KURS-PM
Course Memo
FAG3184

HT 2023

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Contact

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Content

- Main content of the course includes: Theoretical foundation of discrete choice modelling, and core theoretical concepts of rational choice theory and behavioural economics. Estimation of flexible discrete choice models including simulation methods and large choice sets and Hierarchical Bayes, with a focus on transport demand. Theoretical approach of econometrics vs Machine Learning, as applied to forecast demand modelling, in particular in transport.

ILO

Describe and critique the application of rational choice theory in applied demand modelling in market research
with a focus to transport demand, with a focus of using core theoretical concepts of rational choice theory and behavioural economics.

Describe underlying theoretical foundation for estimation of demand models. Develop and estimate flexible demand models using discrete choice econometric, including the use of simulation methods.

Estimate a transport demand model on realistic data set with large choice sets, and communicate and interpret the results.

Describing and using standard theory and techniques for model interpretation and validation, including goodness-of-fit measures,
cross-validation and out-of-sample prediction

Describe basic theory of Bayesian estimation and hierarchical models. Formulate and estimate a model using Hierachical Bayes for multinomial choices.

Discuss the approach in econometrics, and differences and similarities with approach in Machine Learning, when applied to forecast demand modelling.

Literature

- Main text book is Train, K., 2009, Discrete choice methods with simulation, Cambridge University Press
- Papers, see canvas

Course requirements

Formally:

- Seminars
- Written examination

Seminars

- Submitted lab results
- Active participation at seminars, see below
- Individual oral assessment

LABS

There are 3 labs in the course

LABS Deadlines

- There is a deadline for each lab. Lab results needs to be submitted at least **one hour and 15 minutes** before the corresponding seminar, as visible in the schedule
- Participation in seminar is **not** possible without submited lab results, submitted before deadline.
- Date and time of seminars are visible in the course schedule on Canvas.

- LAB 1 will be subject to SEMINAR 1
- LAB 2 will be subject to SEMINAR 2
- LAB 3 will be subject to SEMINAR 3

lab results

There are three (3) labs. For each, each student needs to submit Lab Results.

Formal requirement for submission of Lab Results are found on canvas course web. These include, but may not be limited to,

1. The model estimation results in table: include, when appropriate, parameter name, parameter value, std errors, Wald z-score, AIC, LLF at zero and LLF at ASC. Value-of-time estimates, when appropriate. In table caption, make sure the reader/instructor will be able to understand what models have been estimated.
2. Provide a model selection
3. Include all the files: data.R, loglikelihoods.R, output.R, lab1.R - lab4.R

The results and estimation code will be discussed at seminar, and individual oral assessment

SEMINARS

- Seminars are mandatory.
- You are required to participate in three (3) seminars, and completed three (3) labs
- To participate in the seminar you need to have

- completed the exercises (which will form the basis of assessment)
- completed the corresponding lab (submission deadline is 75 minutes before corresponding seminar)

- Active participation is required, and you will be given questions, or topics for discussion, by the instructor during the seminar.

Seminars (continued)

- Seminars is an assessment activity
- At the seminar, individual Modules will be assessed.
- The topic of each Seminar is communicated in Schedule.
- The Seminar is based on the literature, exercises, and labs for associated Modules.

Follow-up seminars

- You will need to complete three seminars.
- If you miss a seminar, then you are required to attend a follow-up seminar.
- The follow-up seminars will be scheduled as required in the period Oct 11-Oct 27
- There is a re-take period Dec 1 - Dec 15.
- No assessment activities will take place after this date.

Individual oral assessment

- To participate in individual oral assessment, participation in at least three (3) seminars is required.
- Time-slots for scheduling of individual oral assessment will be found on Canvas course web.
- Individual oral assessment will be scheduled in the period Oct 11-Oct 27 2023
- There is a re-take period Dec 1 - Dec 15 2023.
- No assessment activities will take place after this date.

- The individual oral assessment is similar to the seminars, including but not limited to lab report and codes.

Grading

- All learning objectives are examined both at seminars (together with submitted lab results), individual oral assessment, and written examination

- Only PASS/FAIL

FX

- If the grade FX is given, the a new examination task or assessment activity will be given.
- The order of events are

- The student is notified about the grade FX
- The student needs to contact the examiner as soon as possible
- Instructions of a new assessment activity will given and scheduled.

More on examination

- Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.
- The examiner may apply another examination format when re-examining individual students.

Plussning

- Not Applicable

Written examination

- At the written examination, simple calculators are allowed. This includes access to exponentials and logarithms and similar functions. Any memory items must be deleted before the start of the exam. The content of the calculator may be checked by invigilators.

Ethical approach

- It is allowed to cooperate. Each student is responsible for all submitted documentation.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, including seminars, every student shall be able to present and answer questions about the entire assignment and solution.

On instructions wrt examination

The student must access and follow given instructions regarding examination, or be subject to disciplinary actions, either warning or suspension when not following such instructions.

Studenten är skyldig att ta del av och följa givna instruktioner om vad som gäller vid examinationen. Det kan leda till disciplinära påföljder i form av varning eller avstängning om studenten inte följer instruktionerna.

On examination, in general

- Students who, with unauthorized aids or otherwise, attempt to mislead the exam or when a student's performance is otherwise to be assessed, may be subject to disciplinary action.
- This includes, but is not limited to, plagiarism, see next page.

On plagiarism

Plagiarism is defined as “submitting someone else’s work as one’s own”. The activities listed below are to be regarded as examples and not as a comprehensive description of what can be defined as plagiarism.

- Copying of text, problem solutions, computer programs, drawings/diagrams and pictures without citing the copied material and without specifying the source. Copying other students’ work without acknowledgment is also defined as plagiarism.
- Using ideas, data or other material without specifying the source, for example, if a student reads about someone’s discoveries and insights and uses these without specifying the name of the book (publication) or the same of the author of the source. The exception from this rule is what can be regarded as general knowledge in the field in question.
- Summarising or rewriting a text without the writer essentially changing the original. If the source material is rewritten in the student’s own words, the student’s text must include indications of the original source. The only exception is if the newly written text contains general knowledge in the field in question; however, even in this case, citation and source referencing may be useful as a way of increasing the student’s credibility as a writer.
- Too close cooperation with other students in a piece of work that is meant to be the student’s own work, i.e., the student uses another student’s discoveries and insights in his/her work without specifying this.
- Translating a piece of work without stating the original source.

How to avoid cheating and plagiarism

- See

https://www.kth.se/en/student/stod/studier/fusk-1.997287