Master's Program in Data Science: Tentative Course Catalog

Long-term view on the course list. Please find information on the individual courses in ETH course catalog for each semester under www.vvz.ethz.ch

ETH
Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Course category and course names		Sem.	Cr.	Period.	Dep.
CORE COURSES					
Data Analysis: Information & Learning					
252-0535-00	Advanced Machine Learning	AS	10	yearly	D-INFK
227-0423.00	Neural Network Theory	AS	4	yearly	D-ITET
227-0434-10	Mathematics of Information	SS	8	yearly	D-ITET
Data Analysis: Statistics					
401-3621-00	Fundamentals of Mathematical Statistics	AS	10	yearly	D-MATH
401-3632-00	Computational Statistics	SS	8	yearly	D-MATH
Data Management and Processing					
263-3010-00	Big Data	AS	10	yearly	D-INFK
263-3845-00	*Data Management Systems (not offered AS 23)*	*AS*	*8*	*yearly*	*D-INFK*
263-4500-00	Advanced Algorithms	AS	9	yearly	D-INFK
261-5110-00	Optimization for Data Science	SS	10	yearly	D-INFK
Core Electives					
261-5130-00	Research in Data Science	AS/SS	6		all
227-0155-00	Machine Learning on Microcontrollers	AS/SS	6		D-ITET
252-1414-00	System Security	AS	7	yearly	D-INFK
252-3005-00	Natural Language Processing	AS	5	yearly	D-INFK
263-0006-00	Algorithms Lab	AS	8	yearly	D-INFK
263-0009-00	Information Security Lab	AS	8	yearly	D-INFK
263-2400-00	Reliable and Trustworthy Artificial Intelligence	AS	6	yearly	D-INFK
263-2800-00	Design of Parallel and High-Performance Computing	AS	9	yearly	D-INFK
263-3210-00	Deep Learning	AS	8	yearly	D-INFK
263-5005-00	Artificial Intelligence in Education	AS	5	yearly	D-INFK
263-5056-00	Applications of Deep Learning on Graphs	AS	4	yearly	D-INFK
263-5210-00	Probabilistic Artificial Intelligence	AS	8	yearly	D-INFK
263-5300-00	Guarantees for Machine Learning	AS	7	yearly	D-INFK
263-5902-00	Computer Vision	AS	8	yearly	D-ITET
252-0211-00	Information Security	SS	8	yearly	D-INFK
252-0526-00	Statistical Learning Theory (takes place for the last time SS2024	SS	7	yearly	D-INFK
252-0538-00	Shape Modeling and Geometry Processing	SS	7	yearly	D-INFK
252-0579-00	3D Vision	SS	5	yearly	D-INFK
263-0007-00	Advanced Systems Lab	SS	8	yearly	D-INKF
263-0008-00	Computational Intelligence Lab	SS	8	yearly	D-INFK
263-2925-00	Program Analysis for System Security and Reliability	SS	7	yearly	D-INFK
263-3710-00	Machine Perception	SS	8	yearly	D-INFK
263-3855-00	Cloud Computing Architecture	SS	9	yearly	D-INFK
263-4400-00	Advanced Graph Algorithms and Optimization	SS	8	yearly	D-INFK
263-4508-00	Algorithmic Foundations of Data Science	SS	10	yearly	D-INFK
263-4509-00	Computer Network Models	SS	5	yearly	D-INFK
263-4510-00	Introduction to Topological Data Analysis	SS	8	yearly	D-INFK
263-5000-00	Computational Semantics for Natural Learning Procesing	SS	6	yearly	D-INFK
263-5051-00	AI Center Projects in Machine Learning Research	SS	4	yearly	D-INFK

CORE COURSES, continued

263-5052-00	Interactive Machine Learning: Visualization & Explainabi	SS	4	yearly	D-INFK
262-5255-00	Foundations of Reinforcement Learning	SS	7	yearly	D-INFK
263-5352-00	Advanced Formal Language Theory	SS	5	yearly	D-INFK
263-5354-00	Large Language Models	SS	8	yearly	D-INFK
401-0625-01	Applied Analysis of Variance and Experimental Design	AS	5	yearly	D-MATH
401-3054-14	Probabilistic Method in Combinatorics	AS	6	bi-yearly	D-MATH
401-3055-64	Algebraic Methods in Combinators	AS	5	yearly	D-MATH
401-3601-00	Probability Theory	AS	10	yearly	D-MATH
401-3612-00	Stochastic Simulation	AS	5	bi-yearly	D-MATH
401-3622-00	Statistical Modelling	AS	8	yearly	D-MATH
401-3627-00	High-Dimensional Statistics	AS	4	bi-yearly	D-MATH
401-3901-00	Linear & Combinatorial Optimization	AS	11	yearly	D-MATH
401-4623-00	Time Series Analysis	AS	4	yearly	D-MATH
401-4944-20	Mathematics of Data Science	AS	8	yearly	D-MATH
401-0674-00	Numerical Methods for Partial Differential Equations	SS	10	yearly	D-MATH
401-3052-10	Graph Theory	SS	9	yearly	D-MATH
401-3602-00	Applied Stochastic Processes	SS	8	bi-yearly	D-MATH
401-3902-21	Network & Integer Optimization: From Theory to Application	SS	6	yearly	D-MATH
401-4656-21	AI in the Sciences and Engineering	SS	8	yearly	D-MATH
401-6102-00	Multivariate Statistics	SS	4	bi-yearly	D-MATH
227-0101-00	Discrete-Time and Statistical Signal Processing	AS	6	yearly	D-ITET
227-0417-00	Information Theory I	AS	6	yearly	D-ITET
227-0560-00	Computer Vision and Artificial Intelligence for Autonomo	AS	6	yearly	D-ITET
227-0689-00	System Identification	AS	4	yearly	D-ITET
227-2210-00	Computer Architecture	AS	8	yearly	D-ITET
227-0150-00	Systems-on-chip for Data Analytics and Machine Learnir	SS	6	yearly	D-ITET
227-0420-00	Information Theory II	SS	6	yearly	D-ITET
227-0424-00	Model- and Learning-based Inverse Problems in Imaging	SS	4	yearly	D-ITET
227-0427-10	Model-Based Estimation and Signal Analysis	SS	6	yearly	D-ITET
227-0432-00	Learning, Classification, and Compression	SS	4	yearly	D-ITET
227-0558-00	Principles of Distributed Computing	SS	7	yearly	D-ITET
227-0690-11	Large Scale Convex Optimization	SS	4	yearly	D-ITET
151-0563-01	Dynamic Programming and Optimal Control	AS	4	yearly	D-MAVT
151-0566-00	Recursive Estimation	SS	4	yearly	D-MAVT
402-0461-00	Quantum Information Theory	SS	8	yearly	D-PHYS
402-0448-01	Quantum Information Processing I: Concepts	SS	5	yearly	D-PHYS

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252-5051-00	Advanced Topics in Machine Learning	AS / SS	2	yearly	D-INFK
263-3504-00	Hardware Acceleration for Data Processing	AS	2	yearly	D-INFK
263-3713-00	Advanced Topics in Human-Centric Computer Vision	AS	2	yearly	D-INFK
263-4511-00	Projects in Topological Data Analysis	AS	2	yearly	D-INFK
263-5100-00	Topics in Medical Machine Learning	AS	2	yearly	D-INFL
261-5113-00	Computational Challenges in Medical Genomics	SS	2	yearly	D-INFK
263-5002-00	Generative Visual Models	SS	4	yearly	D-INFK
401-3620-18	Student Seminar in Statistics	AS / SS	4	yearly	D-MATH
401-5680-00	Foundations of Data Science Seminar	AS / SS	0		D-MATH

SCIENCE IN PERSPECTIVE

851-0740-00	Big Data, Law, and Policy	SS	3	yearly	D-INFK
	SIP Type A				
	SIP Type B for D-INFK				
851-xxxx-xx	Language courses				