



## Course and Examination Fact Sheet: Spring Semester 2022

### 8,250: Advanced Microeconomics III: Game Theory

ECTS credits: 4

#### Overview examination/s

(binding regulations see below)

Decentral - Written examination (with defined exam duration) (70%, 90 mins.)

Examination time: term time

Decentral - examination paper written at home (individual) (30%)

Examination time: term time

#### Attached courses

Timetable -- Language -- Lecturer

[8,250,1.00 Advanced Microeconomics III: Game Theory](#) -- Englisch -- [Bühler Stefan](#)

#### Course information

#### Course prerequisites

Students should have a firm background in microeconomic analysis. Basic knowledge of game theory is expected.

#### Learning objectives

In this course, students

1. learn how to describe strategic interaction,
2. familiarize themselves with the most important solution concepts,
3. gain practice in solving game-theoretic problems,
4. learn how to think strategically within and beyond the classroom.

#### Course content

Game theory is the lingua franca of modern behavioral and social sciences. In particular, game theory is an indispensable tool for the analysis of strategic interaction between economic agents in all subfields of economics. This course builds on material that students have learned in their bachelor studies. The goals of this course are to introduce students to various examples and applications of game theory, to train them to apply advanced, game theoretic concepts, and to convey the theoretical fundamentals of the field. The course aims to enable students to independently describe and analyze settings with strategic interaction using the tools of modern game theory.

#### Course structure and indications of the learning and teaching design

Lectures take place weekly. There are two exercise sessions replacing the lecture in the respective weeks. In each class, we discuss the key concepts, solve exercises, or conduct classroom experiments to immerse ourselves in the material. A thorough understanding of the contents of the "Brush Up" about normal-form games and solution concepts (Lecture 0) is a prerequisite for this course. Students are therefore asked to familiarize themselves with the contents of the "Brush Up" before the beginning of the course.

Tentative Structure (subject to change):

##### Static Games of Complete Information

1. Mixed Strategies and Nash's Existence Theorem



## Dynamic Games of Complete Information

2. Brush Up
3. Multistage Games
4. Repeated Games I
5. Repeated Games II

## Static Games of Incomplete Information

6. Brush Up
7. Exercise Session I

## Dynamic Games of Incomplete Information

8. Brush Up
9. Cheap Talk
10. Exercise Session II
11. Exam

## Course literature

### Main text:

Tadelis, S. (2013), *Game Theory: An Introduction*, Princeton University Press.

### Other useful texts:

Brams, S.J., (2011), *Game Theory and the Humanities: Bridging Two Worlds*, MIT Press.

Fudenberg, D., Tirole, J. (1993), *Game Theory*, MIT Press.

Gibbons, R. (1992), *Game Theory for Applied Economists*, Princeton University Press.

Mailath, G.J., Samuelson, L. (2006), *Repeated Games and Reputations*, Oxford University Press

Mas-Colell, A., Whinston, M.D., Green, J.R. (1995), *Microeconomic Theory*, Oxford University Press; Chapters 7-9.

Osborne, M.J., Rubinstein, R. (1994), *A Course in Game Theory*, MIT Press.

Tirole, J. (1988), *Theory of Industrial Organization*, MIT Press; Chapter 11.

Vega-Redondo, R. (2003), *Economics and the Theory of Games*, Cambridge University Press.

## Additional course information

In the case of the President's Board having to implement new directives due to the SARS-CoV-2 pandemic in SpS2022, the course information listed above will be changed as follows:

- The course is conducted online on Zoom via the platform Canvas.
- The recordings of the course are available for 180 days.
- The lecturer informs via Canvas on the changed implementation modalities of the course.

The examination information listed below would be changed as follows:

If the written examination is not possible, the written exam is replaced by a take home exam (open book examination); the exact modalities of the take home exam will be communicated in due time.



## Examination information

### Examination sub part/s

#### 1. Examination sub part (1/2)

##### Examination time and form

Decentral - Written examination (with defined exam duration) (70%, 90 mins.)

Examination time: term time

##### Remark

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##### Examination-aid rule

Extended Closed Book

The use of aids is limited; any additional aids permitted are exhaustively listed under "Supplementary aids". Basically, the following is applicable:

- At such examinations, all the pocket calculators of the Texas Instruments TI-30 series and mono- or bilingual dictionaries (no subject-specific dictionaries) without hand-written notes are admissible. Any other pocket calculator models and any electronic dictionaries are inadmissible.
- In addition, any type of communication, as well as any electronic devices that can be programmed and are capable of communication such as notebooks, tablets, mobile telephones and others, are inadmissible.
- Students are themselves responsible for the procurement of examination aids.

##### Supplementary aids

No additional aids allowed

##### Examination languages

Question language: English

Answer language: English

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#### 2. Examination sub part (2/2)

##### Examination time and form

Decentral - examination paper written at home (individual) (30%)

Examination time: term time

##### Remark

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##### Examination-aid rule

Term papers

Written work must be written without outside help according to the known citation standards, and a declaration of authorship must be attached, which is available as a template on the StudentWeb.

Documentation (quotations, bibliography, etc.) must be carried out universally and consistently according to the requirements of the chosen/specified citation standard such as e.g. APA or MLA.

The legal standard is recommended for legal work (cf. by way of example: FORSTMOSER, P., OGOREK R., SCHINDLER B., Juristisches Arbeiten: Eine Anleitung für Studierende (the latest edition in each case), or according to the recommendations of the Law School).

The reference sources of information (paraphrases, quotations, etc.) that has been taken over literally or in the sense of the original text must be integrated into the text in accordance with the requirements of the citation standard used. Informative and bibliographical notes must be included as footnotes (recommendations and standards e.g. in METZGER, C., Lern- und Arbeitsstrategien (latest edition)).



For all written work at the University of St.Gallen, the indication of page numbers is mandatory, regardless of the standard chosen. Where page numbers are missing in sources, the precise designation must be made differently: chapter or section title, section number, article, etc.

## Supplementary aids

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## Examination languages

Question language: English

Answer language: English

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## Examination content

Students will have to submit one problem set that is graded (accounting for 30% of the total grade) during the semester. At the end of the semester there is a final written exam (accounting for 70% of the total grade).

The final exam will cover the following topics:

- Static Games of Complete Information
- Mixed Strategies and Nash's Existence Theorem
- Dynamic Games of Complete Information
- Static Games of Incomplete Information
- Dynamic Games of Incomplete Information

## Examination relevant literature

The following content is covered in the examination:

- Chapters 3-6, 7-9, 10, 12, 15, 18 of Tadelis, S. (2013), *Game Theory: An Introduction*, Princeton University Press,
- the graded problem set,
- lectures 0-10 incl. the exercises from Exercise Sessions I and II.

## 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 12 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, 27 January 2022);
- Examination information (regulations on aids, examination contents, examination literature) for decentralised examinations: in CW 12 (Monday, 21 March 2022);
- Examination information (regulations on aids, examination contents, examination literature) for centrally organised mid-term examinations: in CW 12 (Monday, 21 March 2022);
- Examination information (regulations on aids, examination contents, examination literature) for centrally organised examinations: two weeks before the end of the registration period in CW 15 (Monday, 11 April 2022).