University of St.Gallen

Course and Examination Fact Sheet: Spring Semester 2025

8,334: Information and Strategic Analysis

ECTS credits: 4

Overview examination/s

(binding regulations see below)
decentral - Presentation, Analog, Group work group grade (50%)
Examination time: Term time
decentral - Written work, Digital, Group work group grade (50%)
Examination time: Term time

Attached courses

Timetable -- Language -- Lecturer
8,334,1.00 Information and Strategic Analysis -- English -- Gizatullina Alia

Course information

Course prerequisites

The goal of the course is to improve students' modeling abilities, hence to learn effectively from this course, students should ideally have already completed at least one course in advanced Microeconomics (at the Bachelor's or Master's level). However, to ensure a common foundation within the group, all necessary microeconomic and game-theoretic concepts will be reviewed during the course, before the corresponding models are presented.

Learning objectives

By the end of the course, students will be familiar with a set of practically applicable game-theoretic tools, useful to formalize strategic interactions in environments with big data. They will know which steps to follow to independently construct a game-theoretic model that helps to better understand real-life phenomena. Consequently, this course can be also beneficial for students who wish to write their Master's thesis on the topic, whether it involves purely theoretical analysis or empirical work based on an underlying theoretical model.

Course content

The increasing creation and consumption of digital representations of information impact a broad range of economic activities. This digitization has transformed social interactions, given rise to entirely new industries, undermined others, and reshaped the ability of various groups - such as consumers, managers, government officials, financial markets, job seekers, and many others - to access and leverage information. Although numerous techniques have been developed to empirically analyze and learn from data, a comprehensive theoretical understanding of the impact of digitalization and of the widened access to big data on economic interactions still remains elusive. Recently, however, a number of papers have emerged attempting to bridge this gap by addressing several open issues through game-theoretic analysis. The goal of the course is to introduce students weekly to relevant models and techniques that those models rely upon.

Broadly, the course will cover applied models that use the standard Bayesian decision-making approach, as well as models that go beyond by explicitly incorporating algorithms and machine learning methods into strategic interactions. The covered models can be categorized into three main areas:

1. Game-theoretic models studying how the dissemination of information influences players' beliefs and, consequently, their behavior. Applications include global games, herding games, and the contagious unraveling of trade.
2. Models of strategic persuasion through the design of data-collecting procedures and ex-post interpretation of data. Applications cover the strategic design of experiments and the strategic communication of data analysis results.

3. Models examining the implications of digitalization and algorithmic decision-making for economic and social outcomes (changes in incentives, fairness, and discrimination).

Course structure and indications of the learning and teaching design

Each lecture consists of a mix of new theoretical material and exercises. The goal of the exercises is to practice the tools we will learn during the lecture.

Course literature

Main: Lecture slides and the corresponding scientific papers uploaded to Canvas.

Optional: Tadelis, Steven, "Game Theory: An Introduction", 2nd Edition

Additional course information

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Examination information

Examination sub part/s

1. Examination sub part (1/2)

Examination modalities

Examination type	Presentation
Responsible for organisation	decentral
Examination form	Oral examination
Examination mode	Analog
Time of examination	Term time
Examination execution	Asynchronous
Examination location	On Campus
Grading type	Group work group grade
Weighting	50%
Duration	--

Examination languages

Question language: English
Answer language: English

Remark

Presentation of the term paper by the group of 2

Examination-aid rule

Free aids provision

Basically, students are free to choose aids. Any restrictions are defined by the faculty members in charge of the examination under supplementary aids.

Supplementary aids

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2. Examination sub part (2/2)

Examination modalities

Examination type	Written work
Responsible for organisation	decentral
Examination form	Written work
Examination mode	Digital
Time of examination	Term time
Examination execution	Asynchronous
Examination location	On Campus
Grading type	Group work group grade
Weighting	50%
Duration	--

Examination languages

Question language: English
Answer language: English

Remark

Two take-home problem sets, groups of 2 students

Examination-aid rule

Free aids provision

Basically, students are free to choose aids. Any restrictions are defined by the faculty members in charge of the examination under supplementary aids.

Supplementary aids

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Examination content

Writing an extended referee report and presenting it in class, discussing presentations of others. Solving occasional homework exercises and presenting solutions during the lecture.

The topics covered are:

- game-theoretic models studying how information dissemination influences players beliefs and thereby their behavior (the list of applications: global games, herding games, contagious unravelling of trade, etc);
- models of strategic persuasion via design of data-collecting procedures and via ex post data interpretation (applications: strategic design of experiments, strategic communication of the result of data analysis);
- models studying the implication of digitalization and algorithmic decision making for economic and social outcomes (changes in incentives, fairness, discrimination).

Examination relevant literature

Compulsory: Lecture slides and the corresponding scientific papers covered in the slides.

Optional: Tadelis, Steven, "Game Theory: An Introduction", 2nd Edition

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Please note

Please note that only this fact sheet and the examination schedule published at the time of bidding are binding and takes precedence over other information, such as information on StudyNet (Canvas), on lecturers' websites and information in lectures etc.
Any references and links to third-party content within the fact sheet are only of a supplementary, informative nature and lie outside the area of responsibility of the University of St.Gallen.

Documents and materials are only relevant for central examinations if they are available by the end of the lecture period (CW21) at the latest. In the case of centrally organised mid-term examinations, the documents and materials up to CW 13 (Monday, 25 March 2025) are relevant for testing.

Binding nature of the fact sheets:

- Course information as well as examination date (organised centrally/decentrally) and form of examination: from bidding start in CW 04 (Thursday, 23 January 2025);
- Examination information (supplementary aids, examination contents, examination literature) for decentralised examinations: in CW 12 (Monday, 17 March 2025);
- Examination information (supplementary aids, examination contents, examination literature) for centrally organised mid-term examinations: in CW 14 (Monday, 31 March 2025);
- Examination information (regulations on aids, examination contents, examination literature) for centrally organised examinations: two weeks before ending with de-registration period in CW 15 (Monday, 07 April 2025).