Course Programme DAS in Data Science

- The DAS in Data Science consists of 35 to 45 ECTS in total.
- DAS in Data Science Students need to **choose one foundation course** from a set of three (6 to 8 ECTS).
- **At least 12 ECTS need to be selected from one specialization track.** Please do not mix courses from different specialization tracks.
- The capstone project will be accredited with 8 ECTS
- The remaining credits can be freely chosen from the catalogue of the programme. They will count as elective courses.
- The courses are offered from ETH Master's programs and will be held during the regular semesters.

Foundation courses - choose one – to be taken in the first semester

Course Number	Course	ECTS	Semester
252-0220-00	Introduction to Machine Learning	8	Spring
401-3632-00	Computational Statistics	8	Spring
227-0105-00	Introduction to Estimation and Machine Learning	6	Autumn

Specialization tracks - choose one track only

Track: Hardware for ML			
227-0150-00	Systems-on-chip for Data Analytics and Machine Learning	6	Spring
227-0155-00	Machine Learning on Microcontrollers	6	Autumn/ Spring
263-3855-00	Cloud Computing Architecture	9	Spring

Track: Image Analysis & Computer Vision			
263-5902-00	Computer Vision	8	Autumn
227-0391-00	Medical Image Analysis	3	Spring
252-0579-00	3D Vision	5	Spring
263-3710-00	Machine Perception	8	Spring
Track: Neural Information Processing			
227-0973-00	Translational Neuromodeling	8	Spring
227-0395-00	Neural Systems	6	Spring
227-0421-00	Deep Learning in Artificial and Biological Neuronal Networks	4	Autumn
227-1033-00	Neuromorphic Engineering I	6	Autumn
227-1032-00	Neuromorphic Engineering II	6	Spring
Track: Statistics			
<u>One</u> of the two courses: 401-3622-00 **or** 401-0649-00	Statistical Modelling **or** Applied Statistical Regression	8 5	Autumn Autumn
<u>One</u> of the two courses: 401-4623-00 **or** 401-6624-11	Time Series Analysis **or** Applied Time Series	4 5	Autumn Spring
<u>One</u> of the two courses: 401-6102-00 **or** 401-0102-00	Multivariate Statistics **or** Applied Multivariate Statistics	4 5	Spring Spring

401-0625-01	Applied Analysis of Variance and Experimental Design	5	Autumn
401-4632-15	Causality	4	Autumn
401-3621-00	Fundamentals of Mathematical Statistics	10	Autumn
401-3612-00	Stochastic Simulation	5	Autumn
401-3628-14	Bayesian Statistics	4	Autumn
Track: Machine Learning and Artificial Intelligence			
263-3210-00	Deep Learning	8	Autumn
252-3005-00	Natural Language Processing	7	Autumn
252-0535-00	Advanced Machine Learning	10	Autumn
261-5110-00	Optimization for Data Science	10	Spring
263-5210-00	Probabilistic Artificial Intelligence	8	Autumn
252-0526-00	Statistical Learning Theory	8	Spring
263-5300-00	Guarantees for Machine Learning	7	Autumn
263-2400-00	Reliable and Trustworthy Artificial Intelligence	6	Autumn
263-3710-00	Machine Perception	8	Spring
227-0689-00	System Identification	4	Autumn
227-0427-10	Model-Based Estimation and Signal Analysis	6	Spring
263-5354-00	Large Language Models	8	Spring

Track: Big Data Systems			
One of the two courses: 263-3010-00 or 252-3900-00	Big Data **or** Big Data for Engineers	10 6	Autumn Spring
263-2800-00	Design of Parallel and High-Performance Computing	9	Autumn
252-0834-00	Information Systems for Engineers	4	Autumn
263-3855-00	Cloud Computing Architecture	9	Spring
263-3845-00	Data Management Systems	8	Autumn

Elective Courses only			
261-5120-00L	Machine Learning for Health Care	5	Spring
263-5255-00L	Foundations of Reinforcement Learning	7	Spring

Zurich, 01.02.2024