

EHM6114 Telsiz Ağlar için Oyun ve Bilişim Kuramı

Important Message:

Please email me at tureliufuk@gmail.com if you have any questions.

Date	Spring 2024	Credits	3
Course Title	Game Theory and Cognition for Wireless Networks	Course Number	EHM6114
Pre-requisite (s)	None	Co-requisite (s)	None
Hours	45	Out of Class Work Hours	90

Place and Time of Class Meeting

B153 Tuesdays (09:00-11:50) Face to Face

Name and Contact Information of Instructor

Prof. Dr. M.S. Ufuk Türeli

utureli@yildiz.edu.tr, tureliufuk@gmail.com

Book required

Drew Fudenberg and Jean Tirole. *Game Theory, 11th Edition*. MIT Press, 1991. ISBN:9780262061414.

Classroom expectations for students

Attendance Policy

Attendance Policy:

Students are liable to attend every course, practical and laboratory work of the program they are enrolled and to take the exams and participate in academic work required for achieving the course. Student attendance to all courses is compulsory. Students who do not attend a minimum 70% of the theoretical courses will be considered as absent for the related courses. Students who do not meet the mandatory minimum requirement of attendance will fail the course. Students who fail a course for not fulfilling minimum attendance requirement are obliged to meet the attendance requirement when they re-take the course.

Student Tardiness Policy

Students are permitted to arrive to the class in the first 15 minutes after the scheduled start of the course; extension of tardiness time is in instructor's discretion.

Course Description (must correspond exactly to Catalog description)

The course gives an introduction to the principles of game theory and mechanism design. It covers equilibria, repeated games, mechanism design and learning. Applications are provided when available.

Learning Objectives

At the end of this course the student will be able to:

1. Identify different types of games.
2. Use games to model a distributed problem.
3. Design a mechanism which achieves a desired outcome.
4. Choose strategies to achieve the best outcome for a games.

Topical Outline and Schedule

Game theory framework and equilibrium concepts (3 lectures)

- Pure strategy Nash equilibrium
- Dominant strategies
- Probability review
- Expected utility
- Mixed strategy Nash equilibrium
- Zero sum games
- Extensive form games
- Repeated games
- Cooperative game theory
- Bayesian games and imperfect information (2 lectures)
- Mechanism design (2 lectures)
- Congestion games / efficiency analysis (2 lectures)
- Potential games (1 lecture)
- Learning in games (2 lectures)
- Cost sharing / Utility design (1 lecture)

Instructional Methods

In developing methodological strategies, it is best to discuss them between teachers and students in an environment of freedom and mutual agreement in order to ensure that the students make them their own and take responsibility for their execution and for attaining the goals of this course.

The following strategies may be used in this class:

1. A review of the literature.
2. Check of the reading.
3. Analysis of assigned readings.
4. Preparation of reports.

Instructional Materials and References

Please enroll for free/audit <https://www.coursera.org/learn/game-theory-1> [Game Theory | Coursera](#) You are expected start following lectures, and submit results of quizzes as soon as you sign for the course. These will count towards homework grade. I will ask questions in MT1 similar to the questions in these lectures.

Notify me when you sign up email tureliufuk@gmail.com to access Google Drive resources, homeworks and slides.

Martin Osborne and Ariel Rubinstein. *A Course in Game Theory*. Cambridge, MA: MIT Press, 1994. ISBN: 9780262650403.

Supplementary Texts

George J. Mailath and Larry Samuelson. *Repeated Games and Reputations*. New York, NY: Oxford University Press, 2006. ISBN: 9780195300796.

Jorgen Weibull. *Evolutionary Game Theory*. Cambridge, MA: MIT Press, 1995. ISBN: 9780262731218.

Assessment Criteria and Methods of Evaluating Students

Grade	Coefficient
AA	4.00
BA	3.50
BB	3.00
CB	2.50
CC	2.00
DC	1.50
DD	1.00

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FF	0.00
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VF	0.00
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Distribution of Grade Elements		
In-Term Studies	Quantity	Percentage
First Exam	1	20
Second Exam	1	20
HW	1	10
Total		50
End-Term Studies	Quantity	Percentage
Final Exam	1	50
Total		
Contribution Of In-Term Studies To Overall Grade		
End-Term Studies		
Total		100

Date Syllabus Was Last Reviewed: Feb. 16, 2024