



Valid from 2026.HS

Module description: Data Engineering 1			
Module Code	t.BA.DS.DE1.20HS		
ECTS Credits	4		
Language of Instruction/Examination	German		
Organizational Unit	InIT		
Module Coordinator	Andreas Weiler		
Legal Framework	The module description is part of the legal basis in addition to the general academic regulations. It is binding. During the first week of the semester a written and communicated supplement can specify the module description in more detail.		
Module Characteristic	Type 3f 2 asynchronous lessons per semester week for each yearly starting-class + 2 weekly lab lessons per semester week in half-class groups		
Module Description	The field of "Data Engineering" covers the crucial steps from acquisition of the raw data to making the validated, cleaned data available for exploitation. The "Data Engineering 1" module discusses the basics of this field and the handling of unstructured data.		
Module Content	<ul style="list-style-type: none"> • We live in a world in which the collection, transformation and exploitation of data is more central than ever. The field of "Data Engineering" covers the crucial steps from acquisition of raw data to making the validated, cleaned data available for exploitation - such as interpretation, learning and visual rendering. The module "Data Engineering 1" discusses the basics of the field and the handling of unstructured data. • Introduction - What is Data Engineering? - Data Engineering in the broader context of Data Science - Data (Processing) Pipelines - Different forms of data: Big Data, Small Data, Smart Data, .. • Working with data - Data formats and file formats (XML, JSON, CSV, ...) - Navigating XML/JSON data (XPath, JSONPath) - Tools - Structured vs. unstructured data • Handling of different data types and using different NoSQL solutions • Foundations of Information Retrieval (IR) 		
Prerequisite Knowledge	https://gmppublic.zhaw.ch/GPMDocProdDPublic/2_Studium/2_02_Grundlagen_Studium/T_C_L_Modulauspraegungen_SM2025.pdf		
Learning Objectives (Competencies)	Students...	Competencies	Taxonomies
	know the basics of Data Engineering	F	K1
	can use NoSQL technologies to process, query and access miscellaneous types of data.	F	K3
	understand how data pipelines are used for acquiring, transforming and cleaning raw data, and you know how to design and implement such pipelines	F	K2, K3
	know how unstructured data is processed and how information extraction can be achieved.	F	K2

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Performance Assessment	End-of-module exam	Assessment	Length (min.)	Weighting	Social Form	Scenario/Format
	written exam	Grade	90	80%	acc. to module agreement	
Classroom Attendance Requirement	None					