



## Course and Examination Fact Sheet: Spring Semester 2021

### 8,398: Game Theory and Applications (MIA)

ECTS credits: 4

#### Overview examination/s

(binding regulations see below)

Decentral - examination paper written at home (individual) (40%)

Examination time: term time

Decentral - examination paper written at home (individual) (45%)

Examination time: term time

Decentral - Active participation (15%)

Examination time: term time

#### Attached courses

Timetable -- Language -- Lecturer

[8,398.1.00 Game Theory and Applications \(MIA\)](#) -- Englisch -- [Westerwinter Oliver](#)

#### Course information

##### Course prerequisites

A willingness to work through possibly unfamiliar material. A basic understanding of calculus and probability theory are helpful, but not required.

##### Learning objectives

The emphasis of the course is on the theoretical aspects of strategic behavior and the application of game theoretic concepts and models to questions of interest for social scientists. The primary objective is to enable students to understand research that uses game theoretic models. In addition, the course provides students with the skills required to start analyzing strategic situations and build simple game theoretic models on their own. Students will also engage in their own analyses and start developing their own game theoretic models in order to answer substantive questions of interest.

##### Course content

Strategic interdependence is ubiquitous in socio-political life. Individuals exchange goods, firms compete for market access, and states bargain over territory, voting shares in international organizations, and other goods they care about. In these and numerous other situations, actors must anticipate others' behavior to reach optimal decisions and maximize their utility. Non-cooperative game theory is a framework and set of techniques for understanding and analyzing such strategic interaction. Conflict, cooperation, coordination, bargaining, and communication are topics that can be investigated within this framework.

This course provides students with a systematic introduction to the fundamentals of non-cooperative game theory and their application to social science problems. It develops the basic concepts and results of non-cooperative game theory. Topics covered include decision theory, simultaneous and sequential move games, complete and incomplete information games, repeated games, bargaining models, and signaling models. Substantive applications will be drawn from inter-firm competition, legislative bargaining, agenda manipulation, electoral competition, international conflict, and other areas.

##### Course structure

The course will take place on a weekly basis in the spring semester 2021. There will be no classes during the semester break.



## Course literature

The syllabus will provide a full list of mandatory and optional readings for the class. Relevant readings include, but are not limited to:

McCarty, Nolan and Adam Meirowitz. 2007. *Political Game Theory: An Introduction*. Cambridge: Cambridge University Press.

Morrow, James D. 1994. *Game Theory for Political Scientists*. Princeton: Princeton University Press.

## Additional course information

For additional information about the course, please contact Oliver Westerwinter (email: [oliver.westerwinter@unisg.ch](mailto:oliver.westerwinter@unisg.ch)).

In the case of the President's Board having to implement new directives due to the SARS-CoV-2 pandemic in SpS2021, the course information listed above will be changed as follows:

- The course is conducted online via the platform Zoom.
- The recordings of the course are available for 30 days.
- The lecturer informs via StudyNet on the changed implementation modalities of the course.
- There are no changes necessary to the examination information.

## Examination information

### Examination sub part/s

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

##### Examination time and form

Decentral - examination paper written at home (individual) (40%)

Examination time: term time

##### Remark

Term paper

##### 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 which is a published template in StudentWeb.

The documentation of sources (quotations, bibliography) has to be done throughout and consistently in accordance with the chosen citation standard such as APA or MLA.

For papers in law, the legal standard is recommended (by way of example, cf. FORSTMOSER, P., OGOROK R. et SCHINDLER B., *Juristisches Arbeiten: Eine Anleitung für Studierende*, newest edition respectively, or according to the recommendations of the Law School).

The indications of the sources of information taken over verbatim or in paraphrase (quotations) must be integrated into texts 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., *Lern- und Arbeitsstrategien*, newest edition respectively).

For any work written at the HSG, the indication of the page numbers is mandatory independent of the chosen citation standard.



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.

## 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 - examination paper written at home (individual) (45%)

Examination time: term time

### Remark

Three problem sets, 15% each

### 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 which is a published template in StudentWeb.

The documentation of sources (quotations, bibliography) has to be done throughout and consistently in accordance with the chosen citation standard such as APA or MLA.

For papers in law, the legal standard is recommended (by way of example, cf. FORSTMOSER, P., OGOREK R. et SCHINDLER B., Juristisches Arbeiten: Eine Anleitung für Studierende, newest edition respectively, or according to the recommendations of the Law School).

The indications of the sources of information taken over verbatim or in paraphrase (quotations) must be integrated into texts 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., Lern- und Arbeitsstrategien, newest edition respectively).

For any work written at the HSG, the indication of the page numbers is mandatory independent of the chosen citation standard. 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.

## 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 (15%)

Examination time: term time

### 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

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## Examination languages

Question language: English

Answer language: English

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## Examination content

There will be three homework assignments, each of which will contribute 15% to your final grade. The homework assignments will consist of analytical problems. The solutions of the assignments have to be submitted either via Canvas or via email directly to the course instructor. The assignments will be available one week prior to the class at which they are due. No late submissions will be accepted. All submitted homework will be graded. Solutions will be available electronically in due course after the submission of the assignments.

The homework assignments are solo exams. Thus, you always need to write and submit your own solutions. Please always make sure that you write your name on every page of your submission. Please note that the homework assignments are designed to support and deepen your understanding of the material discussed in class. They will help you to self-assess your level of accomplishment and plan your term paper project.

The term paper will contribute 40% to your final grade. It has to be submitted either as hard copy or electronically (per email to: [oliver.westerwinter@unisg.ch](mailto:oliver.westerwinter@unisg.ch)) by June 12. Late submissions will not be accepted. The term paper is expected to present a short research project that uses non-cooperative game theory. In the term paper, you develop your own game-theoretic model in light of a research question of your interest. The maximum length of the paper is 5,000 words (including footnotes, references, etc.). The term paper is a solo exam. You are therefore expected to work on and submit your term paper project individually.

Active participation contributes 15% to your final grade. Active participation means that you come to class, work through all the required readings prior to class, and take part in the discussions and exercises.

## Examination relevant literature

The syllabus will provide a full list of mandatory and optional readings for the class and will be made available at the beginning of the course.

Relevant readings include, but are not limited to:

McCarty, Nolan and Adam Meirowitz. 2007. *Political Game Theory: An Introduction*. Cambridge: Cambridge University Press.

Morrow, James D. 1994. *Game Theory for Political Scientists*. Princeton: Princeton University Press.



### 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, 28 January 2021);
- Examination information (regulations on aids, examination contents, examination literature) for decentralised examinations: in CW 12 (Monday, 22 March 2021);
- Examination information (regulations on aids, examination contents, examination literature) for centrally organised mid-term examinations: in CW 12 (Monday, 22 March 2021);
- Examination information (regulations on aids, examination contents, examination literature) for centrally organised examinations: two weeks before the end of the registration period in CW 14 (Thursday, 8 April 2021).