AI2152 Quantitative Methods Applied to Real Estate and Construction Management 7.5 credits

Kvantitativa metoder tillämpade på fastigheter och byggnader

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

Establishment

Course syllabus for AI2152 valid from Autumn 2018

Grading scale

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

Education cycle

Second cycle

Main field of study

The Built Environment

Specific prerequisites

Eligibility to the master programme in Real Estate and Construction Management.

Language of instruction

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

Intended learning outcomes

People that are involved in making business and policy decisions often use of empirical information and quantitative methods. This course covers different quantitative methods, above all econometric methods, needed for empirical analyses and understanding of economic phenomena in above all the real estate, construction and financial markets. Students will also learn the very basics of some multivariate techniques such as principal component analysis, factor analysis and cluster analysis. Some popular nonparametric statistics, such as chi-square tests on contingency tables will also be taught. This course will develop students' abilities to conduct their own quantitative projects using real world data, statistical software packages and spreadsheet programs.

By the end of this course the student will be able to:

- apply econometric and other quantitative methods to different data structures such as cross-sectional data, time series data and panel (longitudinal) data.
- formulate, estimate and interpret results of simple and multiple linear regression models.
- formulate, estimate and interpret results of logit and probit models.
- identify and discuss common problems in econometric modeling and suggest possible solutions.
- make economic forecasts based on econometric models.
- understand when multivariate statistical methods, such as cluster analysis, principal component analysis and factor analysis, can be appropriate to apply and how to interpret results from such analyses.
- formulate, estimate and interpret results of some popular nonparametric data analysis tools such achi-square tests on contingency tables.
- briefly explain some recent applications with machine learning, data mining and blockchain techniques.
- briefly explain the differences between supervised and unsupervised learning.

Course contents

Repetition of some key probability and statistical inference concepts usually taught in introductory (business) statistics courses; estimation and inference of simple and multiple regression models; econometric models with cross-sectional data, time series data and panel (longitudinal) data; critical analysis of econometric models; logit, and probit models; economic forecasting; principal component analysis, factor analysis and cluster analysis; chi-square tests and other nonparametric tests.

Course literature

Information about main textbook for this course will be posted about one month prior to the start of the course.

Preliminary: Principles of Econometrics, 5th Edition, Wiley. Authors: R. Carter Hill, William E. Griffiths, Guay C. Lim.

Material from the Internet.

Examination

- INL1 - 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.

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.