

Syllabus

Data Science in Economics and Business			
Responsible:			
Junior Professor Victor Klockmann, Microeconomics and Economics of Digitization			
Program:	Type:	Term:	ECTS:
Master	Lecture & Exercise	Summer	5
Contents:			
<p>This course provides an introduction to data science techniques and their application in business and economics. Participants will be familiarized with data handling in Python, data visualization, and various machine learning techniques for prediction and estimation. We will apply the acquired knowledge in topics from business and economics. The course will be divided into two parts: the lecture where the techniques will be taught as well as exercise in which students will be able to work with data on their own.</p>			
Objectives:			
Participants should be acquainted with the foundation of data science in the area of business and economics and how to put them into practice.			
Prerequisites:			
Basic knowledge in statistics and econometrics is desirable.			
Course Structure:			
The lecture will cover the following topics:			
<ol style="list-style-type: none"> I. Introduction This part covers the fundamentals of Python with which we will work throughout the entire course. Further, it comprises an introduction to data handling with Pandas (importing and exporting data sets, data preparation and cleaning, data manipulation). II. Data Visualization We will learn how to visualize data with various Python packages such as Matplotlib and Plotnine. III. Machine Learning with Python After cleaning and gaining insights from plotting, this part introduces machine learning techniques for prediction and estimation. IV. Applications from Business and Economics We will apply the acquired knowledge by working with real data sets from topics in business and economics. 			
Literature:			
Main references for the lecture:			
<ul style="list-style-type: none"> • Coleman, C.; Lyon, S.; Perla, J.; et al. "Introduction to Economic Modeling and Data Science". https://datascience.quantecon.org/ • VanderPlas, J. (2016). <i>Python data science handbook: Essential tools for working with data</i>. O'Reilly Media, Inc. https://jakevdp.github.io/PythonDataScienceHandbook/ 			
Grading:			
Data science project as final assignment at the end of the semester.			
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