



School of Economics and Management

DABN14, Data Analytics and Business Economics: Advanced Machine Learning, 7.5 credits

Dataanalys och ekonomi: Avancerad maskininlärning, 7,5 högskolepoäng
Second Cycle / Avancerad nivå

Details of approval

The syllabus was approved by The Board of the Department of Economics on 2020-09-15 and was last revised on 2025-04-23. The revised syllabus comes into effect 2025-04-23 and is valid from the autumn semester 2025.

General information

This is a single subject master course in data analytics and business economics. The course is mandatory in the master programme Data Analytics and Business Economics. The course is optional within a number of master programmes at Lund University.

Language of instruction: English

(Teaching may be in Swedish if all registered students have a good knowledge of Swedish.)

Main field of study

Data Analytics and Business Economics

Specialisation

A1F, Second cycle, has second-cycle course/s as entry requirements

Learning outcomes

Knowledge and understanding

Students shall have an understanding of:

- bootstrap methods,
- classification and regression trees,
- ensemble methods,
- unsupervised learning methods,

- applications of machine learning to problems that are relevant in business and economics.

Competence and skills

Students shall have the ability to independently:

- apply the methods covered,
- appropriately choose between a set of methods for a given empirical problem,
- evaluate the suitability of the chosen method,
- generalise their knowledge to empirical problems that have not been treated during the course,
- draw conclusions from empirical results and provide advice.

Judgement and approach

Students shall have the ability to pursue further studies in the subject and should be able to search for and evaluate subject related information with a high degree of independence. Students shall also have sufficient competence to write an empirical report where machine learning is an essential element.

Course content

This course covers advanced machine learning methods that are relevant for applications in business and economics, and is intended as a continuation of Machine Learning from a Regression Perspective. Some of the topics covered include bootstrapping, ensemble methods such as boosting and random forests, unsupervised machine learning methods such as principal components analysis and clustering algorithms as well as applications of machine learning methods to problems that are relevant for business and economics. Theoretical studies are interwoven with empirical applications to problems in business and economics.

Course design

1. Teaching: Teaching consists of lectures and exercises.

Assessment

1. Examination: The examination consists of home assignments that are presented orally and in writing and a written exam. The grade is determined as a weighted average of the score of the home assignments (60 percent) and the written exam (40 percent).

2. Limitations on the number of examination opportunities: –

The University views plagiarism and other academic dishonesty very seriously, and will take disciplinary action against students for any kind of attempted malpractice in connection with examinations and assessments. Plagiarism is considered to be a very serious academic offence. The penalty that may be imposed for this, and other unfair practices in examinations or assessments, includes suspension from the University for a specified period.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Grades

Grading scale includes the grades: U=Fail, E=Sufficient, D=Satisfactory, C=Good, B=Very Good, A=Excellent

1. Grading: Grade (Definition), Points or percentage out of maximum points, Characteristic

A (Excellent) A distinguished result that is excellent with regard to theoretical depth, practical relevance, analytical ability, and independent thought.

B (Very good) A very good result with regard to the above-mentioned aspects.

C (Good) The result is of a good standard with regard to the above-mentioned aspects and lives up to expectations.

D (Satisfactory) The result is of a satisfactory standard with regard to the above-mentioned aspects and lives up to expectations.

E (Sufficient) The result satisfies the minimum requirements with regard to the above-mentioned aspects, but not more.

U (Fail) The result does not meet the minimum requirements with regard the above-mentioned aspects.

To pass the course, the student must have been awarded the grade of E or higher.

2. Weighting grades from different parts of the course: –

3. Grading scales for different parts of the course: –

Entry requirements

Students admitted to the master programme Data Analytics and Business Economics are eligible for this course. Students admitted to the Master Programmes in Economics with at least 30 ECTS-credits in economics at the advanced level including Advanced Econometrics and Machine Learning from a Regression Perspective are eligible for the course. For other students, a Bachelor degree including at least 30 ECTS-credits in statistics of which 7.5 ECTS-credits in econometrics or regression analysis, and Machine Learning from a Regression Perspective, or a Bachelor degree in economics or business administration and at least 15 ECTS-credits in statistics of which 7.5 ECTS in econometrics or regression analysis, and Machine Learning from a Regression Perspective.

Further information

1. Transitional regulations: –

2. Limitations in the period of validity: –

3. Limitations: –

4. Similar courses: –

5. Limitations in renewed examination: –