University of St.Gallen

Course and Examination Fact Sheet: Autumn Semester 2022

10,398: Econometric Methods for Social Spillovers and Networks

ECTS credits: 4

Overview examination/s
(binding regulations see below)
Decentral - examination paper written at home (individual) (80%)
Examination time: term time
Decentral - Active participation (20%)
Examination time: term time

Attached courses
Timetable -- Language -- Lecturer
10,398,1.00 Econometric Methods for Social Spillovers and Networks -- Englisch -- Graham Bryan

Course information

Course prerequisites
The equivalent of a first-year Ph.D. sequence in econometrics. Specifically an understanding of probability and inference at the level of Casella and Berger (1990, *Statistical Inference*), linear regression analysis at the level of Goldberger (1991, *A Course in Econometrics)*, some exposure to nonlinear, especially discrete choice, models (e.g., probit, logit) and a basic knowledge of applied linear and matrix algebra. A basic knowledge of game theory would be useful, but is not required.

Learning objectives
Students, using a series of examples, will learn how to interpret empirical research related to social and economic networks. They will also learn the underlying theory of such models as well as how to apply them in their own research (including methods of computation using the Python programming language). Some exposure to methodological research topics will also be provided. At the end of the course students will be proficient consumers of research on social and econometric networks and also have some facility in conducting such research themselves.

Course content
This course will provide an overview of econometrics methods suitable for the analysis of social and economic networks. Many social and economic activities are embedded in networks. Furthermore, datasets with natural graph theoretic structure are increasingly available to empirical researchers (e.g., matched employee-employer data, buyer-supplier networks etc.). We will study (i) how to display and summarize network data, (ii) how to fit and interpret formal econometric models of network formation (including models admitting unobserved heterogeneity and allowing for strategic interaction among agents) and, finally, (iii) how to study behaviors which occur on networks (i.e., the identification of peer group effects and other spillovers). Attention will be given to underlying econometric theory, empirical applications as well as computation.

Course structure and indications of the learning and teaching design
Class will be lecture based, albeit with amply time for student questions and discussion. Computation will be discussed and illustrated in class using Jupyter Notebooks and the Python programming language.

Course literature
A detailed listed of course readings will be made available to students immediately prior to the start of class. Special use will be made of the book *The Econometric Analysis of Network Data* by Bryan Graham and Aureo de Paula (2019, Academic Press) as well as the *Handbook of Econometrics 7A* survey chapter on "Network Data" by Bryan Graham (2010, Elsevier).

Additional course information

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Students who plan to take this course as an *optional* course and *without an examination* should not register via the bidding system. They should register directly with the lecturer.

Students who plan to take this course as a *regular* course or as an *optional* course *with an examination* should register via the bidding system. Enrolment in a course is binding: students have to attend the course and take the exam.

Examination information

Examination sub part/s

1. Examination sub part (1/2)

Examination time and form
Decentral - examination paper written at home (individual) (80%)
Examination time: term time

Remark
Final exam / project / paper

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
The final exam / project / paper will be open book. All course materials may be freely utilized.

Examination languages
Question language: English
Answer language: English

2. Examination sub part (2/2)

Examination time and form
Decentral - Active participation (20%)
Examination time: term time

Remark
Participation in class discussion and office hours

Examination-aid rule

Active classroom participation

In the "Active classroom participation" examination form, regular participation in class is assessed.

The assessment criteria can be as follows:

- Requests to speak enrich the discussion (productive) / requests to speak disturb the discussion (counterproductive);

- Requests to speak are correct/requests to speak are incorrect;

- Requests to speak are frequent/average/rare;

- No requests to speak, but students follow the lesson/no requests to speak and students do not noticeably follow the lessons.

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

Examination content
The exam will provide an opportunity for the student to demonstrate their theoretical knowledge of, and ability to practically apply, econometric methods for network data. A portion of the exam will involve preparing a research proposal.

Examination relevant literature
No materials beyond the course readings are required for exam.

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 (CW51) at the latest. In the case of centrally organised mid-term examinations, the documents and materials up to CW 42 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 34 (Thursday, 25 August 2022);
- Examination information (regulations on aids, examination contents, examination literature) for decentralised examinations: in CW 42 (Monday, 17 October 2022);
- Examination information (regulations on aids, examination contents, examination literature) for centrally organised mid-term examinations: in CW 42 (Monday, 17 October 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 45 (Monday, 7 November 2022).