UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

# COURSE SYLLABUS

# Games and Strategic Behaviour

**2122-2-F5602M017**

## Learning objectives

This course is an introduction to topics in APPLIED game theory. Its objective is to equip the students with tools essential to study economics of information and of strategic behaviour and for setting up and solving a wide range of economic problems, both micro and macro.

## Contents

2. game representations: extensive form, strategic form and Bayesian games

3. Nash equilibria and refinements in extensive form, with applications

4. Nash equilibria and refinements in strategic form, with applications

5. Bargaining models and applications

## Detailed program

1. Presentation of the course and utility maximization

2. 2. Set 1 of Experiment

3. Rational Behavior under Uncertainty

4. Set 1 of exercises

5. Discussion of Experiment and Solution of Set 1 of Exercises

6. Extensive Form Games-1

7. Set 2 of Experiment

8. Discussion of Experiment

9. Extensive Form Games-2

10. Strategic Forms Games

11. Set 2 of exercises

12. Set 3 of Experiment

13. Solution of set 2 of exercises

14. Discussion of set 3 of experiment

15. Bayesian Games

16. Dominance: strict and weak, iterated

17. Bayesian Rationality and Rationalizability

18. Set 3 of exercises

19. Solutions of set 3 of exercises

20. Nash and Bayes Nash Equilibria

21. Set 4 of experiment

22. Discussion set 4 of Experiment

23. Calculation of Nash Equilibria

24. Application of Nash and Bayes Nash Equilibria

25. Set 4 of Exercises

26. Solution of Set 4 of Exercises

27. Equilibria in extensive form games

28. Sequential rationality in imperfect information games

29. Set 5 of Experiment

30. Discussion of set 5 of Experiment

31. Weak Perfect Bayesian Equilibria

32. Set 5 of Exercises

33. Sequential Equilibria

34. Solution of set 5 of Exercises

35. Refinements of Sequential Equilibria - 1

36. Refinements of Sequential equilibria and applications

37. Set 6 of Exercises

38. Sequential Equilibria and signaling games - 1

39. Sequential Equilibria and signaling games - 2

40. Applications of Signaling Games

41. Set 7 of Exercises

42. Bargaining Theory – 1

43. Bargaining Theory - 2

44. Set 8 of Exercises

45. Students' presentations

46. Review and mock exam

## Prerequisites

Basic economics and mathematics

## Teaching methods

Lectures, exercises, on line experiments and students' group presentations

## Assessment methods

There are two assessment methods, for attending and non attending students.

For attending students the final evaluation is the average between

1. a short students' paper based on different possible topics, which will count for 50% and

2. a final written examination consisting of an exercise.

For non attending students the final evaluation will be based on a written examination.

The students are strongly suggested to attend the course.

## Textbooks and Reading Materials

2. P. K. Dutta, Strategies and Games, The MIT Press, 1999 = D.

3. H. S. Bierman – L. Fernandez, Game Theory with Economic Applications, Addison Wesley Publishing Company, 1993 = B-F.

4. Lecture notes

5. Original papers

## Semester

First semester

## Teaching language

English