University of St.Gallen

Course and Examination Fact Sheet: Spring Semester 2021

8,268: Quantitative Applications in Economics and Finance

ECTS credits: 4

Overview examination/s
(binding regulations see below)
Decentral - Presentation (individual) (60%)
Examination time: term time
Decentral - Presentation (individual) (40%)
Examination time: term time

Attached courses
Timetable -- Language -- Lecturer
8,268,1.00 Quantitative Applications in Economics and Finance -- Englisch -- Valladares-Esteban Arnau

Course information

Course prerequisites
Students are expected to have a solid background in Microeconomics, Macroeconomics, and Statistics.

It is expected that students are familiar with the basic notions of programming (irrespective of language): values, variables, functions, iterations, and conditionals.

Learning objectives
The main objective of the course is to introduce students to the methodology and techniques used to quantitatively and structurally evaluate economic and finance models. At the end of the course, students are able to understand the scope of model estimation and the complementarity between reduced-form and structural modelling. They are also able to program (in Julia) and to use the fundamental techniques in computational economic methods.

Course content

In recent years, the increase in the availability of data and the implementation of new techniques, such as randomised control trials (RCTs), have generated a new playing field for the quantitative evaluation of policies. Some of these advances, such of those granted by RCTs, focus on the short run or static effects of policies. However, a complete policy evaluation often faces the challenge of addressing its impact on dynamic decisions (which may result in unexpected long-run outcomes) or its repercussion on market dynamics (the so-called general equilibrium effects). The improvement in computer performance of the last decades has allowed researchers to develop structural quantitative models that can shed light on these dynamic, long-run, general-equilibrium effects. These models are mathematical descriptions of the world that are solved and simulated in a computer in order to use them as laboratories to test the effects of policies.

In this course, students learn the basic concepts and techniques to develop structural models. The course consists of three parts. In the first part, students consolidate their knowledge of key programming concepts and become familiar with the Julia programming language. In the second part of the course, students learn basic tools of computational methods such as Monte Carlo simulation or Dynamic Programming. In the third part, students learn to solve and simulate different applications in Economics and Finance.

Course structure
The course consists of sessions of 2 or 4 hours a week spread throughout the semester. There is a session almost every week (except during the midterm break).

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Course literature

- Lectures in Quantitative Economics (website) by Thomas J. Sargent and John Stachurski.
- Dynamic Economics by Jérôme Adda and Russell Cooper. MIT Press 2003.

Additional course information

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 will be conducted online via the platform Zoom;
- The recordings of the course will be available for 30 days;
- The lecturer will inform via StudyNet on changes related to the development of the course.

The examination information listed below will be changed as follows:

- Both presentations will take place via Zoom and will be recorded.

Arnau Valladares-Esteban is an Assistant Professor at the Department of Economics and the Swiss Institute for Empirical Economic Research of the University of St. Gallen. His research focuses on labour issues, such as labour market dynamics and earnings inequality approached from a macro-quantitative perspective. After completing a PhD in Economics at the Barcelona Graduate School of Economics, Arnau worked as a Lecturer in Economics at the University of Southampton.

Examination information

Examination sub part/s

1. Examination sub part (1/2)

Examination time and form
Decentral - Presentation (individual) (60%)
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

2. Examination sub part (2/2)

Examination time and form
Decentral - Presentation (individual) (40%)
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

Examination content

The examination of this course consists of replicating a published academic paper. There are two presentations to assess the performance of students:

- Paper content and replication strategy (40%): At about the midpoint of the semester students give a presentation to they explain the content of the paper (what does it do, why is it important, which methodology is used, etc.) and the strategy they plan to implement in order to replicate the results of the paper.
- Replication results and lesson (60%): At the end of the course, students present the outcome of their replication exercise and reflect on what they have learned by working on the replication.

Examination relevant literature

All the relevant material is posted on StudyNet at the beginning of the semester.

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, 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).