Department of Computer and Systems Sciences

Stockholm University

Syllabus

for course at advanced level

Data Science for Health Informatics
Data science för hälsoinformatik

7.5 Higher Education Credits
7.5 ECTS credits

Course code:	ML412N
Valid from:	Spring 2018
Date of approval:	2017-10-23
Department	Department of Computer and Systems Sciences
Main field:	Health Informatics
Specialisation:	A1F - Second cycle, has second-cycle course/s as entry requirements

Decision

This syllabus was approved by the Head of the Department 2017-10-23.

Prerequisites and special admittance requirements

Admitted to the master's program in health informatics.

Course structure

Examination code	Name	Higher Education Credits
DSHI	Data Science for Health Informatics, assignments	3.5
DSHT	Data Science for Health Informatics, 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 health informatics.
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 in health informatics, such as Weka or Rstudio. 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 health informatics problems
- Formulate and solve different health informatics problems by selecting and applying appropriate methods from the field of data science.

Education
The teaching consists of:
- Lectures
- Demonstrations
- Lessons
- Research visits.

The teaching takes place in 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.
If there are multiple examinations with grading A to F, the average of the grades is calculated by converting letters into numbers in the following way: A = 4, B = 3, C = 2, D = 1, E = 0. The average is calculated relatively to the number of credits of the various components/examinations and the number of credits of the course. The final grade of the course is thus a weighted average of the course components/examinations. If the average is in between two grades, 2/3 parts of the higher grade are required in order to round up the average.

e. In addition the following regulations also apply:
- Students who obtain grade Fx in a written examination 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 utilised 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 entitled 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.

Limitations
The course may not be included in the degree together with another course whose content fully or partially corresponds to the content of the course.

Required reading
Information about course litterature is available on the department's website - www.dsv.su.se - at least two months before the start of the course.