

# Python Lecture at KIS 2020

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Please note: This program may be understood as a broad guideline and rough timetable on topics. As such it may be subject to changes before and during the lecture.

## 1 Basics

First Week (intensive course, one lecture per day and per topic)

- 1.1 Installation, GitHub introduction, DataCamp and First Steps
- 1.2 Basic Operations, Types and Loops
- 1.3 Functions, Methods and Scope
- 1.4 Scripts, Modules, Packages and Good Practices
- 1.5 Input and Output, Object-oriented Programming, Why Python?

## 2 Advanced Topics: Data Structures, Data Handling and Visualization

Following weeks (one lecture per week, one to two lectures per topic)

- 2.1 Basic Data Structures and Numerics with numpy and scipy
- 2.2 Visualization with matplotlib
- 2.3 Advanced Data Structures and Statistics with pandas

## 3 Specific Topics

Following weeks (one lecture per week, one to two lectures per topic)

- 3.1 Advanced Object-oriented Programming, Symbolic calculations with sympy
- 3.2 Efficient Debugging, Optimization, Parallel Programming (and Cython)
- 3.3 Utilities for solar physicists with fits, h5py, sunpy and astropy