



## Bachelor's courses School of Business and Economics

VU University Amsterdam - Student- & Onderwijszaken - Exchange programme Vrije Universiteit - 2019-2020



# Mathematical Economics II

<b>Course code</b>	E_EOR2_ME2 ()
<b>Period</b>	Period 4+5
<b>Credits</b>	6.0
<b>Language of tuition</b>	English
<b>Faculty</b>	School of Business and Economics
<b>Coordinator</b>	dr. M.A. Estevez Fernandez
<b>Examinator</b>	dr. M.A. Estevez Fernandez
<b>Teaching staff</b>	dr. I.D. Lindner, dr. M.A. Estevez Fernandez
<b>Teaching method(s)</b>	Lecture, Study Group
<b>Level</b>	200

## Course objective

In a globalized world, cooperation among economic partners has become increasingly relevant. Another relevant aspect in nowadays economic environments is social and economic networks. In this course, the student learns basic concepts on mathematical modeling of bargaining and cooperation and analysis the role of social and economic networks and social interactions in explaining economic behavior.

## Course content

Bargaining Problems:

- Nash bargaining solution
- Kalai-Smorodinsky bargaining solution

Cooperative Game Theory:

- Introduction to cooperative games
- The core of a cooperative game and balancedness
- Convexity and the Shapley value
- Linear production games
- Sequencing games

Social and Economic Networks:

- Introduction to social networks
- Random networks
- Strategic network formation
- Diffusion of networks
- Learning on networks
- Games on networks

## Form of tuition

Classes. During classes time will be made for discussing exercises.

The second part of this course (Social and Economic Networks) uses a blended learning approach. That means that students are asked to prepare the classroom meeting by watching clips. Students can earn a bonus point with successfully answering quiz question in class.

## Type of assessment

Intermediate exam – Individual assessment

Final exam – Individual assessment

Individual assignment - Individual assessment

Quizzes in classroom - Individual assignment

**Course reading**

Syllabus on Canvas.

Jackson, M.O (2010), Social and Economic Networks, Princeton University Press, Available as paperback or ebook.

**Recommended background knowledge**

Linear Algebra, Analysis I, Probability Theory, Operations Research I