



UPPSALA
UNIVERSITET

Welcome

2019-03-04

Advanced Scientific Programming with Python

Some Facts About This Course

- Course credits: 3 hp
- The teachers:
 - Filipe Maia (filipe.maia@icm.uu.se)
 - Tomas Ekeberg (tomas.ekeberg@icm.uu.se)
- Course material: <http://github.com/uu-python/>
- Coding project at the end of the course



Why Did We Create This Course?

- Modern research involves a lot of programming
- Many of us use Python, Matlab, ... to analyse data
- But, most of us are Researchers, not Programmers
- Software engineers over the years have developed many useful tools
- Most of them are quite simple to use (at least we think that)
- You might not agree with us, but we hope you do after this course
- So, our goal is to introduce you to the most common tools of professional software engineering ...
- ...and help you become more efficient programmers!

Course Schedule

DAY	TIME	TOPIC	ROOM
Monday, 04.03.	09.15-12.00	Basics: An introduction to the UNIX shell, interactive Python and git repositories	A5:001
	13.15-16.00	Hands-on exercises	A5:001
Tuesday, 05.03.	09.15-12.00	Best practices I: Organizing, debugging and profiling of code	A5:001
	13.15-16.00	Hands-on exercises	A5:001
Wednesday, 06.03.	09.15-12.00	High performance computing: Speed optimization using Numpy, Cython, MPI and GPU acceleration	A9:001
	13.15-16.00	Hands-on exercises and coding project	A9:001

Course Schedule

DAY	TIME	TOPIC	ROOM
Thursday, 07.03.	09.15-12.00	Best practices II: Testing, documenting and packaging of code	A5:001
	13.15-16.00	Coding project	A5:001
Friday, 08.03.	09.15-12.00	Data containers: Efficient memory storage using HDF5, Pytables and Pandas	C4:301
	13.15-16.00	Coding project	A9:001

Coding Project

- Take some of your own code and improve it!
- This could mean:
 - Transform your code into a Python library
 - Improve documentation
 - Add proper test functions
 - Optimize your code for speed/memory usage
 - Your own idea on how you would like to improve it
- Do all development from beginning to end on GitHub
- Submit by emailing to us your repository
- No ideas what to work on: check some on <http://bit.ly/2TfsY3x>

Code Dissection: Send Us Your Code Problems/Questions

- For our last lecture on Friday, May 8th we would like to give a chance to send us your own code examples or problems
- We will try to answer and analyze as many as possible
- Anything related to Programming and/or Python works
- Just email us what you would like us to cover until Wednesday

You can upload your code problem / question here:

<https://goo.gl/forms/iVuHW0GEnbl0G3Zj1>

Any Questions?

**...Ok Then, We Are
Almost Ready To Start!**

**Just A Few Questions
For You...**

Just A Few Questions For You...

- Did you all bring your own laptop?
- Are you all connected to power?
- Do you all have Python installed?
- Do you all have git installed?
- Are you all connected to WIFI?
- Have you all found the lecture notes?
- Hint: they are available here:
 - <https://github.com/uu-python/day1-basics>