CHAPTER OUTLINE

I. The Demand for Labor

A. Marginal Revenue Product and Marginal Factor Cost

1. The amount that an additional unit of a factor adds to a firm's total revenue during a period is the **marginal revenue product (*MRP*)** of the factor.
   a. An extra unit of a factor adds to total output.
   b. The extra output adds to total revenue.
   c. $MRP = MP \times MR$ in general.
   d. $MRP = MP \times P$ in perfect competition.
   e. $MRPL = MPL \times P$ in perfect competition.
   f. The law of diminishing returns to an input indicates that as labor is added eventually its *MP* will fall and, therefore, its *MRP* will fall.
2. The amount a factor adds to a firm's total cost per period is its **marginal factor cost (*MFC*).**
   a. Marginal factor cost is the change in total cost associated with a change in the quantity of a factor.
   b. $MFC = \Delta TC / \Delta f$
   c. Profit will be maximized where the downward-sloping portion of the marginal revenue product curve intersects the marginal factor cost curve.
   d. In general, the downward-sloping portion of a firm's marginal revenue product curve for a factor over which variable costs are at least covered is its demand curve for that factor.

B. Shifts in Labor Demand

II. Changes in the Use of Other Factors of Production

A. When an increase in the use of one factor of production increases the demand for another, the two factors are complementary factors of production.

B. When an increase in the use of one factor of production decreases the demand for another, the two factors are substitute factors of production.

C. **Changes in Technology**

1. Changes in technology may increase demand for a factor by increasing factor productivity.
2. Changes in technology may decrease demand for a factor by substituting for it.

D. Changes in Product Demand

1. Factor demand is derived from the demand for the product that uses the factor in its production and is called **derived demand.**
2. Factor demand changes in the same direction as product demand.

E. Changes in the Number of Firms

1. An increase in the number of firms that use a particular factor will increase demand for that factor.
2. A decrease in the number of firms that use a particular factor will decrease demand for that factor.

III. The Supply of Labor

A. Basic Concepts

1. The analysis of labor supply is based on the trade-off between work and leisure.
2. Leisure is a normal good where increases in income increase the demand for leisure, all other things unchanged.
3. The opportunity cost or "price" of leisure is the wage an individual can earn.

B. Income and Substitution Effects

1. The substitution effect of a higher wage causes the consumer to substitute labor for leisure.
2. This substitution effect is a straightforward application of utility analysis and the marginal decision rule.

3. An increase in wages also has an income effect. With higher income, the consumer demands more of all normal goods, including leisure. This implies a reduction in labor supplied.
4. For labor supply problems, the substitution effect is always positive and the income effect is always negative.

C. Wage Changes and the Slope of the Supply Curve

1. In some range of wages, the substitution effect dominates worker behavior and a worker provides more labor or a wage increase.
2. Beyond some point, the income effect may dominate worker behavior and provide less labor for a wage increase in order to enjoy more leisure.
3. The supply curve of labor may be backward bending.
4. Because workers leave one job market in competitive markets in order to take higher paying jobs in another job market, the labor supply for a specific labor market is likely to be upward sloping.

D. Shifts in Labor Supply

1. Changes in preferences
   - **a.** If preferences change toward leisure, labor supply will shift left.
   - **b.** If preferences change toward more goods and services, labor supply will shift right.
2. Changes in income
   - **a.** Changes in nonlabor income increase or decrease the labor supply curve depending on whether the income change is negative or positive.
   - **b.** Changes in wage income cause a movement along the labor supply curve.
3. Change in expectations
   - **a.** Changes in expectations may increase or decrease labor supply.
   - **b.** If people expect to live longer and doubt the solvency of Social Security, they may increase the hours they are willing to work.
4. Labor supply in specific markets
   - **a.** Any of the above factors could affect a specific labor market.
   - **b.** A change in wages in related occupations could affect a specific labor market.
   - **c.** A change in entry requirements could affect a specific labor market.
   - **d.** Worker preferences concerning specific occupations—risk, social significance, and the like—could affect a specific labor market.

IV. Labor Markets at Work

A. Fundamental Aspects

1. Wages are determined by the intersection of demand and supply.
2. Once determined, individual firms in perfect competition take the wage as given–they face a horizontal supply curve of labor.

B. Changes in Demand and Supply

1. Both the demand and the supply of labor have increased over time.
2. The effect of changes in demand and/or supply can be illustrated graphically.

C. Competitive Labor Markets and Minimum Wage

1. As technology increases wages for high skill jobs, those who lack the opportunity to obtain those skills lag behind.