AH2304 Advanced Transport Modelling 7.5 credits

Avancerad transportmodellering

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

Establishment

Course syllabus for AH2304 valid from Spring 2010

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Specific prerequisites

- A completed, documented Bachelor's degree in Engineering, Science, Economics or Planning including at least 60 credits in Mathematics, Physics, Statistics and/or Computer Science (the course Transport Modelling (AH2302) is recommended) **and**
- documented proficiency in English B or equivalent.

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, the student should be able to

- use the theory for discrete choices and stochastic utility maximization to formulate models related to transport demand, in particular travel frequencies, destination choice and mode choice
- program a transport forecasting model for analysing a real and current policy measure, such as congestion charges
- account for models and theory for route choice
- explain network equilibrium models and equivalent optimization formulations. Account for pros and cons with the concept of network equilibrium
- use software for network equilibrium on a real world application to analyse traffic flows.
- use decision support systems to analyse realistic planning problems
- search relevant literature for a current application within transport demand modelling

Course contents

- Theory for discrete choices, stochastic utility maximization, econometric estimation, entropy methods and gravity model.
- Theory and algorithms for network equilibrium
- Cost benefit valuation and effect evaluations: accidents, emissions and value of time.
- Literature seminar

First, the theory is presented within lectures, which are the followed up by computer assignments, normally four.

Finally, in a literature study assignment, the student will search information to find a solution to a given problem. The suggested solution will be presented as a written report and at a seminar.

Course literature

Hensher, D.A., and Button, K.J., 2000, Handbook of Transport Modelling, Pergamon Press. In particular chapters 1, 3, 5, 9, 10,13, 17, and 19.

Train, K., 2003, * Discrete choice methods with simulation*, Cambridge University Press.

Examination

- ANN1 - Assignment, 3.0 credits, grading scale: P, F
- TEN1 - Examination, 4.5 credits, grading scale: A, B, C, D, E, FX, 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.

Other requirements for final grade

Written exam (4,5 cr) and assignments (3 cr).

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.