

Course Syllabus:

Computer Engineering MA, Machine Learning, 6 credits

General data

Code	DT062A
Subject/Main field	Computer Engineering
Cycle	Second cycle
Orientation (name)	
Credits	6.0
Progressive specialisation	A1F , Second cycle, has second-cycle course/s as entry requirements
Answerable institution	Information Systems and Technology
Adapted	2019-04-01
Established	2019-05-21
Date of change	2020-06-01
Valid from	2020-07-01

Aim

The student should understand modern machine learning techniques. The student should develop skills in finding interesting features, building graphic and deep learning models by using Python. The student should show an ability to apply the skills in a small project in a real-world business or engineering application area.

Course objectives

Upon completion of the course the student should be able to:

- show a basic understanding of ensemble methods, graphic models and deep learning,
- apply these techniques in a real-world business or engineering application area,
- implement several types of machine learning methods and modify them,
- critically evaluate the methods' applicability in new contexts.

Content

- Ensemble methods
- Multilayer perceptron
- Convolutional neural network
- Recurrent neural network
- Deep Learning with Python
- Graphic models
- Project

Entry requirements

Computer Engineering BA (AB), including Databases, Modeling and Implementation, 6 credits. Computer Engineering MA, Data Mining, 6 credits. Mathematics BA (A), 30 credits, including Mathematical Statistics, 6 credits. Total previous studies 120 credits.

Selection rules and procedures

The selection process is in accordance with the Higher Education Ordinance and the local order of admission.

Teaching form

The course may be offered as a campus course or as a web-based distance course. The student time commitment is estimated to about 160 hours.

Examination form

L101: Laboratory exercise , 1,0 hp

Grading: Fail (U) or Pass (G)

P101: Project with written report , 2,0 hp

Grading: Fail (U) or Pass (G)

T101: Written Exam , 3,0 hp

Grading: Seven-grade scale, A, B, C, D, E, Fx and F. Fx and F represent fail levels.

The final grade is based on combined exam and project assessment.

Grading criteria for the subject can be found at www.miun.se/gradingcriteria.

The examiner has the right to offer alternative examination arrangements to students who have been granted the right to special support by Mid Sweden University's disabilities adviser.

If examination on campus cannot be conducted according to decision by the vice-chancellor, or whom he delegated the right to, the following applies: Written Exam T101, will be replaced with two parts, online examination and follow-up. Within three weeks of the online examination, a selection of students will be contacted and asked questions regarding the examination. The follow-up consists of questions concerning the execution of the on-line exam and the answers that the student have submitted.

Grading system

Seven-grade scale, A, B, C, D, E, Fx and F. Fx and F represent fail levels.

Course reading

Required literature

Author: Witten, Frank, Hall
Title: Datamining - Pratical Machine Learning Tolls and Techinques
Edition: Third edition 2011 or later
Publisher: Elsvier

Reference literature

Author: Christopher Bishop
Title: Pattern recognition and Machine Learning
Edition: 2006
Publisher: Springer