



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## COURSE SYLLABUS

### Microeconomics M

2223-1-F8204B005

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#### Obiettivi formativi

Il Corso (42 ore di lezione frontale e 6 CFU) si propone di offrire conoscenze specialistiche nelle seguenti aree della microeconomia (di cui si presuppone la conoscenza a livello base):

- a) teoria e applicazioni della dualità nella sfera del consumo e della produzione;
- b) teoria delle scelte in condizioni di incertezza;
- c) teoria dei meccanismi d'asta

#### Contenuti sintetici

Starting from the assumption that students (are supposed to) have already acquired a sound background in basic general microeconomics, the first part of this graduate course intends to provide a comprehensive treatment of duality theory and its applications in modern microeconomics. Problems of consumer and producer optimization will be analysed in both primal and dual versions and functional relations among relevant variables will be discussed as a theoretical introduction to the methods and results of microeconomic analysis of both consumer demand and production or cost functions.

The second part of the course will provide a graduate treatment of individual choice under uncertainty starting from expected utility and including topics such as measures of risk aversion, risk spreading and risk pooling.

The last part of the course deals with the basic issues of auction theory starting from the single object IPV models and the Revenue Equivalence Theorem under both risk neutrality and risk aversion. Multiunit auctions will be discussed with some reference to utility or procurement/permission markets organized as auctions (electricity, gas, CO<sub>2</sub>, etc.). CV models will be only briefly discussed.

Students should bear in mind that

a) Topics such as games and oligopoly form part of the program of another microeconomic course (Advanced Microeconomics) delivered during the second year. In order to avoid useless duplications they are not considered here.

b) Topics such as moral hazard and adverse selection in the field of insurance will be covered in other courses (in particular Economics of Insurance/Economia delle Assicurazioni).

## **Programma esteso**

### **Details of the topics covered**

#### **Individual consumer behaviour and demand**

- Direct and indirect utility functions
- Roy's identity
- Expenditure function and Slutsky decomposition
- Functional forms and estimations
- Hotelling-Wold identity
- Distance function and its properties
- Relations between distance and direct utility functions

#### **Producer behaviour and efficiency**

- Direct and indirect production functions
- The cost function and Slutsky decomposition
- Profit functions (unrestricted; restricted)
- Functional forms and estimations
- Input and Output Distance Function and their properties
- Measurement and estimation of production efficiency

#### **Uncertainty**

- Notion of uncertainty
- Choice under uncertainty and Axioms
- Properties of the utility function, risk premium and measures of risk aversion
- Measure of risk
- Comparative statics under uncertainty
- Production under uncertainty
- Price and technological uncertainty

#### **Auctions**

- Basic single unit auction formats
- IPV vs CV
- Bidding models and optimal bids for risk neutral bidders
- Revenue Equivalence
- Risk aversion
- Multiunit auctions

## Prerequisiti

Calcolo intermedio (analisi I e algebra I) e microeconomia di base. Lo studente non basi la sua preparazione su testi di matematica per economisti.

Testo undergraduate di riferimento: H. Varian, *Intermediate Microeconomics. A modern approach*, Norton, ultima edizione

## Metodi didattici

Lezioni frontali. Esercizi individuali con correzione in aula. Predisposizione del materiale didattico (testi e files di varia tipologia) nella pagina e-learning del corso. Ricevimento con tutoraggio per piccoli gruppi (due ore settimanali) in presenza se le condizioni lo consentiranno.

All'inizio del corso verrà effettuato un test di ingresso.

## Modalità di verifica dell'apprendimento

Esame finale scritto (6 domande a punteggio differenziato, di cui 3 esercizi; ciascuna domanda è suddivisa in più parti tra loro connesse) se le condizioni sanitarie lo permetteranno. Non è prevista una prova intermedia. Non sono previste modalità particolari per studenti non frequentanti. Modalità soggette alle circostanze sanitarie.

## Testi di riferimento

### Bibliografia

#### dualità

H. Gravelle and R. Rees, *Microeconomics*, Prentice Hall, third edition, 2004 (Chapters 2, 3, 5, 6).

R. Cornes, *Duality and modern economics*, Cambridge University Press, 1992 (Chapters 2 – 8)

Or equivalent chapters in graduate textbooks. (For production a good reference is: R. Sickles and V. Zelenyuk, *Measurement of Productivity and Efficiency*, C.U.P, 2019)

#### incertezza

H. Gravelle and R. Rees, *Microeconomics*, Prentice Hall, third edition, 2004 (Chapters 17 – 19). Or equivalent chapters in graduate textbooks.

#### Auctions

Lecturer's notes (e learning page)

Basic online material with exercises will be provided (please visit the E-Learning platform of the course). Language: Italian and English

## **Periodo di erogazione dell'insegnamento**

I semestre

## **Lingua di insegnamento**

Italiano

## **Sustainable Development Goals**

CONSUMO E PRODUZIONE RESPONSABILI

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