

Module description: Machine Learning Using SAS Viya		
Module Code	w.BA.XX.2MLVJA.XX	
ECTS Credits	3	
Language of Instruction/Examination	English	
Module Description	<p>This module, which is taught in English, gives students the knowledge to pass the "Machine Learning Using SAS Viya 4" certification exam. Obtaining the SAS certification is not compulsory for passing the module, but it is highly recommended, given the value placed by companies on this certificate. For more information about the certification exam, see, e.g.: https://www.sas.com/en_au/certification/credentials/advanced-analytics/machine-learning-using-sas-viya.html After completing the module, students will be able to use SAS Viya to: - import and prepare data - deal with dimensionality issues - classify and cluster data - use decision trees - work with basic neural networks - use support vector machines efficiently - deploy and assess (and model the risk of) a statistical model. A basic understanding of statistics is sufficient to successfully follow the course. This course, together with "Data Analysis with SAS", is part of the so-called SAS Academic Specialization, which is an extra opportunity ZHAW and the SAS Institute offer to you. By successfully completing the two courses, you will receive a digitally verifiable "SAS Analytics Specialist badge" at no additional cost. More info here: https://www.credly.com/org/sas/badge/sas-zurich-university-of-applied-sciences-zhaw-acad</p>	
Organizational Unit	Institut für Wirtschaftsinformatik	
Module Coordinator	Pasquale Cirillo	
Deputy Module Coordinator	Christian Hitz	
Program and Specialization	<ul style="list-style-type: none"> • Business Administration - Specialization in Banking and Finance • 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 Elective	Program Phase Main Study Period
Prerequisite Knowledge	<p>Elementary knowledge of statistics, e.g. concepts such as mean, variance, and standard deviation.</p> <p>No previous knowledge of SAS is required.</p>	
Contribution to Program Learning Objectives (by the concerned Module)	<ul style="list-style-type: none"> • Professional Competence • Methodological Competence • Social Competence • Self-Competence 	

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Contribution to Program Learning Objectives	Professional Competence <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 Methodological Competence <ul style="list-style-type: none">• Problem-Solving & Critical Thinking• Scientific Methodology• Work Methods, Techniques, and Procedures• Information Literacy• Creativity & Innovation Social Competence <ul style="list-style-type: none">• Written Communication• Oral Communication• Teamwork & Conflict Management• Intercultural Insight & Ability to Change Perspective Self-Competence <ul style="list-style-type: none">• Self-Management & Self-Reflection• Ethical & Social Responsibility• Learning & Change			
Module Learning Objectives	Students... <ul style="list-style-type: none">• will be familiar with the SAS Viya environment.• will be able to import data and deal with the main data issues (standardization, dimensionality reduction, etc.).• will know how to cluster and classify data.• will master tools like decision trees, SVM, and neural networks.• will acquire the basics of model risk hedging.			
Module Content	<ul style="list-style-type: none">• Introduction to SAS Viya• Importing and cleaning data• Main data issues and data preparations• Algorithm selection• Decision trees and ensembles• Neural networks (an introduction to)• Support vector machines• Some advanced statistical topics (quick view, also depending on students' feedback)• Modelling risk assessment			
Links to other modules	This module is linked to the following modules: <ul style="list-style-type: none">• w.BA.XX.WPM-DAS.XX			
Digital Learning Resources	<ul style="list-style-type: none">• Teaching Videos• Teaching Materials• Practice and Application Exercises (with Key)			
Methods of Instruction	<ul style="list-style-type: none">• Lecture• Explorative Learning• Exercises• Case Studies		Social Settings Used: <ul style="list-style-type: none">• Individual Work	
Type of Instruction		Classroom Instruction	Guided Self-Study	Autonomous Self-Study
	Large Class	28 h	-	
	Small Class	-	-	
	Group Instruction	-	-	
	Practical Work	-	-	
	Seminar	-	-	
	Total	28 h	0 h	62 h

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Performance Assessment	End-of-module exam		Form	Length (min.)	Weighting
	Written exam		closed book	60	100.00
	Permitted Resources		Free choice calculator	With dictionary	
	Others	Assessment	Format	Length (min.)	Weighting
	-	-	-	-	-
Classroom Attendance Requirement	None Classroom attendance is highly recommended but not compulsory.				
Compulsory Reading					
Recommended Reading	<ul style="list-style-type: none">• SAS Institute (2020). Machine Learning with SAS Viya. 1st edition. ISBN 1951685393.• https://support.sas.com/en/books/free-books-viya.html				
Comments	<ul style="list-style-type: none">• The study materials that will be provided during the course (slides, exercises) are sufficient to successfully pass the module. The books and e-books on the recommended reading list are useful extra resources, which can help you in improving your skills.				