

Obuda University Bánki Donát Faculty of Mechanical and Safety Engineering				<i>Institute of Mechatronics and Vehicle Engineering</i>			
Subject title and code:		<i>Statistical Machine Learning BMXSGE3MNF</i>				Credits: 4	
Full-time study		2026-27		ac. 1		semester	
						<i>year</i>	
The course is available at:				mechatronics engineering MSc			
Supervised by:		Dr. Frigyik Béla András		Instructors:		Dr. Frigyik Béla András	
Prerequisite (neptun code):				Applied Mathematics (BTXAME1MNF)			
Weekly number of lessons							
Lecture: 2		Group seminar:		Lab: 1		Consultation:	
Way of assessment: Exam				(Oral)			
Online consultation (in case it's required): ... (BBB link)							
Edu. goal:		The purpose of the subject is to give a survey of the theory of statistical machine learning. The course starts with a short introduction into machine learning. Next we cover the theory of statistical machine learning. The second part of the course deals with an assortment of practical questions.					
Schedule							
Education week		Topics					
1.		Introduction to machine learning					
2.		Theory of machine learning: basics of probability theory and statistics, basics of theory of risk					
3.		Theory of risk minimization Deciding on project topic					
4.		Practical questions of statistical machine learning: evaluation of supervised learning methods					
5.		Practical questions of statistical machine learning: method of nearest neighbor					
6.		Practical questions of statistical machine learning: finding upper bounds					
7.		Introduction to support machine learning: review of linear algebra, linear classification First milestone of the project					
8.		Introduction to support machine learning: optimization with hard and soft constraints					
9.		Optimization algorithms: introduction and types					
10.		Optimization algorithms: linear optimization problems					
11.		Rector's holiday					
12.		Rector's holiday					
13.		Optimization algorithms: convex optimization problems Second milestone of the project					
14.		Introduction to the theory of kernels: definition and types and "exploration" of the data-space					
Mid-semester requirements							
Test		Assignment to be submitted		Szöveg beírásához kattintson vagy koppintson ide.			
amount	dates	amount	deadlines	amount	dates		
		2	7,13				
<i>According to the HKR attendance of group seminars and lab exercises are mandatory.</i>							
Other requirements for participation in sessions not covered by the regulations and restrictions on substitutions:							

Test		Assignment to be submitted		Szöveg beírásához kattintson vagy koppintson ide.	
maximum points available ...points	minimum score required to pass /test ...points	maximum points available 60 points	minimum score required to pass / assignment 30 points	maximum points available ...points	minimum score required to pass /lab ...points

Total number of points achievable in semester: ...points				
Grading thresholds	satisfactory 50 % and above	average 63 % and above	good 76 % and above	excellent 90 % and above
Other evaluation criteria: The grade is based entirely on the project. The oral exam is the final report on the project.				
Receive a signature denied entry: If you don't submit any part of the project in a timely manner.				
Required references: Material in Moodle				
Recommended references: Gareth James, Daniela Witten, Trevor Hastie, Robert Tibshirani, Jonathan Taylor; An Introduction to Statistical Learning with Applications in Python; Springer 2023				
Quality assurance methods of the subject:				

Things, that are not included, can be found within the regulations of Óbuda University.