DATA ANALYSIS WITH PYTHON
Fall term 2016/2017
Course coordinator: Orsolya Vasarhelyi
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Website: https://velf.github.io/Data_Analysis_with_Python

Prerequisites:
Basic programming skills in any programming language (e.g. /R, Stata, SPSS, Matlab/ familiarity with logical statements, for loops, with different variables), Basic statistics
Course Level: Master

Brief Introduction:
This course provides a basic introduction to data analysis with python for social scientists. Students expected to attend classes, be proactive and ask questions and hack their homeworks at home and create a final project based on the given tutorials and hands-on sessions.

Aim of the course:
Providing enough programming experience and tutorials for students to be able to start working with python in data analysis and social scientific research. This course tends to be a good foundation from which new tools, techniques and the beautiful world of open-source development can be explored later on.

Grading:
Assignment - 20%
Final Project (Code and Presentation)- 60%
Attendance and in-class activity - 20%

In classes **students required to bring their own laptops**, and please be sure that both the **Anaconda python work environment and Internet works on it, before the first class**. Find here the setup instructions. *Internet is essential because programming is most of the time mainly about googling for the relevant information/bug/package.*
Each class organized by two 90 minutes sessions, with a 15 minutes break. The first part of the class is about introducing new tools, the second one is practicing it with individual or group-work.

Resources:
- Anaconda. The python work environment that we will use. Find here the setup instructions.
- Stack overflow. Always handy for programming help
- Learning python, 5th edition, the Python standard library , the Python.org tutorial.
- More resources: Python for Data Analysis, Learn Python on a Hard Way
- Cannot wait to start our class? Go to Codeacademy and learn the basics!

Syllabus:

  0. *Install Python on your own computer, and make sure it works, before the first class.*
  1. Introduction to Python and Jupyter Notebook, variables, data structures (strings, tuples, lists, dictionaries, functions, loops)
  2. String Operations and Web Scraping (BKK, WIkipedia)
  3. Reading and Writing Files, File Parsing (FB timeline parsing)
  4. Twitter API and Data Visualization with Matplotlib
FIRST ASSIGNMENT - scraping, parsing, plotting
  5. Data Analysis with Pandas I.

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6. Data Analysis with Pandas II. (Linear regression analysis)
7. Machine Learning (hands-on) (PCA, Logistic Regression, Decision Tree)
   HW: Send your final Project Plan to me!
8. Introduction to Network ANalysis (NetworkX, Bokeh)

Final Project Presentations - mid november