Module	**Advanced Data Architectures**
Code	tbd
Degree Program	Master of Science in Life Sciences (MSLS)
ECTS Credits	3
Workload	90: 45h Lectures and Exercises, 45h Self-Study
Module Coordinator	**Name** Dr. Robert Vorburger **Phone** +41 (0)58 934 57 44 **Email** robert.vorburger@zhaw.ch **Address** ZHAW Zurich University of Applied Sciences Life Sciences and Facility Management Schloss 1 CH-8820 Wädenswil
Lecturers	• Dr. Robert Vorburger
Entry Requirements	The course “Relational Databases” or equivalent The course requires basic knowledge in the following topics: • Programming in Python • Statistical programming in R The scripting language Python as well as the statistical computing environment R are used in this module to create and process relational databases using SQL (structured query language). Prior knowledge of SQL is not required.
Learning Outcomes and Competences	Yes, it is true: *Data Scientist* is the sexiest job of the 21st century (at least according to the Harvard Business Review). While knowledge is usually engineered using statistical methods, the basis is always a well-structured set of data. The module covers the techniques and structures used to efficiently store, process, and load data in databases. By completing the module, students will specifically acquire knowledge and skills in the following fields: • Different types of databases and their concepts • Data Warehouses • NoSQL database concepts • Graph-based databases Hands-on exercises and examples will strengthen the student’s competences in applying database concepts in the fields of life sciences.
Module Content	The module basically consists of two parts: *Part I - Data Warehouse* o Extract-Transform-Load o OLAP-Cube o Business Intelligence • *Part II* - NoSQL

	○ Database types ▪ Key-Value-based ▪ Document-based ▪ Graph-based ○ SPARQL
Teaching / Learning Methods	• Lectures : ~40% classical teaching / ~30% guided exercises • Self-Study : ~20% exercises / ~10% literature studying
Assessment of Learning Outcome	Programming assignments during the semester (20%) Final exam (written) (80%)
Bibliography	Important additional literature will be provided on Moodle.
Language	English
Comments	Data [ˈdeɪtə]: Borrowing from Latin *data*, nominative plural of *datum* (“that is given”), neuter past participle of dō (“I give”).
Last Update	