

# Industrial organization

## 7<sup>nd</sup> module, academic year 2022-23

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### Course information

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**Course Website:** at my.nes

**Instructor's Office Hours:** by appointment

**Class Time:** see schedule

**Room Number:** see schedule

**TAs:** Dmitrii Urentsov

### Course description

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The theory of Industrial Organization studies firms, markets, and their interactions. This course aims at giving the student knowledge about various forms of strategic market interactions, expanding beyond the basic analysis of firm-level interactions studied in the Micro sequence. By completing this course the student will be able to formalize and analyze market situations and outcomes using a number of IO models and approaches. These approaches would also enable the student to examine economic problems in other related fields such as trade theory, theory of contracts, political economy, energy economics etc.

The course will start by reviewing and extending the standard models of imperfect market competition including the topics of product differentiation as a tool of (price and non-price) competition. We will then proceed to the topics related to market power and antitrust policy. In particular, we will study collusion, anticompetitive strategies, horizontal mergers and vertical relations. The course will consider both theoretical models and their applications.

For each of the abovementioned topics, the student is expected to learn and understand the modeling approach, and be able to apply, extend and modify it to analyze a range of economic problems within the IO framework.

### Course requirements, grading, and attendance policies

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**Prerequisites:** Micro sequence, Game theory

**Teaching and Work Forms:** 2 lectures/1 exercise class per week.

**Grading policy:** The grade will be a combination of the Final Exam (60%), two homeworks (10% each), and a COVID project (20%, in pairs).

**Attendance policy:** Attendance is not compulsory. However, it will be marked both at the lectures and at the exercise classes, and those with attendance below 50% will not be allowed to re-take the final exam.

### Course contents

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**Preliminary course outline:**

- The scope of IO. Review of monopolistic markets and oligopolistic competition models.
- Product differentiation and price competition.
- Non-price competition (advertising, quality choice, warranties)
- Collusion. Cartels. Price wars.

- Anticompetitive strategies (entry deterrence, predation etc.).
- Horizontal mergers
- Vertical relations and vertical control

### **Description of course methodology**

The course will mix conventional lecturing with more interactive techniques, such as class discussions etc. We might also use one or two cases.

### **Course materials**

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#### **Textbooks:**

- Belleflame, P. and M. Peitz, 2010 (or 2015), "Industrial Organization: Markets and Strategies", Cambridge University Press
- Shy, Oz: Industrial Organization, The MIT Press, 1995
- Tirole, Jean: The Theory of Industrial Organization, The MIT Press, 1995

#### **Papers** (the list below is preliminary and will be expanded)

- Akerberg, Daniel A, 2001. "Empirically Distinguishing Informative and Prestige Effects of Advertising," RAND Journal of Economics
- Bagnoli, Mark, Stephen W. Salant, and Joseph E. Swierzbinski, 1989. "Durable-goods monopoly with discrete demand." The Journal of Political Economy
- Dixit, Avinash and Victor Norman, 1978, "Advertising and Welfare", The Bell Journal of Economics
- Kadiyali, Vrinda, 1996. "Entry, Its Deterrence, and Its Accommodation: A Study of the U. S. Photographic Film Industry," The RAND Journal of Economics
- Kreps, David M., and Jose A. Scheinkman, 1983. "Quantity precommitment and Bertrand competition yield Cournot outcomes." The Bell Journal of Economics
- Milgrom, Paul & Roberts, John, 1986. "Price and Advertising Signals of Product Quality," Journal of Political Economy

### **Academic integrity policy**

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Cheating, plagiarism, and any other violations of academic ethics at NES are not tolerated.

### **Sample tasks for course evaluation**

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1. Consider a monopolist who produces a single good. There are 2 groups of consumers: high and low type, each group is of unit mass. Demand of high type is  $D_H(p)=4-p$ , demand of low type is  $D_L(p)=2-p$ . Monopolist can also advertise his product: if he chooses  $\lambda$  amount of advertising, then  $\lambda$  of low type customers will become high type (so,  $\lambda$  cannot be more than 1). The cost of advertising is  $a\lambda^2$ . Marginal and fixed costs of production are zero.
  - a. Suppose that monopolist can set different prices for groups 1 and 2, but the price within the group should be the same. What advertising  $\lambda'(a)$  does she choose? Will monopolist always advertise? For what values of  $a$  will monopolist choose to turn all low type customers into high type?
  - b. Suppose that monopolist can perfectly distinguish between customers and can use non-linear pricing. What advertising  $\lambda''(a)$  does she choose? Will monopolist always advertise? For what values of  $a$  will monopolist choose to turn all low type customers into high type?
  - c. Suppose now that monopolist cannot distinguish between customers, however, he can provide bundles of goods  $(T_H, q_H)$  and  $(T_L, q_L)$ . What is the level of advertising  $\lambda'''(a)$  in

this case? Will monopolist always advertise? For what values of  $\alpha$  will monopolist choose to turn all low type customers into high type?

- d. How does the level of advertising compare in three situations (a)--(c)? Why? Provide economic intuition.

2. Consider a market operated by a firm which has private information about the quality of its good  $s \in [0,1]$ . Quality is drawn from uniform distribution  $U[0,1]$ , and this distribution is common knowledge among firm and consumers. After observing its quality (type) the firm can choose to reveal its quality to consumers, e.g., by sending the good to an independent quality tester (but it can only tell the true quality or nothing at all). Then the firm sets price  $p$ . If consumers buy the good, they derive utility

$$u = s_e - p,$$

where  $s_e$  denotes the expected quality. Otherwise, their reservation utility is set to 0.

- a. Suppose that the quality disclosure is mandatory by law. Characterize the solution to the firm's pricing problem for all quality levels.
- b. Suppose now that the firm can disclose information at zero cost. Which quality firms will choose to disclose its quality to the consumer in equilibrium? What will be the price levels set by firms of different qualities? (HINT: Argue that if the consumers buy a good from a firm that does NOT disclose quality, they are willing to pay no more than the expected value of quality among all firms that do not disclose quality. Show that this implies that if a firm with quality  $s'$  chooses to disclose its quality in equilibrium, all firms with quality  $s > s'$  will also reveal their qualities. What do these two statements imply for the set of the firms that choose to disclose quality in equilibrium?)
- c. Suppose now that the firm can disclose information at some cost  $c$ ,  $0 < c < 1$ . Which quality firms will choose to disclose its quality to the consumer in equilibrium? What will be the price levels set by firms of different qualities? What is the lowest level of  $c$  that implies no information disclosure in equilibrium?