An oligopoly is a market served by a small number of firms. With a limited number of competitors, each firm enjoys some market power which gives it the ability to influence price as we saw with our study of monopolies. Having some competition introduces strategic issues since how well or how poorly a firm performs depends not only its own decisions but also the competition's decisions. In practice, firms compete in several different ways so economists have developed several distinct models to understand how firm behave under each type of competition. We will see that the choice of whether to compete in quantities, in prices, or both has different implications for firm choices, firm profits, and consumer surplus. In addition, since market power generally translates into positive economic profit, the study of oligopolies must also address the potential for new firms to enter and increase the amount of competition. We will conclude this topic (and the semester) by studying one way in which existing firms can limit entry in their markets.

Outline

I. Using Game Theory to Model Strategic Behavior
   A. Best response (reaction) functions - When competitors have several options, a firm needs to develop a contingency plan before committing to any one action.
   B. Nash Equilibrium – This is the basic solution concept that helps us understand market outcomes when firms behave strategically.

II. Quantity Competition - In this form of competition, firms set quantities and let the market set price.
   A. Cournot Competition - simultaneous quantity choices
   B. Stackelberg Competition - sequential quantity choices, leader/follower markets

III. Price Competition - In this form of competition, firms set prices and let the market allocate quantity.
   A. Bertrand Competition - simultaneous price setting with homogeneous goods
and constant marginal cost

B. Differentiated product price competition

**Key Ideas**

- Under quantity competition, industry production exceeds monopoly production and results in lower industry profit.
- Price competition in a homogeneous product duopoly results in marginal cost pricing and zero economic profits.
- The degree of product differentiation and the nature of competition in a strategic setting determine the extent to which firms can earn positive economic profits.
- An incumbent monopolist can use excess capacity to discourage entry of new competitors if the potential entrants fixed costs are large enough.

**Important Skills**

- Derive firm best response functions and calculate Cournot, Stackelberg, and Bertrand equilibria with undifferentiated products and with differentiated products and provide an economic interpretation of the relevant equations.
- Be able to reconcile the different predictions of the Bertrand and Cournot models.
- Solve the Dixit entry deterrence model and be able to explain the role of excess capacity and fixed costs in deterring entry.

**Important Concepts and Terms**

**Nash Equilibrium** – A situation in which each firm in a market is maximizing its profit given the choices of its competitors.

**Cournot Competition** – A type of market competition in which the firms simultaneously and independently choose how much to produce and the market price is set so that the quantity demanded of each firm's product equals the quantity produced.

**Bertrand Competition** – A type of market competition in which the firms simultaneously and independently choose a price and each firm produces enough to satisfy the quantity demanded of its product.

**Stackelberg Competition** – A type of market competition in which one firm chooses its
output first and then the other firm selects its output in response. The market price is set so that the quantity demanded of each firm's product equals the quantity produced.

**Entry Deterrence** – A strategy by which an incumbent firm invests in excess capacity to discourage entry by new firms.