



FAG3184 Discrete Choice Modelling 4.5 credits

Modellering för diskreta val

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

The course syllabus is valid from autumn 2023 according to the Head of school decision: A 2023-1794, 3.2.2. Decision date: 2023-07-04

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

Admission to relevant doctoral program: Approved courses of at least 60 higher education credits at the basic level in the subject areas of transportation systems, civil engineering, urban planning, economics, computer science, physics, applied mathematics, or other subjects deemed directly relevant. Proficiency in English equivalent to English 6.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

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 Hierarchical Bayes for multinomial choices.

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

Course contents

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.

Examination

- SEM1 - Seminars, 3.5 credits, grading scale: P, F
- TEN1 - Written exam, 1.0 credits, grading scale: P, F

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.

The examiner may, based on a recommendation from KTH's coordinator of support for students with disabilities, decide on any adapted examination for students with documented, permanent disabilities.

The examiner may allow an alternative form of examination for re-examination of individual students.

Other requirements for final grade

75% or more participation in seminars is mandatory. One seminar may be replaced by a written and oral examination

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.