

Curriculum “Data Analytics”

The "Data Analytics" curriculum focuses on basic techniques for analyzing data with mathematical, statistical, and machine learning tools, and on computer techniques for building applications that access data and extract information to generate new knowledge to support decision-making and business processes.

Study Plan

First Year

1 st Semester		
Course	CP	Exam
Advanced Data Management Technologies	6	Yes
Data Visualization and Exploration	6	Yes
Information Retrieval	6	Yes
Programming for Data Analytics	6	Yes
Statistics for Data Science	6	Pass/Fail
	30	

2 nd Semester		
Course	CP	Exam
Data Curation <ul style="list-style-type: none"> • Data Integration • Data Profiling 	12	Yes
Machine Learning	6	Yes
Optional Course	6	Yes
Free Choice*	6	**
	30	

Second Year

1 st Semester		
Course	CP	Exam
Development of Data Products	6	Yes
Human-Centered Computing	6	Yes
Capstone Project	6	Pass/Fail
Optional Course	6	Yes
Free Choice*	6	**
	30	

2 nd Semester		
Course	CP	Exam
Optional Course	6	Yes

Advanced English for Scientific Communication	4	Pass/Fail
Thesis	20	Laurea/Diplomarbeit
	30	

* The student can freely advance or postpone the Free Choice credit points

** The student can choose courses that foresee both exams with grades and pass/fail tests

Optional Courses - Curriculum "Data Analytics"

Course	CP	Exam
Algorithms for Data Processing	6	Yes
Advanced Topics in Machine Learning	6	Yes
Agile Software Development	6	Yes
Artificial Intelligence – Methods and Applications	6	Yes
Computational Linguistics	6	Yes
Data Maintenance and Evolution	6	Yes
Data Scientist Toolbox	6	Yes
Decision Making and Support Systems	6	Yes
Enterprise Architectures	6	Yes
Formal Verification of Software and Systems	6	Yes
Intelligent Agents	6	Yes
Lean Start-Up and Entrepreneurship	6	Yes
Management of Temporal and Spatial Data	6	Yes
Process-Aware Information Systems	6	Yes
Process Mining	6	Yes
Programming Data Infrastructures	6	Yes
Real-Time Big Data Processing	6	Yes
Recommender Systems	6	Yes
Research Methods and Technology Transfer	6	Yes
Semantic Technologies and Linked Data	6	Yes
Simulation and Modelling	6	Yes
Web and Text Mining	6	Yes

Curriculum “Data Management”

The "Data Management" curriculum focuses on data management and on the teaching of techniques and methods typical of information technology and artificial intelligence, in order to develop architectures, information systems, and IT infrastructures for modeling, integration and access to data, as well as to manage the execution of the corresponding decision-making and business processes.

Study Plan

First Year

1 st Semester		
Course	CP	Exam
Algorithms for Data Processing	6	Yes
Artificial Intelligence - Methods and Applications	6	Yes
Organizational Modelling <ul style="list-style-type: none"> • Data and Process Modelling • Information Systems Design 	12	Yes
Optional Course	6	Yes
	30	

2 nd Semester		
Course	CP	Exam
Enterprise Architectures	6	Yes
Data Integration	6	Yes
Machine Learning	6	Yes
Programming Data Infrastructures	6	Yes
Free Choice*	6	**
	30	

Second Year

1 st Semester		
Course	CP	Exam
Social and Security Aspects of Data Science	6	Pass/Fail
Semantic Technologies and Linked Data	6	Yes
Capstone Project	6	Pass/Fail
Optional Course	6	Yes
Free Choice*	6	**
	30	

2 nd Semester		
Course	CP	Exam
Optional Course	6	Yes
Advanced English for Scientific Communication	4	Pass/Fail

Thesis	20	Laurea/Diplomarbeit
	30	

* The student can freely advance or postpone the Free Choice credit points

** The student can choose courses that foresee both exams with grades and pass/fail tests

Optional Courses - Curriculum "Data Management"

Course	CP	Exam
Advanced Data Management Technologies	6	Yes
Advanced Topics in Machine Learning	6	Yes
Agile Software Development	6	Yes
Computational Linguistics	6	Yes
Data Maintenance and Evolution	6	Yes
Data Scientist Toolbox	6	Yes
Data Visualization and Exploration	6	Yes
Decision Making and Support Systems	6	Yes
Development of Data Products	6	Yes
Formal Verification of Software and Systems	6	Yes
Human-Centered Computing	6	Yes
Information Retrieval	6	Yes
Intelligent Agents	6	Yes
Lean Start-Up and Entrepreneurship	6	Yes
Management of Temporal and Spatial Data	6	Yes
Process-Aware Information Systems	6	Yes
Process Mining	6	Yes
Programming for Data Analytics	6	Yes
Real-Time Big Data Processing	6	Yes
Recommender Systems	6	Yes
Research Methods and Technology Transfer	6	Yes
Simulation and Modelling	6	Yes
Web and Text Mining	6	Yes

Optional Course

The optional courses of the chosen curriculum allow the student to deepen her/his scientific and technical knowledge in a particular field.

The Faculty Council decides each year which of the optional courses contained in the list should be activated. The activated optional courses are announced in the Manifesto of Studies for the corresponding academic year.

Capstone Project

Capstone projects allow students to apply the scientific and technical knowledge acquired during the study using real data from a specific application domain in areas such as bioinformatics, sensors, Internet of things, business information systems, tourism, agriculture.

Capstone projects are project courses during which the student works autonomously on an individual or group project. The project is supervised by a faculty professor or researcher (hereinafter referred to as a tutor), and a domain expert.

The tutor is the person responsible for the course and follows, guides and evaluates the project. The domain expert introduces the student to the data and features of the application domain and provides requirements, guidance and feedback.

The Faculty Council decides each year which capstone projects to activate. The application domains are defined through contacts on the territory and made known through the Manifesto of Studies of the relevant academic year.

Free Choice courses or internship

The student must freely choose courses or an internship for a total of 12 credit points.

The Degree Council of the Master annually approves a list of Free Choice courses. Courses that are not included in this list, or internships, must be approved by the Degree Council, which verifies consistency with the educational path of the student.

For internships, please refer to the General Internship Regulations of the University of Bozen/Bolzano.

Exams taken for Free Choice courses count as a single exam for total number of exams taken by the student.