Freie Universität Bozen
Libera Università di Bolzano
Università Liedia de Bulsan

MASTER IN COMPUTATIONAL DATA SCIENCE

Study plan by year and semester - Cohorts from 2021/22

Curriculum Data Analytics
The "Data Analytics" curriculum is mainly oriented towards teaching mathematical and statistical techniques for data analysis, together with computer and engineering techniques for the creation of data-centred, end-user-oriented applications capable of learning and extracting knowledge to support decision-making and business processes.
Curriculum Data Management
The "Data Management" curriculum is mainly focused on the modelling and management of data and corresponding software architectures at enterprise level, and imparts techniques and methods typical of computer science for the development of information systems and IT infrastructures for storing data and supporting the execution of decision and business processes.
Study path without curriculum
Students who prefer not to follow one of the proposed curricula can customise their studies by choosing three compulsory optional courses. At the end of their studies, however, they will not receive any curriculum indication in their Diploma Supplement.

Study Plan		
First Year		
1ˢᵗ Semester		
Lecture	**CP**	**Exam**
Data Management Technologies*	6	yes
Mathematics and Statistics for Data Science*	6	yes
Programming and Visualisation for Data Science* • Data Visualisation and Exploration • Programming for Data Science	12	yes
Information Systems Design	6	yes
	30	

2nd Semester		
Lecture	**CP**	**Exam**
Artificial Intelligence	6	yes
Machine Learning	6	yes
Semantic Technologies	6	yes
Curriculum-specific course	6	yes
Curriculum-specific course	6	yes
	30	

Secondo Year

1st Semester		
Lecture	**CP**	**Exam**
Data Curation • Data Preparation and Integration • Data Profiling	12	yes
Capstone Project	6	pass/fail
Curriculum-specific course	6	yes
Free Choice*	6	**
	30	

2nd Semester		
Lecture	**CP**	**Exam**
Advanced English for Scientific Communication	4	pass/fail
Free Choice**	6	***
Thesis	20	Graduation
	30	

* Fresher Unit

** 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

Fresher Unit
The Fresher Unit brings together the lecturers of the three core courses of the first semester (Data Management Technologies, Mathematics and Statistics for Data Science, Programming and Visualization for Data Science). Through regular meetings, the Fresher Unit aims to check and even out the differences between incoming students, coordinating teaching activities to fill any gaps.

Curriculum-specific lectures

Data Analytics - Lecture	**CP**	**Exam**
Advanced Statistics	6	Sì/Ja

Recommender Systems	6	Sì/Ja
Deep Learning	6	Sì/Ja
Free Choice suggestion: Information Retrieval	6	Sì/Ja

Data Management - Lecture	CP	Exam
Data and Process Modelling	6	Sì/Ja
Human Computer Interaction	6	Sì/Ja
Algorithms for Data Science	6	Sì/Ja
Free Choice suggestion: Enterprise Digital Transformation	6	Sì/Ja

Mandatory optional courses - Study path without curriculum		

Lecture	CP	Exam
Algorithms for Data Science	6	Sì/Ja
Data and Process Modelling	6	Sì/Ja
Deep Learning	6	Sì/Ja
Enterprise Digital Transformation	6	Sì/Ja
Human-Computer Interaction	6	Sì/Ja
Information Retrieval	6	Sì/Ja
Real-Time Big Data Processing	6	Sì/Ja
Recommender Systems	6	Sì/Ja
Systems Security	6	Sì/Ja

Choice of curriculum
By the end of the first semester the student must choose which curriculum to follow or indicate that he/she does not intend to follow any curriculum. Curriculum changes can be made within the first year with the approval of the Master's Degree Course Council.

Capstone Project
Capstone projects allow the student 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 and agriculture.
Capstone projects are project-based courses during which the student works independently on an individual or group project. The project takes place under the supervision of a professor or researcher from the faculty (hereinafter referred to as the tutor), and a domain expert.
The tutor is responsible for the lecture and supervises, directs and evaluates the project. The domain expert introduces the student to the data and characteristics of the application domain and provides requirements, guidance and feedback.

The Faculty Council decides annually which capstone projects to activate. The application domains are defined through contacts in the local area.

Free Choice
The student is free to choose lectures or an internship for a total of 12 credits points.
These educational activities must be consistent with the student's academic pathway. The methods for verifying consistency are decided by the Course Council.
For internships, please refer to the general internship regulations of the University.
Examinations taken for lectures chosen as Free Choice count as a single examination for the purposes of calculating the total number of examinations taken by the student.

Teaching language
The official language of all Master's degree lectures is English.