1. The Production Technology of the Firm
   - The concepts of a firm, production, and production technology
   - The notion of a production function
   - An isoquant and the notion of factor substitution possibilities
   - The Law of Diminishing Marginal Rate of Technical substitution
   - An isocost line or equation
   - Factors causing a shift or rotation of an isocost line.

2. The Calculus of Cost Minimization: Optimal Input Combination
   - Cost minimization as constrained optimization problem
   - The equi-marginal condition for least cost combination of inputs
   - Output maximization as the dual problem of cost minimization

3. The Cobb-Douglas Type Production Function and Its Various Properties

4. Long-Run Production and Cost Analysis:
   - Returns to scale
   - The expansion path
   - The links among a firm's production function, expansion path and long-run cost function
   - Economies and diseconomies of scale

5. Short-run Production and Cost Analysis
   - The dichotomy between short-run and long-run costs: Why in the short-run a firm may not be able to expand its output along its expansion path
   - Families of short-run total costs (TFC, TVC, TC) and their interrelationships
   - Families of short-run unit costs (AFC, AVC, ATC, MC) and their interrelationships
   - The Law of Diminishing Marginal and Average Products
   - Why marginal cost is not affected by fixed cost
   - Returns to a variable input
   - Relationships between average product and average variable cost and marginal product and marginal cost
6. **Profit Maximization and the Supply Curve of a Competitive Firm: Short-run**

- The equi-marginal condition for profit maximizing output in the short-run
- The equivalence of profit maximization and loss minimization
- A firm’s decision to continue operating or shut-down in the short-run
- Identifying the short-run supply curve as a segment of the short-run marginal cost curve of a competitive firm
- Factors affecting the supply curve of a competitive firm
- The market supply curve of a competitive industry, short-run.

7. **The Theory of Marginal Productivity and The Demand for Factors of Production**

- The notion of marginal revenue product
- The marginal revenue product as the demand for labor of a competitive firm
- Factors affecting the demand for labor
- The demand for factor inputs in general

8. **Make sure you know the difference among the following cost concepts:**

- Explicit costs, implicit costs, and opportunity costs