

# National Cheng Kung University

## Modular Course 2023 Summer Program

### 賽局論

#### Game theory

Instructor

Affiliation

Graduation (Ph.d.)

**Brice Franke**

**Université de Bretagne Occidentale  
(Brest) Département de Mathématiques**

**Georg-August Universität Göttingen  
(德國哥廷根大學)**

Course  
Type

Course  
Credit

Class Capacity  
(Maximum)

**Lecture  
+  
Recitation**

**1**

**25**

#### Student Background

College of Science、College of Engineering、College of Bioscience and Biotechnology、College of Electrical Engineering and Computer Science、College of Management、College of Medicine、其他:基本微積分知識尤其是願意學習新觀念的態度

#### Difficulty

Challenging  Medium Well  Medium  Entry Level ( Basic)

#### Format of The Course

**Lecture 100%**

#### Grading Policy

**In class exam 80 % : 最後一天一小時的筆試**

**Participation 20%**

#### Code of Conduct for The Course

**Preliminaries: elementary calculus and readiness to learn new concepts**

#### Course Description

Game theory is a mathematical theory in which decision-making is modelled to involve several participants interact with each other. In addition, it attempts to derive rational decision-making behaviors from social conflict-situations. Game theory is originally a branch of mathematics, however it finds many applications in many fields and disciplines.

#### Timetable and Syllabus

Peroid	Timetable	Syllabus
8/7(MON)	14:00-17:40	preliminaries and introduction
8/8(TUE)	14:00-17:40	one round zero sum games with two players and their value
8/9(WED)	14:00-17:40	mixed strategies in one round zero sum game with two players
8/10(THU)	14:00-17:40	one round non-zero sum games with multiple players
8/11(FRI)	14:00-17:40	dynamic games with multiple rounds 16:40-17:40 Exam

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### **Goal of the Course**

- 1.Ability to model a simple game situation with mathematical objects**
- 2.Ability to analyze different game situations in the mathematical setting.**
- 3.Ability to solve simple games with mathematical tools.**

### **The Importance, Cross-Over Disciplinary and Contemporary of The Curriculum**

**In recent years, the concept of game theory has often appeared in the popular media. This course is aimed to bring interested students into the field to learn how mathematical tools can be applied in the decision-making process.**

### **Remarks**

#### **References :**

**Myerson,Roger B. : Game theory: Analysis of Conflict. Harvard University Press(1991)**

**Lecturer's own lecture notes**