

Module description: Data Science Introduction		
Module Code	w.BA.XX.3DSI-WIN.XX	
ECTS Credits	3	
Language of Instruction/Examination	English	
Module Description	<p>In the course of the widespread digitization efforts in today's society, the possible applications of a data scientist are complex and cannot be attributed to a few industries. In particular, there are a variety of disciplines that make up a data science team. That said, it should be noted that the profession of data scientist does not actually exist. Data science is a relatively new term that has emerged from the fields of statistics, business, and artificial intelligence. The literature shows that it is hard to find the system boundaries to other disciplines. The "Data Science Introduction" module introduces students to the modern processes of data science and clarifies related terms. It presents the world of data science and highlights all disciplines that are necessary for the implementation and execution of data science projects. A special focus are methods to deal with data science problems in a business context.</p>	
Organizational Unit	Institut für Wirtschaftsinformatik	
Module Coordinator	Christian Hitz	
Deputy Module Coordinator	Mario Gellrich	
Program and Specialization	<ul style="list-style-type: none"> • Business Information Technology - Specialization in Data Science 	
Legal Framework	Academic Regulations BSc dated 29.01.2009, for the degree programs in Business Administration, International Management, Business Information Technology, Business Law, Business Law and Applied Law, first adopted on 12.05.2009	
Module Category	Module Type Compulsory	Program Phase Main Study Period
Prerequisite Knowledge		
Contribution to Program Learning Objectives (by the concerned Module)	<ul style="list-style-type: none"> • Professional Competence • Methodological Competence • Social Competence • Self-Competence 	
Contribution to Program Learning Objectives	<p>Professional Competence</p> <ul style="list-style-type: none"> • Knowing and Understanding Content of Theoretical and Practical Relevance • Apply, Analyze, and Synthesize Content of Theoretical and Practical Relevance • Evaluate Content of Theoretical and Practical Relevance <p>Methodological Competence</p> <ul style="list-style-type: none"> • Problem-Solving & Critical Thinking • Scientific Methodology • Work Methods, Techniques, and Procedures • Information Literacy • Creativity & Innovation <p>Social Competence</p> <ul style="list-style-type: none"> • Written Communication • Oral Communication <p>Self-Competence</p> <ul style="list-style-type: none"> • Self-Management & Self-Reflection • Ethical & Social Responsibility • Learning & Change 	

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Module Learning Objectives

Students...

- will be familiar with terms of data science.
- will know the history of data science.
- will understand the interdisciplinary character of the topic.
- will understand the CRISP-DM process.
- will know problem-framing techniques.

Module Content

- Introduction to data science
- Science vs methods
- Data science as a process
- Methods in data science
- Data science vs. applied statistics and why stats matter
- Distribution forms of data points
- Statistical methods vs. data
- Paradigm shifts in computing
- Why decentralization matters
- Computing architectures in data science
- Deployment in advanced computing
- Understanding the data
- Data ingestion
- Data quality and operationalization
- Data feature engineering
- Coding in data science - getting things done matters. What the hack is the Hacker Mindset?
- The hacker's role in a data science project
- Lifecycle of code in data science
- Methods for problem-framing
- Understanding the business
- Nominal group technique
- Introduction to communication theory and storytelling, axioms of communication theory
- Business information design and design principles in data visualization

Links to other modules

This module is linked to the following modules:

Digital Learning Resources

- Teaching Videos
- Teaching Materials

Methods of Instruction

- Case Studies
- Problem-Oriented Teaching
- Lecture

Social Settings Used:

- Individual Work
- Group Work
- Pair Work

Type of Instruction

	Classroom Instruction	Guided Self-Study	Autonomous Self-Study
Large Class	28 h	28 h	
Small Class	-	-	
Group Instruction	-	-	
Practical Work	-	-	
Seminar	-	-	
Total	28 h	28 h	34 h

Performance Assessment

End-of-module exam	Form	Length (min.)	Weighting	
Written exam	closed book	60	100.00	
Permitted Resources	No calculator	With dictionary		
Others	Assessment	Format	Length (min.)	Weighting
-	-	-	-	-

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Classroom Attendance Requirement	80%
Compulsory Reading	<ul style="list-style-type: none">• Cao, L. Data Science Thinking. ISBN 978-3-319-95091-4. The Next Scientific, Technological and Economic Revolution.• Chapman, P., Clinton, J. & Kerber, R. (2009). CRISP-DM 1.0: Step-by-step data mining guide. https://web.archive.org/web/20090521070053/http://www.crisp-dm.org/CRISPWP-0800.pdf.
Recommended Reading	<ul style="list-style-type: none">• Additional reading materials will be communicated in class.
Comments	