**Unit 4 Overview**

**Big Questions:**

How do businesses use marginal analysis to make decisions?

What drives producers’ decision making about output?

**Essential Understanding and Terms:**

**Students should be able to calculate and describe the relationship between the quantity of inputs and the quantity of outputs using total product, marginal product, and average product data and curves.**

Mastery Includes: Describe the difference between the short-run and long-run. Define and calculate TP, MP, and AP. Illustrate the relationship between TP, MP, and AP and quantity of inputs on a graph. Describe the three stages of the theory of production.

Short Run VS Long Run

Total Product

Marginal Product

Average Product

Theory of Production

Increasing Marginal Returns/Product

Diminishing Marginal Returns/Product

Negative Returns/Product

**Students should be able to calculate and describe the relationship between costs and the quantity of outputs in the short-run and long-run using total cost, total fixed cost, total variable cost, marginal cost, average total cost, average fixed cost, and average variable cost data and curves.**

Mastery Includes: Calculate and describe the relationship between output data and cost data: TP:TC, MP:MC, and AP:AVC. Calculate and describe the relationship between cost measures: TC:TFC:TVC, ATC:AFC:AVC, MC:TC, MC:TVC, and MC:ATC:AVC. Illustrate all cost measures on a graph.

Total Cost

Total Fixed Cost

Total Variable Cost

Marginal Cost

Average Total Cost

Average Fixed Cost

Average Variable Cost

Efficient Scale

**Students should be able to define the profit maximization rule, identify profits and losses on a graph, and explain whether more firms will continue to operate or shut down in the short-run.**

Mastery Includes: Calculate and describe the relationship between total revenue, marginal revenue, and total profits and quantity of outputs.

Total Revenue

Marginal Revenue

Average Revenue

Total Profit

Explicit VS Implicit Costs

Accounting/Normal Profit VS Economic Profit

**Students should be able to describe the relationship between inputs and outputs and average total cost and outputs in the long-run.**

Mastery Includes: Define increasing, decreasing, and constant returns to scale. Define economies of scale, diseconomies of scale, and constant returns to scale. Define minimum efficient scale and explain how it can help determine the number of firms in an industry.

Long-Run Average Total Cost

Economies of Scale

Diseconomies of Scale

Constant Returns to Scale

Minimum Efficient Scale

Economies of Scale

Diseconomies of Scale

Constant Returns to Scale