University of St.Gallen

Course and Examination Fact Sheet: Spring Semester 2022

8,300: Data Analytics II: Causal Econometrics

ECTS credits: 4

Overview examination/s
(binding regulations see below)
Central - Written examination (60%, 60 mins.)
Examination time: inter-term break
Decentral - examination paper written at home (individual) (25%)
Examination time: term time
Decentral - examination paper written at home (in groups - all given the same grades) (15%)
Examination time: term time

Attached courses
Timetable -- Language -- Lecturer
8,300,1.00 Data Analytics II: Causal Econometrics -- Englisch -- Lechner Michael , Knaus Michael
8,300,2.01 Data Analytics II: Causal Econometrics: Exercises, Group 1 -- Englisch -- Lechner Michael
8,300,2.02 Data Analytics II: Causal Econometrics: Exercises, Group 2 -- Englisch -- Bodory Hugo
8,300,2.03 Data Analytics II: Causal Econometrics: Exercises, Group 3 -- Englisch -- Busshoff Hannah

Course information

Course prerequisites
It is assumed that students are familiar with the methods taught in Data Analytics I: Predictive Econometrics. Furthermore, the knowledge of an introductory econometrics course is assumed as well.

Learning objectives
Goal of the course is know and use modern data analytic and econometric tools for causal empirical studies. In particular, students will understand important concepts of empirical causal analysis, like identification strategies and research designs. They will also learn to use suitable advanced data analytic causal estimators (classical estimators as well as causal machine learning estimators). Finally, students will learn how to code estimators in Python.

Course content
In the lecture part of the course, we will discuss research designs suitable to detect causal effects in empirical studies (selection-on-observables, instrumental variables, difference-in-difference, regression-discontinuity), as well as classical and machine learning estimators suitable in the particular research design. In the Lab sessions, the focus is on applying these method to empirical settings. In the self-study part, students create their own code in context of a Monte Carlo study. Coding in the Lab sessions and the Self-studies is based on Python.

Course structure and indications of the learning and teaching design
The course is in the first half of the term only. It consist of 7 lectures, 5 Lab sessions (contact studies), as well as a self-studies part. The contact studies part emphasise the statistical theory and its application. The self-studies part emphasises coding in Python.

Course literature

Wooldridge: Econometric Analysis of Cross-sectional and Panel Data, 2nd ed.

Angrist, Pischke: Mostly Harmless Econometrics.

Frölich, Sperlich: Impact Evaluation.

Athey, Imbens: The State of Applied Econometrics: Causality and Policy Evaluation. Journal of Economic Perspectives, 31, 3-32.

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 (i.e. if the university decides that we have to do remote teaching), the course information listed above will be changed as follows:

- Lectures and Lab session will be online only. The lectures consist of prerecorded lecture and live Q&A session (not recorded). Lab sessions are live session.

Examination information

Examination sub part/s

1. Examination sub part (1/3)

Examination time and form
Central - Written examination (60%, 60 mins.)
Examination time: inter-term break

Remark
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Examination-aid rule
Open Book
Students are free to choose aids but will have to comply with the following restrictions:

- All the pocket calculators that are not of the Texas Instruments TI-30 series are explicitly inadmissible.
- In addition, any type of communication, as well as any electronic devices that can be programmed and are capable of communication such as electronic dictionaries, notebooks, tablets, 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

2. Examination sub part (2/3)

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

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

3. Examination sub part (3/3)

Examination time and form
Decentral - examination paper written at home (in groups - all given the same grades) (15%)
Examination time: term time

Remark
Maximum group size is 2.

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.

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Supplementary aids
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Examination languages
Question language: English
Answer language: English

Examination content

Exam (60%):

- Research designs suitable to detect causal effects in empirical studies.

Lab sessions (15%):

- Coded solutions to part of questions of the PC projects.

Self-study (25%):

- Code econometric project.
- Classical and machine learning estimators suitable in the particular research design.
- Application and Monte Carlo studies with Python.

Examination relevant literature

Wooldridge: Econometric Analysis of Cross-sectionaland Panel Data, 2nded.

Angrist, Pischke:MostlyHarmlessEconometrics.

Frölich, Sperlich: Impact Evaluation.

Athey, Imbens: The State of Applied Econometrics:Causalityand Policy Evaluation. Journal ofEconomicPerspectives, 31, 3-32.

Please note

Please note that only this fact sheet and the examination schedule published at the time of bidding are is 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).