FA33002 Discrete Choice Modelling 4.5 credits

Modellering för diskreta val

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

Establishment

The syllabus is valid from Autumn 2025 according to the Faculty Board decision: A-2024-0880.Decision date: 2025-02-20

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

Fundamental knowledge of transport modelling, including logit and nested logit models, four-step model for transport demand modelling, and interaction between land use and transport planning.

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

After completing the course, students should be able to:

- discuss and critique the application of rational choice theory in transport demand modelling,

- discuss and formulate nested logit models (general MEV models),

- Discuss the use of standard theory and techniques for model interpretation and validation, including goodness-of-fit measures, cross-validation and out-of-sample prediction,

- 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 from core theoretical decision theories. Discrete choice models includes, but is not limited to, logit, nested logit (MEV multivariate extreme value) and appropriate simulation-based models. Theoretical approach of econometrics vs Machine Learning, as applied to forecast demand modelling, in particular in transport.

Examination

- SEM1 - Seminars, 4.5 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.

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

Seminars involve active and authorised participation.

Other requirements for final grade

- In group work, everyone in the group is responsible for the group's work.
- During examination, each student should honestly disclose any assistance received and sources used.
- During the oral examination, each student must be able to give an account of the entire task and the entire solution.

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.