



Course and Examination Fact Sheet: Autumn Semester 2015

7,740: Game Theory and Decision Theory: Origins and Development

ECTS credits: 3

Overview examination/s

(binding regulations see below)

Central - Written examination (100%, 90 mins.)

Attached courses

Timetable -- Language -- Lecturer

[7,740,1.00 Game Theory and Decision Theory: Origins and Development](#) -- English -- [Schuppli Reto](#)

Course information

Course prerequisites

None

Course content

Game theory as an important tool in economics has its origins in the 1940s/50s (while many specific topics have first been discussed long before that time). During the second half of the 20th century it developed in width and depth, and found its official recognition when the Nobel Prize in Economics 1994 was awarded to Nash, Harsanyi and Selten.

Game theory not only influenced economics, but had its impact in many areas of social sciences.

My intention is to discuss the ideas and models in their historical context and to characterize the contributing researchers within their social and political environment.

Course structure

1. Introduction, Classification, Examples and Terminology
2. John von Neumann, Oskar Morgenstern & the *Theory of Games And Economic Behavior*
3. John Nash and Equilibria in Non-Cooperative Games
4. n-Person Games: Coalition, Cooperation and Power
5. Theory of Collective Decisions

Game theoretical problems: **obligatory, not marked presentation.**

Contextual Studies are considered part of **Contact Learning**; thus, taking part properly implies **regular attendance**. It is the students' own responsibility to ensure that there is **no timetable clash** between the courses they have chosen.

Course literature

1. Lecture notes (on *studyNet*)
2. Problems to *Game Theory & Decision Theory* (on *studyNet*)

Additional course information

--



Examination information

Examination sub part/s

1. Examination sub part (1/1)

Examination time and form

Central - Written examination (100%, 90 mins.)

Remark

--

Examination-aid rule

Extended Closed Book

The use of aids is limited; any additional aids permitted are **exhaustively** listed under "Supplementary aids". Basically, the following is applicable:

- At such examinations, all the pocket calculators of the Texas Instruments **TI-30** series and bilingual dictionaries without hand-written notes are admissible. Any other pocket calculator models and any electronic dictionaries are inadmissible.
- In addition, any type of communication, as well as any electronic devices that can be programmed and are capable of communication such as notebooks, tablets, PDAs, mobile telephones and others, are inadmissible.
- Students are themselves responsible for the procurement of examination aids.

Supplementary aids

Pocket Calculator of the Texas Instruments TI-30 series

Examination languages

Question language: English

Answer language: English

Examination content

1. Introduction, Classification, Examples and Terminology

1.1. Introduction and Classification

1.2. Examples of Games

2. John von Neumann, Oskar Morgenstern & the *Theory of Games and Economic Behavior*

2.1. Historic Remarks, Background and Biographies

2.2. The Intention and Contents of *Theory of Games and Economic Behavior* and the Respective Contribution of the Two Authors

2.3. Topics from *Theory of Games and Economic Behavior*: Utility

2.4. Topics from *Theory of Games and Economic Behavior*: Minimax Theorem for 2-Person Zero-Sum Games

2.5. Topics *Theory of Games and Economic Behavior*: The von Neumann-Morgenstern Solution of 2-Person Cooperative Games

2.6. Topics *Theory of Games and Economic Behavior*: n-Person Cooperatives Games

2.7. The Reception of *Theory of Games and Economic Behavior*

3. John Nash and Equilibria in Non-Cooperative Games

3.1. John Nash

3.2. HEX



- 3.3. Nash's Contributions to Game Theory
- 3.4. Nash Equilibrium
- 3.5. Nash's Solution of a 2-Person Cooperative Game
- 3.6. "Solution": Comparison of Different Solution Concepts
- 3.7. John C. Harsanyi
- 3.8. Reinhard Selten
- 3.9. Equilibrium Selection
- 3.10. The Nobel Prize in Economics 1994

4. n-Person Games: Coalition, Cooperation and Power

- 4.1. Lloyd Shapley
- 4.2. Shapley's Contribution to Game Theory
- 4.3. Shapley-Wert

5. Theory of Collective Decisions: Impossibility Theorem

- 5.1. K. J. Arrow
- 5.2. Social Choice and Individual Values
- 5.3. The Swiss Voting Procedure on Initiatives with a Counterproposal

In the seminar, every student has to give a short **presentation** or to submit **solutions** of the problems.

The **test** consists of three tasks. One can get 30 points from every task.

The **first** task is an **essay**. One can choose one from three topics. The essay should be written in whole sentences, not in abbreviated form. The factual accuracy is rated, not stylistics.

The **second** task consists of **questions about game theory**, no options.

The **third** task consists of **game theoretical problems** to be solved mathematically, no options.

A **sample test** can be found on *StudyNet*.

Examination relevant literature

- 1. Lecture notes (on *StudyNet* [full and final version available from 18.12.2015])
- 2. Problems to *Game Theory & Decision Theory* (on *StudyNet* [full and final version available from 18.12.2015])
- 3. Content of student presentations
- 4. Individual notes



Please note

We would like to point out to you that this fact sheet has absolute priority over other information such as StudyNet, faculty members' personal databases, information provided in lectures, etc.

When will the fact sheets become binding?

- Information about courses and examination time (central/decentral and grading form): from the start of the bidding process on 20 August 2015
- Information about decentral examinations (examination-aid rule, examination content, examination relevant literature): after the 4th semester week on 12 October 2015
- Information about central examinations (examination-aid rule, examination content, examination relevant literature): from the start of the enrolment period for the examinations on 02 November 2015

Please look at the fact sheet once more after these deadlines have expired.