



# Official Transcript of Records

**Qiao Ren**  
19940218-5921

2020-09-10

Completed courses		Scope	Grade	Date	Note
DD2380	<b>Artificial Intelligence</b>	6.0 hp	C	2019-10-25	1
TEN1	Exam	(2.0 hp)	P	2019-10-25	2
LAB1	Labs	(4.0 hp)	P	2019-10-25	2
DD2421	<b>Machine Learning</b>	7.5 hp	B	2019-10-25	1
TEN1	Examination	(4.0 hp)	B	2019-10-25	1
LAB1	Laboratory Work	(3.5 hp)	P	2019-10-25	2
DD2434	<b>Machine Learning, Advanced Course</b>	7.5 hp	C	2020-05-25	1
TEN1	Exam	(3.5 hp)	A	2020-01-14	1
LAB1	Labs	(4.0 hp)	D	2020-05-25	1

Parts of uncompleted courses		Scope	Grade	Date	Note
DA2205	<b>Introduction to the Philosophy of Science and Research Methodology</b>	(7.5 hp)			
HEM2	Assignments	3.0 hp	P	2019-12-23	2
TEN1	Examination	3.0 hp	C	2020-01-07	1
DD2437	<b>Artificial Neural Networks and Deep Architectures</b>	(7.5 hp)			
LAB2	Laboratory assignments	4.0 hp	P	2020-05-16	2
DT2119	<b>Speech and Speaker Recognition</b>	(7.5 hp)			
PRO1	Project	3.0 hp	A	2020-06-29	1

60 credits (hp) represent a full academic year.

## Notes

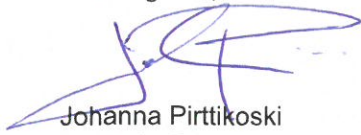
- 1 Grading scale: Excellent (A), Very Good (B), Good (C), Satisfactory (D), Sufficient (E)
- 2 Grading scale: Pass (P)

The above is an excerpt from the register of student records.

Sum of credits: 34,0



Best regards,



Johanna Pirttikoski  
Master's Coordinator  
KTH Royal Institute of Technology  
School of Electrical Engineering and Computer Science  
Lindstedtsvägen 3, plan 4, 10044 Stockholm  
+46 8 7908176  
jpir@kth.se, [www.kth.se/eecs](http://www.kth.se/eecs)



## Grading Scale in KTH:

# Grades

## Grading scale

As the main option, KTH uses a seven-grade goal-related grading scale (A, B, C, D, E, Fx, F) for grades on first and second cycle courses, but not for degree projects. The same grading scale will be used preferentially for courses that are part of access programmes. A–E are grades corresponding to a pass, with A being the highest grade. The grade Fx indicates that the result is close to a pass for a module and that the module may be upgraded to a pass. The grade Fx cannot be used as a final grade for courses.

The grades pass (P) and fail (F) are used for degree projects. These grades can also be used as final grades for other courses, if there are exceptional reasons.

Reference:

<https://www.kth.se/en/student/studentliv/studentratt/examination/betyg-1.324443>



Spring 2020

Autumn 2020

Spring 2021

## Course information

- [Student](#)
- [Alumni](#)
- [Staff](#)
- [Kursinformation på svenska](#)

- [Home](#)

☐

- [Studies](#)

☐

- [Research](#)

☐

- [Co-operation](#)

☐

- [About KTH](#)

☐

- [Library](#)

☐

Search the KTH website

Search

1. [KTH](#)
2. [STUDENT AT KTH](#)
3. [COURSE AND PROGRAMME DIRECTORY](#)
4. [EECS/Intelligent Systems](#)

## DD2421 Machine Learning 7.5 credits

Maskininlärning

About course

Course information

[Course development and history](#)

[Administrate](#)



**Show course information based on the chosen semester and course offering:**

Choose semester

## Offering and execution

**No offering selected**

Select the semester and course offering above to get information from the correct course syllabus and course offering.

## Course information

\* Retrieved from [Course syllabus \( Autumn 2020 - \)](#)

## Content and learning outcomes

### Course contents \*

The course is intended for both undergraduate and graduate students in computer science and related fields such as engineering and statistics. The course addresses the question how to enable computers to learn from past experiences. It introduces the field of machine learning describing a variety of learning paradigms, algorithms, theoretical results and applications. It introduces basic concepts from statistics, artificial intelligence, information theory and probability theory in so far they are relevant to machine learning.

The following topics in machine learning and computational intelligence are covered in detail

- nearest neighbour classifier
- decision trees
- bias and the trade-off of variance
- regression
- probabilistic methods
- Bayesian learning
- support vector machines
- artificial neural networks
- ensemble methods
- dimensionality reduction
- subspace methods.

### Intended learning outcomes \*

After passing the course, the student should be able to

- describe the most important algorithms and the theory that constitutes the basis for machine learning and artificial intelligence
- explain the principle for machine learning and how the algorithms and the methods can be used
- discuss advantages with and limitations of machine learning for different applications

in order to be able to identify and apply appropriate machine learning technique for classification, pattern recognition, regression and decision problems.

## Course Disposition

No information inserted

## Literature and preparations

### Specific prerequisites \*

Completed courses in all following subjects:

- the equivalent SF1626 of multivariable analysis
- probability theory and statistics e equivalent  
SF1912/SF1914/SF1915/SF1916/SF1920/SF1921/SF1922/SF1923/SF1924
- programming equivalent DD1337/DD1310/DD1312
- algorithms and data structures equivalent DD1338/DD1320/DD1321/DD1325.

The above requirements are the specific entry requirements to the Master's programme (two-year) in machine learning.

Active participation in a course offering where the final examination is not yet reported in LADOK is considered equivalent to completion of the course. This applies only to students who are first-time registered for the prerequisite course offering or have both that and the applied for course offering in their individual study plan.

### Recommended prerequisites

No information inserted

### Equipment

No information inserted

### Literature

No information inserted

## Examination and completion

If the course is discontinued, students may request to be examined during the following two academic years.

### Grading scale \*

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

**Examination \***

- LAB1 - Laboratory Work, 3.5 credits, Grading scale: P, F
- TEN1 - Examination, 4.0 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.

The exam is written.

**Opportunity to complete the requirements via supplementary examination**

No information inserted

**Opportunity to raise an approved grade via renewed examination**

No information inserted

**Examiner**

 [Atsuto Maki](#)

**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.

**Further information****Course web**

Further information about the course can be found on the Course web at the link below. Information on the Course web will later be moved to this site.

[Course web DD2421](#)

**Offered by**

[EECS/Intelligent Systems](#)

**Main field of study \***

Computer Science and Engineering

**Education cycle \***

Second cycle

## Add-on studies

No information inserted

## Contact

Atsuto Maki (atsuto@kth.se)

## Supplementary information

In this course, the EECS code of honor applies, see:  
<http://www.kth.se/en/eecs/utbildning/hederskodex>

## KTH

- [Study at KTH](#)
- [Research](#)
- [Cooperation](#)
- [About KTH](#)
- [News & events](#)
- [Student at KTH](#)
- [Alumni](#)
- [KTH Intranet](#)

## Organisation

- [KTH Library](#)
- [KTH Schools](#)
- [Competence centres](#)
- [President](#)
- [University Administration](#)

## Services

- [Timetables](#)
- [Course and programme directory](#)
- [Course, programme and group webs](#)
- [Learning management system \(Canvas\)](#)
- [Webmail](#)

## KTH Royal Institute of Technology

*SE-100 44 Stockholm*

*Sweden*

*+46 8 790 60 00*

- [Contact KTH](#)
- [Work at KTH](#)
- [KTH on Facebook](#)
- [KTH on YouTube](#)
- [Contact web site administrators](#)





# DD2421 Machine Learning 7.5 credits

## Maskininläring

---

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

If the course is discontinued, students may request to be examined during the following two academic years

## Establishment

On 04/21/2020, the Head of the EECS School has decided to establish this official course syllabus to apply from autumn semester 2020, registration number: J-2020-0642.

## Grading scale

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

## Education cycle

Second cycle

## Main field of study

Computer Science and Engineering

## Language of instruction

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

## Intended learning outcomes

After passing the course, the student should be able to

- describe the most important algorithms and the theory that constitutes the basis for machine learning and artificial intelligence
- explain the principle for machine learning and how the algorithms and the methods can be used
- discuss advantages with and limitations of machine learning for different applications

in order to be able to identify and apply appropriate machine learning technique for classification, pattern recognition, regression and decision problems.

## Course contents

The course is intended for both undergraduate and graduate students in computer science and related fields such as engineering and statistics. The course addresses the question how to enable computers to learn from past experiences. It introduces the field of machine learning describing a variety of learning paradigms, algorithms, theoretical results and applications. It introduces basic concepts from statistics, artificial intelligence, information theory and probability theory in so far they are relevant to machine learning.

The following topics in machine learning and computational intelligence are covered in detail

- nearest neighbour classifier
- decision trees
- bias and the trade-off of variance
- regression
- probabilistic methods
- Bayesian learning
- support vector machines
- artificial neural networks
- ensemble methods
- dimensionality reduction
- subspace methods.

# Specific prerequisites

Completed courses in all following subjects:

- the equivalent SF1626 of multivariable analysis
- probability theory and statistics e equivalent SF1912/SF1914/SF1915/SF1916/SF1920/SF1921/SF1922/SF1923/SF1924
- programming equivalent DD1337/DD1310/DD1312
- algorithms and data structures equivalent DD1338/DD1320/DD1321/DD1325.

The above requirements are the specific entry requirements to the Master's programme (two-year) in machine learning.

Active participation in a course offering where the final examination is not yet reported in LADOK is considered equivalent to completion of the course. This applies only to students who are first-time registered for the prerequisite course offering or have both that and the applied for course offering in their individual study plan.

## Examination

- LAB1 - Laboratory Work, 3.5 credits, grading scale: P, F
- TEN1 - Examination, 4.0 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.

The exam is written.

## 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.