

The Hebrew University of Jerusalem

Syllabus

GAME THEORY - 73509

Last update 22-10-2017

<u>HU Credits:</u> 3

Degree/Cycle: 2nd degree (Master)

Responsible Department: environmental economics & management

<u>Academic year:</u> 0

Semester: 2nd Semester

Teaching Languages: Hebrew

<u>Campus:</u> Rehovot

<u>Course/Module Coordinator:</u> Guni Orshan

Coordinator Email: Guni.Orshan@mail.huji.ac.il

Coordinator Office Hours: Sunday 12:00-13:00

Teaching Staff:

Dr. Guni Orshan

Course/Module description:

The extensive form and the strategic form of non-cooperative games, pure and mixed strategies, Nash equilibrium, cooperative games with side payments, the core, the Shapley value.

Course/Module aims:

Basic concepts in non-cooperative games and cooperative games.

Learning outcomes - On successful completion of this module, students should be able to:

Introduce the extensive and the strategic form of non-cooperative games. Find the equilibria of certain non-cooperative games.

Introduce the classical model of transferable utility cooperative games.

Compute the core and the Shapley value of certain cooperative games.

Relate the mathematical models to well known political, economic and negotiation conflicts.

<u>Attendance requirements(%):</u> 100

Teaching arrangement and method of instruction: Lecture + exercise

Course/Module Content:

Non-cooperative games:

Introduction and basic concepts of non-cooperative games, the chess theorem, the extensive form of non-cooperative games, games with perfect information and without perfect information, the concept of a strategy, the strategic (normal) form of non-cooperative games, dominated strategies, zero-sum games, maxmin strategies and the max-min value, mixed strategies, Nash equilibrium, Cooperative games with side payments:

The definition of cooperative games with side payments, the meaning of solution concepts, the core, the Shapley value, an axiomatic characterization of the Shapley value, the Shapley value of simple monotonic games.

Required Reading:

None

Additional Reading Material:

Game Theory (in Hebrew), Shmuel Zamir, Michael Maschler, Eilon Solan, Magness Press

Game Theory 20216 (in Hebrew), Robert J. Aumann, Shmuel Zamir, Yair Tauman, The Open university of Israel.

<u>Course/Module evaluation:</u> End of year written/oral examination 90 % Presentation 0 % Participation in Tutorials 0 % Project work 0 % Assignments 10 % Reports 0 % Research project 0 % Quizzes 0 % Other 0 %

Additional information: