Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
INF 609	Mathematics for Machine Learning	1	3	0	0	3	8

Prerequisites	
Admission Requirements	

Language of Instruction	English
Course Type	Elective
Course Level	Doctoral Degree
Objective	Artificial learning algorithms are based on a serious mathematical basis in the background. This course aims to strengthen those mathematical foundations.
Content	Within the scope of this course, the mathematical foundations underlying artificial learning algorithms are examined. In this course, students are introduced to courses they have previously taken at undergraduate level, such as linear algebra, calculus and probability, and their relationship with artificial learning algorithms is examined.
References	Mathematics for Machine Learning Companion webpage to the book "Mathematics for Machine Learning". Copyright 2020 by Marc Peter Deisenroth, A. Aldo Faisal, and Cheng Soon Ong Published by Cambridge University Press.

Theory Topics

Week	Weekly Contents
1	Introduction to Mathematics for Artificial Learning
2	Linear algebra
3	Analytic Geometry
4	Matrix Decomposition I
5	Matrix Decomposition II
6	SVM
7	Calculus II
8	Calculus II
9	Week Midterms Exam
10	Optimization I
11	Optimization II
12	Probability Distributions I
13	Probability Distributions II
14	Linear regression