

# Algorithmic Economics

MA ECON AM MIT ALGOECON



## Content and learning outcome

### Content

Algorithmic economics is a vibrant interdisciplinary area at the intersection of economics and computer science. It brings computational thinking to traditional economic problems, enabling economic analysis to deal with the challenges of a digital economy. Understanding computational constraints is vital for designing mechanisms from elections to auctions and provides new insights into why practical institutions deviate from theoretical predictions.

This course introduces students to algorithmic economics. It provides the necessary background from theoretical computer science and demonstrates its usefulness by applying it to game theory, mechanism design, social choice, and fair division.

### Learning outcome

Students of this course will get acquainted with basic concepts from theoretical computer science. They will learn to recognize algorithmic challenges in familiar economic problems and to analyze and compare the practical limitations of traditional economic approaches. Moreover, they can apply algorithmic thinking to identify computationally tractable solutions.

## Teaching and learning methods

Type of course/ learning methods	Topic	Language of instruction	Group size	Contact time	Workload [h]
Lecture	Algorithmic Economics	English	30	4 hours	60
Self-study					165

## Prerequisites

### obligatory

none

### recommended

Basic Module *Microeconomics*

## Degree program allocation

Study Program/Study Field/Module Number/Lecture Number	obligatory/ elective	Semester
Economics (M.Sc.)/Microeconomic Theory/332121013/332021013	elective	3 <sup>rd</sup>
Export*/332192113/332021013		

## Requirements for the awarding of credit points (ECTS)

### Prerequisites for participation

none

### Types of Assessment Examination language

Written or oral exam or term paper (graded, 100%) - English

## Credits

7,5 CP

## Course Cycle

## Workload

## Duration

Winter term  
Summer term

Winter and  
 Summer term

225 h

1 Term

<b>Module coordination</b>	
<b>Teaching person</b>	See <a href="https://basis.uni-bonn.de">https://basis.uni-bonn.de</a>
<b>Module coordinator</b>	Prof. Dr. Dezső Szalay
<b>Institute/Department</b>	Department of Economics
<b>Further Information</b>	
<b>Literature</b>	The recommended literature will be announced at the beginning of the course.

*\* export into other study programs is only possible if contract between faculties exists*