

Content

| Course Code | Course Name | Semester | Theory | Practice | Lab | Credit | ECTS |
|--------------------|--------------------|-----------------|---------------|-----------------|------------|---------------|-------------|
| MAT343 | Game Theory | 5 | 3 | 0 | 0 | 4 | 6 |

| | |
|------------------------|--|
| Prerequisites | |
| Admission Requirements | |

| | |
|-------------------------|-----------------|
| Language of Instruction | French |
| Course Type | Elective |
| Course Level | Bachelor Degree |
| Objective | |

| | |
|------------|---|
| Content | <p>INTRODUCTION TO GAME THEORY</p> <ol style="list-style-type: none"> 1. Introduction <ol style="list-style-type: none"> 1.1 Defining Games 1.2 Nash Equilibrium 1.3 Strategic Reasoning 1.4 Best Response and Nash Equilibrium 1.5 Nash Equilibrium of Examples Games 1.6 Dominant Strategies 1.7 Pareto Optimality 2. Mixed-Strategy Nash Equilibrium <ol style="list-style-type: none"> 2.1 Mixed Strategies and Nash Equilibrium 2.3 Computing Mixed Nash Equilibrium 2.4 Hardness Beyond 2x2 Games 2.6 Examples: Mixed Strategy Nash 3. Alternate Solution Concepts <ol style="list-style-type: none"> 3.1 Beyond the Nash Equilibrium 3.2 Strictly Dominated Strategies and Iterative Removal 3.3 Maxmin Strategies 3.4 Correlated Equilibrium 4. Extensive-Form Games <ol style="list-style-type: none"> 4.1 Formalizing Perfect Information Extensive Form Games 4.2 Perfect Information Extensive Form Strategies, BR, NE 4.3 Subgame Perfection 4.4 Backward Induction 4.5 Imperfect Information Extensive Form: Definitions, Strategies 4.6 Mixed and Behavioural Strategies 5. Repeated Games <ol style="list-style-type: none"> 5.1 Infinitely Repeated Games : Utility 5.2 Stochastic Games 5.3 Learning in Repeated Games 5.4 Equilibria of Infinitely Repeated Games 5.5 Discounted Repeated Games 6. Bayesian Games <ol style="list-style-type: none"> 6.1 Bayesian Games: Definitions 6.4 Analysing Bayesian Games 6.5 Analysing Bayesian Games: Example 7. Coalitional Games <ol style="list-style-type: none"> 7.1 Coalitional Game Theory 7.2 Coalitional Game Theory: Definitions 7.3 The Shapley Value 7.4 The Core |
| References | |

Theory Topics

| Week | Weekly Contents |
|------|-----------------|
|------|-----------------|