

Valid for 2024.FS

Module Name: Data Analysis with SAS		
Module Code	w.BA.XX.WPM-DAS.XX	
Module Description	<p>SAS is a fourth-generation programming language for data access, transformation, analysis, and reporting. It is an extremely popular language in many relevant sectors such as pharma, banking, and retail. This module teaches the basic principles of SAS in SAS Studio, from DATA steps to common PROCs, and the use of MACROs. Students who pass this module as well as "Machine Learning Using SAS Viya" (w.BA.XX.2MLVIJA.XX) can attain the "SAS Analytics Specialist" badge from the SAS Institute at no extra charge, which can be added to a CV. N.B.: Attendance at both courses is only necessary for students earning their SAS badge. N.B.2: Most of the module is taught online.</p>	
Program and Specialization	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	To benefit from this course, a good knowledge of basic statistical concepts is advisable and students should be familiar with types of variables (numerical, categorical), first moments (mean, variance, skewness, kurtosis), confidence intervals, and linear regression. Any previous courses in statistics or data analysis should be sufficient; however, no previous knowledge of SAS language is needed.	
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 become familiar with SAS Studio. § will learn how SAS handles different types of data. § will learn DATA Step and its main applications in SAS. § will learn basic procedures (PROCs) for data handling and statistical analysis. § will learn the basis of MACRO language.	

Module Content	§ Using SAS Studio to write and submit SAS programs. § Accessing SAS, Microsoft Excel, and text data. § Exploring and validating data. § Preparing data by subsetting rows and computing new columns. § Analyzing and reporting on data. § Exporting data and results to Excel, PDF, and other formats. § Using SQL in SAS to query and join tables. § Understanding and controlling DATA step processing. § Creating an accumulating column and processing data in groups. § Manipulating data with functions. § Converting column type. § Creating custom formats. § Concatenating and merging tables. § Processing repetitive code. § Restructuring tables. § Basic PROCs (reg, univariate, etc.). § Performing text substitution in SAS code. § Using macro variables and macro functions. § Automating and customizing the production of SAS code.		
Links to other modules	The content of this module is linked to the following module: w.BA.XX.2MLVIJA.XX		
Methods of Instruction	§ Lecture § Interactive Instruction § Exercises	Social Settings Used: -	
Digital Resources	§ Reader § 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	-	-	
Seminar	-	-	
Total	28 h	0 h	62 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	Length (min.)	Weighting
-	-	-	-
Classroom Attendance Requirement	Mandatory Attendance: None Most of the module is taught online via Zoom and SAS Studio. Details are provided on Moodle.		
Language of Instruction/Examination	English		
Compulsory Reading	§ Lecture notes and slides. § SAS Institute (2016). SAS® 9.4 Language Reference: Concepts. 2nd edition. The SAS Institute. ISBN 978-1-62960-822-8. We will not cover the entire manual (freely available online), but only some parts which will be clearly indicated on Moodle.		
Recommended Reading	§ Additional and optional reading will be suggested during the course.		
Comments	All course materials will be freely available on Moodle.		