd edition. Amazon Createspace). Free pdf download.

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Week 13

Topic: Examination

Objective: To examine the students on all that has been taught during the semester.

HOD's COMMENTS:

Name: Professor O.M. Bamiro Signature Date: