

## The economics of bargaining and collective choice

**Level:** Master – first year - M1 / second semester

**Cursus:** Political Engineering

**Teaching hours:** 24h in class (lectures)

**Teacher:** Philippe Solal

**Contact:** [philippe.solal@univ-st-etienne.fr](mailto:philippe.solal@univ-st-etienne.fr)

### **1. Overview**

This course studies some main solutions in cooperative and non-cooperative game theory, and in social choice theory: the Nash bargaining solution, the Shapley value, the Myerson value, the Nash equilibrium, and the dictatorial social welfare functions. Each of these solutions is studied from a normative point of view, i.e. each solution is characterized by a set of (desirable) properties.

### **2. Skills developed**

Most of this course pertains to the field of normative economics which is a part of economics that expresses value or normative judgments about economic fairness and concerns statements of what the outcome of the economy or goals of public policy "ought to be" rather than facts based on cause-and-effect statements.

### **3. Content**

#### Chapter 1. The Nash bargaining solution

1. The Nash bargaining problem
2. The Nash solution
3. Axiomatic characterization
4. Application: Union-Firm negotiation

#### Chapter 2. Cooperative TU-games and the Shapley value

1. Cooperative games with transferable utilities
2. The Shapley value
3. Application: land production economies
4. Axiomatic characterization

#### Chapter 3. The Myerson value

1. Preliminaries on graph theory
2. Communication situations
3. The Myerson value
4. Axiomatic characterization

#### Chapitre 4. The Nash solution for non-cooperative games

1. Strategies and payoffs

2. Nash equilibrium
3. Axiomatic characterization

### Chapitre 5. Social choice theory

1. Social states and individual preferences
2. Social welfare functions
3. Arrow's impossibility theorem.

### **References**

- Arrow K. (1953/1963) Social choices and individuals values. Wiley.
- Nash J.F. (1950). The bargaining problem. *Econometrica* (18) :155-162, 1950.
- Nash J.F. (1950). Equilibrium points in n-person games. *Proceedings of the National Academy of Sciences*, (36) :48-49.
- Peleg B., Tijs S. (1996). The consistency principle for games in strategic form. *International Journal of Game Theory* (25):13-34.
- Peters H. (2008), *Game theory, a multi-leveled approach*, Springer.
- Shapley L.S. (1953). A value for n-person games. In H.W. Kuhn and A.W. Tucker, editors, *Contributions to the Theory of Games*. Vol II. Princeton, 307-317.

### **4. Prerequisites**

Relational and linear algebra

### **5. Grading**

Written exam (2 hours)