Zurich University
of Applied Sciences

School of
Management and Law

Valid for 2023.FS

Module Name: Machine Learning Using SAS Viya		
Module Code	w.BA.XX.2MLVIJA.XX	
Module Description	This module, which is taught in English, gives students the knowledge to pass the "Machine Learning Using SAS Viya 3.5" 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_us/certification/credentials/advanced-analytics/machine-learning-specialist.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 the model risk of) a statistical model.A basic understanding of statistics is sufficient to successfully follow the course.	
Program and Specialization	§ Business Information Technology § 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
ECTS	3	
Organizational Unit	W Institut für Wirtschaftsinformatik	
Module Coordinator	Pasquale Cirillo (ciri)	
Deputy Module Coordinator	Christian Hitz (hitz)	
Prerequisite Knowledge	Elementary knowledge of statistics, e.g. concepts such as mean, variance, and standard deviation. No previous knowledge of SAS is required.	
Contribution to Program Learning Goals (Affected by 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	
Module Learning Objectives	Students... § 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	§ 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	-
Methods of Instruction	§ Lecture § Case Studies § Exercises § Explorative Learning **Social Settings Used:** Individual Work
Digital Resources	§ Teaching Videos § Teaching Materials § Practice and Application Exercises (with Key)

Type of Instruction	**Classroom Instruction**	**Guided Self-Study**	**Autonomous Self-Study**
Large Class	28 h	-	
Small Class	-	-	
Group Instruction	-	-	
Practical Work	14 h	-	
Seminar	2 h	-	
Total	**44 h**	**0 h**	**46 h**

Performance Assessment

End-of-module exam	**Form**	**Length (min.)**	**Weighting**
Written exam	Closed book	60	100,00 %
Permitted Resources	No calculator		

Others	**Assessment**	**Length (min.)**	**Weighting**
-	-	-	-

Classroom Attendance Requirement	Mandatory Attendance: None Classroom attendance is highly recommended but not compulsory.
Language of Instruction/Examination	English
Compulsory Reading	-
Recommended Reading	§ SAS Institute (2020). Machine Learning with SAS Viya. 1st edition. ISBN 1951685393. § https://support.sas.com/en/books/free-books-viya.html
Comments	• 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.