



Course and Examination Fact Sheet: Spring Semester 2021

8,720: Technologien/Technologies: Predictive Technologies in Modern Science - From Climate Research to Economy

ECTS credits: 6

Overview examination/s

(binding regulations see below)

Decentral - examination paper written at home (individual) (50%)

Examination time: term time

Decentral - Presentation (in groups - all given the same grades) (25%)

Examination time: term time

Decentral - examination paper written at home (individual) (25%)

Examination time: term time

Attached courses

Timetable -- Language -- Lecturer

[8,720,1.00 Technologien/Technologies: Predictive Technologies in Modern Science - From Climate Research to Economy](#)

-- Englisch -- [Bschr Karim](#)

Course information

Course prerequisites

None.

Learning objectives

This course enables students to:

1. understand the epistemic role of predictions in scientific practice (in the natural as well as social sciences);
2. critically reflect the potential and the limitations of science-based predictions, as well as the causes of those limitations;
3. assess the societal and economic relevance of science-based predictions in various domains.

Course content

Predicting the behavior of complex systems (the climate, the economy, human health etc.) is a major goal of modern science. In this seminar, we take a look at the historical development of predictive techniques in modern science with a special emphasis on climate science and the epistemological aspects of predictions. Another important topic will be the increased use of data-driven predictive technologies in decision making. Thinking about the potential and the limitations our predictive capacities will facilitate an adequate understanding of the goals and methods of modern science and technology more generally.

Course structure

Seminar sessions are held **weekly** on **Zoom**. Each session will consist of a lecture part and a discussion part. Participation in plenary discussions is essential.

PLEASE DO NOT SIGN UP FOR THIS COURSE IF YOU ARE UNABLE TO ATTEND THE PLENARY SESSIONS.

The course has two parts. In the first part, general conceptual issues related to predictions in science will be discussed (the problem of induction, the use of predictions in model/theory testing, the limits of predictions etc.). The second part deals with the role of science-based predictions in policy making in different areas (climate science, economic forecasting, the predictive use of AI



etc.). A detailed course program will be available at the beginning of the semester on: www.prediction2021.philsci.ch

Contextual Studies are considered part of **Contact Learning**; thus, taking part properly implies **regular attendance**, be it online or in the classroom. In order to fully comply with the distance and hygiene rules applicable at the university, the course can be taught online or in smaller groups. It is the students' own responsibility to ensure that there is **no timetable clash** between the courses they have chosen. A detailed course outline and all relevant documents will be made available on **Studynet**.

Course literature

General Introductory Literature

- Agrawal, Ajay, Joshua Gans, and Avi Goldfarb. 2018. *Prediction Machines: The Simple Economics of Artificial Intelligence*. Boston, Mass.: Harvard Business Review Press.
- Taleb, Nassim Nicholas. 2007. *The Black Swan: The Impact of the Highly Improbable*. New York: Random House.
- Tetlock, Philip E, and Gardner Dan. 2015. *Superforecasting: The Art and Science of Prediction*. New York: Crown Publishers.
- Silver, Nate. 2012. *The Signal and the Noise: Why so Many Predictions Fail, but Some Don't*. New York: Penguin Press.
- Siegel, Eric. 2013. *Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die*. Hoboken, N.J.: Wiley.
- Friedman, Milton. (1953). The Methodology of Positive Economics. In *Essays in Positive Economics* (Vol. II, pp. 3-43). Chicago: University of Chicago Press.

Additional course information

The course is conducted **online** via zoom.

Karim **Bschir** is a lecturer and managing director of the HSG ethics commission. After finishing his undergraduate studies in biochemistry and philosophy, he obtained a PhD in philosophy of science at the ETH Zurich. His most recent research project focuses on the philosophical analysis of scientific predictions and was supported by a Branco Weiss Fellowship. He held visiting research positions at the London School of Economics, the Leibniz University in Hannover, and the University Roma Tre. In Fall 2014, he was a visiting fellow at the Center for Philosophy of Science at the University of Pittsburgh. From 2019-2020, he served as a scientific advisor for innovation and technology policy. For more go to: www.karim.bschir.philsci.ch.

Examination information

Examination sub part/s

1. Examination sub part (1/3)

Examination time and form

Decentral - examination paper written at home (individual) (50%)

Examination time: term time

Remark

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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., OGORÉK 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

2. Examination sub part (2/3)

Examination time and form

Decentral - Presentation (in groups - all given the same grades) (25%)

Examination time: term time

Remark

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Examination-aid rule

Presentations

In presentations, aids for visual presentation can be used. These aids can be specified or restricted by the lecturers.

Supplementary aids

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Examination languages

Question language: English

Answer language: English

3. Examination sub part (3/3)

Examination time and form

Decentral - examination paper written at home (individual) (25%)

Examination time: term time

Remark

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Examination-aid rule

Term papers

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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).

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Supplementary aids

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Examination languages

Question language: English

Answer language: English

Examination content

The main part of the examination is a individual **term paper** on one of the topics of the course (examination part 1; 50% of grade). The paper can either be a discussion of relevant literature or of a current topic related to prediction and forecasting. Papers have to be handed in by Saturday, 5 June 2021 (minimum length: 18'000 characters incl. spaces).

Each student has to participate in a **group presentation** (approx. 20 min) of one of the texts discussed in the course (examination part 2; 25% of grade; all given the same grade).

Each student will have to hand in 5 of 10 possible **preparatory assignments** (max. 500 words). Assignments will consist of a question or task related to the reading of the week (examination part 3; 25% of grade).

Examination relevant literature

There will be no specific literature requirements for the term papers. Literature for term papers should be selected individually according to the chosen topic.

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).