

2019.HS

Module Name: Python for Data Analysis			
Module Code	w.BA.XX.2DAPyt.XX		
Module Description	This module deals with processing and evaluating structured data using Python. The goal is to provide guidelines to the parts of the Python programming language and its data-oriented library ecosystem that can be used to to perform data analysis effectively. This means that the focus is on the possibilities of Python (especially its data analysis library "Pandas") and less on data analysis methods (see the elective "Machine Learning: An Application-Oriented Introduction"). This practically oriented module uses concrete case studies to illustrate how Python can be used to solve various typical data analysis problems.		
Program and Specialization	<ul style="list-style-type: none"> § Business Administration - Accounting, Controlling, Auditing § Business Administration - Banking and Finance § Business Administration - Banking and Finance (FLEX) § Business Administration - Banking and Finance (PIE) § Business Administration - Economics and Politics § Business Administration - General Management § Business Administration - Risk and Insurance § Business Information Technology 		
Legal Framework	Academic Regulations BSc dated 29.01.2009, Appendix to the Academic Regulations for the degree programs in Business Administration, Business Information Technology, and Business Law, first adopted on 12.05.2009		
Module Category	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Module Type: Compulsory Elective</td> <td style="width: 50%;">Program Phase: Main Study Period</td> </tr> </table>	Module Type: Compulsory Elective	Program Phase: Main Study Period
Module Type: Compulsory Elective	Program Phase: Main Study Period		
ECTS	3		
Organizational Unit	W Institut für Wealth & Asset Management		
Module Coordinator	Armin Bänziger-Aiba (banz)		
Deputy Module Coordinator	-		
Prerequisite Knowledge	w.BA.XX.2Stat.XX (or similar introduction to statistics)		
Contribution to Program Learning Goals (Affected by Module)	<ul style="list-style-type: none"> § Professional Competence § Methodological Competence § Social Competence § Self-Competence 		
Contribution to Program Learning Objectives	<ul style="list-style-type: none"> 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 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"> § Oral Communication Self-Competence <ul style="list-style-type: none"> § Self-Management & Self-Reflection § Learning & Change 		
Module Learning Objectives	<p>Students...</p> <ul style="list-style-type: none"> § can capture, comment on, and execute Python code in the Jupyter notebook. § have mastered the main principles of the Python programming language for data analysis, in particular the handling of lists, conditional statements, loops, and functions. § know the key libraries for data analysis, especially Pandas, NumPy and Matplotlib, and know which library is useful in which context. § are able to import and export data in different formats. § can clean, prepare, combine, and reshape data in Pandas. § visualize data in Pandas and Matplotlib. § are able to aggregate data and use group operations. § manipulate time series and panel data. § analyze (large) data sets in Pandas. § engage in self-study to acquire a considerable part of the target skills. 		

Module Content	§ Essentials of Python and Jupyter Notebooks § Data structures and functions in Python § Fundamentals of NumPy § Introduction to Pandas § Uploading and saving data and data formats § Processing data - cleansing and transformation § Processing data - combining and reshaping § Plotting and visualization § Aggregation of data and group operations § Time series § Examples of extensive data analysis		
Links to other modules	The content of this module is linked to the following modules: w.BA.XX.2ISL.XX w.BA.XX.2Stat.XX w.BA.XX.2Stat-en.XX w.BA.XX.2Stat-flex.XX w.BA.XX.2Stat-WIN.XX		
Methods of Instruction	§ Interactive Instruction § Application Tasks § Exercises	Social Settings Used: Individual Work	
Digital Resources	§ Teaching Videos § Practice and Application Exercises (with Key)		
Type of Instruction	Classroom Instruction	Guided Self-Study	Autonomous Self-Study
Large Class	-	-	
Small Class	-	-	
Group Instruction	12 h	58 h	
Practical Work	-	-	
Seminar	-	-	
Total	12 h	58 h	
Performance Assessment			
End-of-module exam	Form	Length (min.)	Weighting
Written exam	Specified documentation	45	100,00 %
Permitted Resources	Approved calculator according to "Guidelines on Supplementary Materials"		
	Others	Assessment	Length (min.)
	-	-	-
Classroom Attendance Requirement	-		
Language of Instruction/Examination	German		
Compulsory Reading	McKinney, W. (2017). Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython. 2nd edition. Sebastopol, CA [u. a.]: O'Reilly. ISBN 978-1-4919-5766-0.		
Recommended Reading	-		
Comments	This module is offered as a FLEX module. Classes are held approximately every three weeks (Weeks 1, 4, 7, 10, 13, and 14). In the intervals, content is developed in commented Jupyter notebook sessions (in each case, a notebook with the new Python functionalities to be learned and, based on this, an exercise with a key).		