



## Course and Examination Fact Sheet: Spring Semester 2019

### 8,334: Game Theoretic Models for a Digital World

ECTS credits: 4

#### Overview examination/s

(binding regulations see below)

Central - Written examination (50%, 60 mins.)

Decentral - Group examination paper (all given the same grades) (40%)

Decentral - Active participation (10%)

#### Attached courses

Timetable -- Language -- Lecturer

[8,334,1.00 Game Theoretic Models for a Digital World](#) -- Englisch -- [Gizatulina Alia](#)

#### Course information

#### Course prerequisites

The course is relatively formal and based on concepts from game theory. To learn effectively from this course, students must have already taken at least one advanced course in Microeconomics (Bachelor or Master). However, all the corresponding concepts will be also reviewed during the course.

#### Course content

The goal of the course is to introduce students to a staple of the most recent game-theoretic models of the strategic interactions that became possible due to the development of digital economy.

The increasing creation and consumption of digital representation of information touches a wide breadth of economic activities. This digitization has transformed social interactions, facilitated entirely new industries and undermined others and reshaped the ability of people - consumers, managers, government officials, financial markets job seekers and many others - to access and leverage information. While a lot of techniques have been developed to analyze and learn from the data at the empirical level, full theoretical understanding of the impact of digitalization on economic interactions is still lagging behind. However, some recent papers have already addressed a number of open theoretical issues.

Our course will cover the most important papers that have been developed recently in this area. The examples of the topics that we will study are, among other things - the models of herding and information aggregation; contagious inefficient unravelling of trade; design of optimal rating systems; functioning and design of peer platform markets (e.g. like eBay, Uber or TaskRabbit), and many others. While occasional working through abstract game-theoretic and probabilistic concepts is unavoidable, the main focus will be on learning applied models that provide empirically testable implications.

The overall goal of the course is two-fold. On the one hand, to make students acquainted with new theoretical models of digitalization that are not yet available in the « standard » textbooks. On the other hand, the goal is also to learn and to practice non-standard game-theoretic tools that became pertinent for formalizing strategic interactions that appeared due to digitalization.

By the end of the course the students should be able to construct independently a game-theoretic model using the newly learned concepts. Hence, the course can be useful to students who wish to write their Master thesis on the topic, be it a purely theoretical analysis or an empirical work that also contains a new theoretical development.

#### Course structure

The course is held weekly and consists of a mixture between lectures and tutorials. The goal of the tutorials is to practice and



apply at a smaller scale the main concepts introduced during the theoretical parts.

## Course literature

- Lecture notes and the corresponding scientific papers covered in lecture notes
- Tadelis, Steven, "Game Theory: An Introduction"
- Osborne, Martin and Ariel Rubinstein, "A Course in Game Theory" (as extra reading)

## Additional course information

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## Examination information

### Examination sub part/s

#### 1. Examination sub part (1/3)

##### Examination time and form

Central - Written examination (50%, 60 mins.)

##### 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, PDAs, mobile telephones and others, are inadmissible.
- Students are themselves responsible for the procurement of examination aids.

##### Supplementary aids

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##### Examination languages

Question language: English

Answer language: English

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#### 2. Examination sub part (2/3)

##### Examination time and form

Decentral - Group examination paper (all given the same grades) (40%)

##### Remark

Groups of up to 4 people

##### Examination-aid rule

Term papers

- Term papers must be written without anyone else's help and in accordance with the known quotation standards, and they must contain a declaration of authorship.
- The documentation of sources (quotations, bibliography) has to be done throughout and consistently in accordance with the APA or MLA standards. The indications of the sources of information taken over verbatim or in paraphrase



(quotations) must be integrated into the text in accordance with the precepts of the applicable quotation standard, while informative and bibliographical notes must be added as footnotes (recommendations and standards can be found, for example, in METZGER, C. (2017), Lern- und Arbeitsstrategien (12th ed., Cornelsen Schweiz).

- For any work written at the HSG, the indication of the page numbers both according to the MLA and the APA standard is never optional.
- Where there are no page numbers in sources, precise references must be provided in a different way: titles of chapters or sections, section numbers, acts, scenes, verses, etc.
- For papers in law, the legal standard is recommended (by way of example, cf. FORSTMOSER, P., OGOREK R. et SCHINDLER B. (2018, Juristisches Arbeiten: Eine Anleitung für Studierende (6. Auflage), Zürich: Schulthess, or the recommendations of the Law School).

#### Supplementary aids

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#### Examination languages

Question language: English

Answer language: English

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### 3. Examination sub part (3/3)

#### Examination time and form

Decentral - Active participation (10%)

#### Remark

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#### Examination-aid rule

Practical examination

No examination-aid rule is necessary for such examination types. The rules and regulations of the University of St. Gallen apply in a subsidiary fashion.

#### Supplementary aids

Participation in the discussion and presentation of home work solutions

#### Examination languages

Question language: English

Answer language: English

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### Examination content

The exam will cover the lecture material and the corresponding papers mentioned during the lectures.

### Examination relevant literature

Lecture notes and the corresponding scientific papers.



### Please note

We would like to point out to you that this fact sheet has absolute priority over other information such as StudyNet, faculty members' personal databases, information provided in lectures, etc. When will the fact sheets become binding?

- Information about courses and examination time (central/decentral and grading form): from the start of the bidding process on 24 January 2019
- Information about decentral examinations (examination-aid rule, examination content, examination relevant literature): after the 4th semester week on 18 March 2019
- Information about central examinations (examination-aid rule, examination content, examination relevant literature): from the start of the enrolment period for the examinations on 08 April 2019

Please look at the fact sheet once more after these deadlines have expired.