

# Syllabus

for course at advanced level

**Data Science for Design**  
**Data science för design**

**7.5 Higher Education  
Credits**  
**7.5 ECTS credits**

<b>Course code:</b>	ML483N
<b>Valid from:</b>	Spring 2020
<b>Date of approval:</b>	2019-11-12
<b>Department</b>	Department of Computer and Systems Sciences
<b>Main field:</b>	Computer and Systems Sciences
<b>Specialisation:</b>	A1N - Second cycle, has only first-cycle course/s as entry requirements

## Decision

This syllabus was approved by the Head of the Department 2019-11-12.

## Prerequisites and special admittance requirements

90 ECTS in Computer and Systems Sciences (or equivalent knowledge).  
English 6 (or equivalent knowledge).

## Course structure

Examination code	Name	Higher Education Credits
DSHI	Data Science, assignments	3.5
DSHT	Data Science, written exam	4

## Course content

The course begins with the basics of data science and decision support. Then facts and methods for data science are presented with a focus on design. The content consists of i.a. clustering, classification, deep learning, analysis of time series and decision support methods. The last part of the course focuses on data analysis and decision support tools. The course includes research visits to industrial partners.

## Learning outcomes

Knowledge and understanding

After completing the course the student should be able to:

- Understand basic methods in the field of data mining and machine learning
- Understand basic methods in the field of decision support
- Explain process models for data mining projects
- Explain the difference between rule-based methods and machine learning methods

Skills and abilities

After completing the course the student should be able to:

- Apply the steps in a process model for data mining projects
- Apply methods from the areas of data mining, machine learning and decision support to different types of problems
- Formulate and solve different problems by selecting and applying appropriate methods from the field of data science.

## Education

The teaching consists of:

- Lectures
- Demonstrations
- Lessons
- Research visits.

The language of instruction is English.

### **Forms of examination**

a. The course is examined through written exam and assignments.

b. The final grading of the course is based on the following grading scale related to the learning outcomes of the course: A = Excellent, B = Very Good, C = Good, D = Satisfactory, E = Sufficient, Fx = Fail, F = Fail.

c. The grading criteria are communicated to the students at the start of the course.

d. In order to complete the whole course segment the student must obtain at least grade E (or P with Pass/Fail grades) in all course components/examinations.

e. In addition the following regulations also apply:

- Students who obtain grade Fx in a written examination task are allowed to complete a supplementary assignment in order to elevate the grade to E.

The examiner informs the concerned students when the results of the written examination are published. The supplementary assignment has to be submitted within a given deadline and can only be utilized to elevate the grade of the actual examination task.

- Students who obtained grade E in an examination task are not allowed to re-write the examination or resubmit the assignment in order to obtain a higher grade.

- Students who have failed the same examination task twice are allowed to have another examiner appointed, unless there are special reasons to the contrary.

### **Interim**

When a course is discontinued, or its contents are substantially altered, the following applies:

- Failed examination tasks are replaced with other similar examination tasks according to a specific plan.

- If no similar examination tasks can be provided, at least three examination opportunities per examination task should be offered during a period of at least three terms from the date of the decision. After this period, no examinations should be carried out on the course.

### **Limitations**

This course may not be included in a degree together with a course, taken in Sweden or elsewhere, of identical or partially similar content.

### **Required reading**

Information about course literature is available on the department's website - [www.dsv.su.se](http://www.dsv.su.se) - at least two months before the start of the course.