Valid from 2025.FS

Module description: Summer School

Module Code	w.MA.XX.SUSC.20HS
ECTS Credits	3
Language of Instruction/Examination	English
Module Description	Our Summer/Winter Schools last 1-6 weeks and take place during the lecture-free period at different partner universities in France, India, and the United States. Each session covers one field of practice in data science. Through company visits and on-site internships, students gain an insight into and practical experience of the innovative applications of data science in fields including health analytics, smart cities, financial services, and the supply chain. Depending on the exam period at ZHAW, the schools take place in Weeks 5/6/7 or 6/7/8 (Winter School) and Weeks 26/27 or 27/28 (Summer School). The schools are designed both to develop practical knowledge and skills in the field of data science and to help participants understand the context of working internationally. They are therefore ideal complements to the modules offered on campus. The curriculum of each session is unique so that it is possible to combine two schools during the Master's study program. Each session requires a minimum of 20 participants.
Organizational Unit	Research Labs / Competences
Module Coordinator	Christian Hitz
Program and Specialization	• Business Information Technology
Legal Framework	Academic Regulations MSc in Business Information Technology dated 22.08.2019, Appendix to the Academic Regulations for the degree program in Business Information Technology, first adopted on 10.07.2012
Module Category	**Module Type** Compulsory Elective
Prerequisite Knowledge	
Contribution to Program Learning Objectives (by the concerned Module)	• Professional Competence • Methodological Competence • Social Competence • Self-Competence
Contribution to Program Learning Objectives	**Professional Competence** • 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 **Methodological Competence** • Problem-Solving & Critical Thinking • Scientific Methodology • Work Methods, Techniques, and Procedures • Information Literacy • Creativity & Innovation **Social Competence** • Written Communication • Oral Communication • Teamwork & Conflict Management • Intercultural Insight & Ability to Change Perspective **Self-Competence** • Self-Management & Self-Reflection • Ethical & Social Responsibility • Learning & Change

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Module Learning Objectives

Students...
- are familiar with the important technical terms related to information systems and information technologies used in business intelligence and performance.
- explain the interrelationships between various technical terms.
- analyze specific business issues based on the knowledge structure taught.
- apply business intelligence tools and methods in short practical exercises.
- develop concrete solutions to business issues.
- evaluate solutions for specific issues on the basis of the criteria taught.
- weigh up the advantages and disadvantages of business intelligence and performance management systems in the creation of competitive advantage.
- demonstrate the knowledge they have acquired in presentations and discussions.
- work in groups to achieve a shared goal.
- develop a willingness to engage more deeply with selected business intelligence and performance management approaches in an operational context.
- appreciate different points of view in the evaluation of solution strategies and problem areas.

Module Content

- Application of information systems at various management levels of a corporation
- Defining the scope of transactional and analytical information systems
- Architecture and components of business intelligence and corporate performance management systems
- Information processes and forms of organization of operational reporting
- Reporting, budgeting, and forecasting using integrated enterprise systems
- Processes of data collection, data reduction, and data analysis
- Basic methods of data mining, data analysis, and information provision
- Practical handling of IT-based systems to assist decision-making
- Innovations in the field of business intelligence
- Maturity level models of business intelligence solutions
- Business intelligence and data governance
- Enhancements to internal reporting of external data and information flows (Web 2.0, big data, Industry 4.0)
- Abolition of the separation of transactional and analytical information systems
- Process mining methodologies and tools

Links to other modules

This module is linked to the following modules:

Digital Learning Resources

- Reader
- Teaching Videos
- Teaching Materials
- Practice and Application Exercises (with Key)
- Case Studies (with Key)

Methods of Instruction

- Problem-Oriented Teaching
- Explorative Learning
- Exercises
- Project Work
- Case Studies
- Interactive Instruction
- Lecture
- Application Tasks

Social Settings Used:
- Group Work
- Individual Work
- Pair Work

Type of Instruction

	Classroom Instruction	Guided Self-Study	Autonomous Self-Study
Lecture	-	-	
Excercise	-	-	
Project Work	-	-	
Seminar	70 h	20 h	
Total	**70 h**	**20 h**	**0 h**

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Performance Assessment

End-of-module exam	Form	Length (min.)	Weighting
Written exam	Specified documentation	0	100.00
Permitted Resources	No calculator	With dictionary	

Others	Assessment	Format	Length (min.)	Weighting
Talk/oral presentation	Pass/Fail	Gruppenarbeit	30	0.00

Classroom Attendance Requirement

80%

Compulsory Reading

Recommended Reading

- M. Sutton T. Sutton O. Dassau. A Gentle Introduction to GIS. https://download.osgeo.org/qgis/doc/manual/qgis-1.0.0_a-gentle-gis-introduction_en.pdf.
- Lee Schlenker. The Ethics of Data Science. https://towardsdatascience.com/the-ethics-of-data-science-e3b1828affa2.
- Ajay Agrawal, Joshua Gans und Avi Goldfarb. Prediction machines: the simple economics of artificial intelligence. ISBN 9781633695672.
- Raghav Bharadwaj. AI for Banking in Europe 3 Current Applications. https://emerj.com/ai-sector-overviews/ai-for-banking-in-europe-3-current-applications/.
- David Chappell. INTRODUCING AZURE MACHINE LEARNING. http://www.davidchappell.com/writing/white_papers/Introducing-Azure-ML-v1.0--Chappell.pdf.
- Longbing Cao. Data science thinking. The next scientific, technological and economic revolution. ISBN 9783319950914. DOI: 10.1007/9783319950921.
- Longbing Cao. „Data Science: Challenges and Directions“. DOI: 10.1145/3015456.
- Cathy O'Neil. Weapons of math destruction: how big data increases inequality and threatens democracy. ISBN 9780553418811.
- Wil van der Aalst. Process mining: Data science in action. ISBN 9783662498514. https://doi.org/10.1007/978-3-662-49851-4.
- Konstantin Didur. Machine learning in finance: Why, what & how. https://towardsdatascience.com/machine-learning-in-finance-why-what-how-d524a2357b56.
- Sebastian Sauer. Moderne Datenanalyse mit R. ISBN 9783658215873. https://www.springer.com/de/book/9783658215873.
- Longbing Cao. „Data Science: Nature and Pitfalls“. https://ieeexplore.ieee.org/document/7579413.
- Charu C. Aggarwal. Data mining: The textbook. ISBN 9783319141411. https://doi.org/10.1007/978-3-319-14142-8.
- Konstantin Didur. Machine learning in finance: Why, what & how. https://towardsdatascience.com/machine-learning-in-finance-why-what-how-d524a2357b56.
- Simeon Kostadinov. The Future of Lending Money Is Deep Learning. https://towardsdatascience.com/the-future-of-lending-money-is-deep-learning-61a9e21cf179.
- Raj Shroff. How Are Insurance Companies Implementing Artificial Intelligence (AI). https://towardsdatascience.com/how-are-insurance-companies-implementing-artificial-intelligence-ai-aaf845fce6a7.
- Ensemble Machine Learning Cookbook: Over 35 Practical Recipes to Explore Ensemble Machine Learning Techniques Using Python. ISBN 978-1-78913-660-9. https://ebookcentral.proquest.com/lib/zhaw/reader.action?docID=5667626.
- M. Sutton T. Sutton O. Dassau. A Gentle Introduction to GIS. https://download.osgeo.org/qgis/doc/manual/qgis-1.0.0_a-gentle-gis-introduction_en.pdf.
- Raj Shroff. How Are Insurance Companies Implementing Artificial Intelligence (AI). https://towardsdatascience.com/how-are-insurance-companies-implementing-artificial-intelligence-ai-aaf845fce6a7.
- Jesse McWaters. The New Physics of Financial Services – How artificial intelligence is transforming the financial ecosystem. https://www.weforum.org/reports/the-new-physics-of-financial-services-how-artificial-intelligence-is-transforming-the-financial-ecosystem/.

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Comments	If you are interested in this module, register early on Moodle for the respective group. For full details about the Winter or Summer School you are interested in, send an email to the module coordinator. For more Information and to enroll for the next Summer/WinterSschools, please visit: https://www.baieurope.com/