Course Title: Game and axiomatic decision theory / N-person decision theory

Lecturer: Professor Tsung-Chyan Lai (**賴聰乾 教授**)

Course Location & Time: Room 305 (Building II) & Tuesday 678

Course Goal: This course offers a solid introduction to the decision theory with n independent decision-makers, including both non-cooperative and cooperative decision theory. This course is specifically designed for helping those undergraduate or graduate students who plan to pursue (1) a graduate study in operations research/management science/decision science, operations management, marketing science, financial engineering, accounting theory, organization theory, microeconomic theory, or quantitative decision-making in general, or (2) a PhD in any management-related fields, especially in a globally top university.

Course Schedule:

1. (2/17) Intro to non-cooperative game: modeling and model representation
2. (2/24) Two-person zero-sum (constant-sum) game
3. (3/3) Two-person general-sum game I: equilibrium, perfect equilibrium, subgame-perfect equilibrium
4. (3/10) II: evolutionary stable systems, correlated equilibria
5. (3/17) One-stage signaling game
6. (3/24) Multi-stage signaling game
7. (3/31) Expected utility theory
8. (4/7) Review
9. (4/14) Nash bargaining problem
10. (4/21) Other bargaining problems
11. (4/28) Intro to cooperative game I: intro to coalitional TU games, some families of games (market games, cost allocation games, simple games)
12. (5/5) Intro to cooperative game II: basic properties
13. (5/12) Useful & basic results on the core I
14. (5/19) Useful & basic results on the core II
15. (5/26) Useful & basic results on Shapley value I
16. (6/2) Useful & basic results on Shapley value II
17. (6/9) Review

Grading: Homework assignments (60%), Exam (25%), Class Attendance (15%)