



University of
Zurich^{UZH}

Department of Physics



Welcome!

Scientific Programming with Python

Federica Lionetto, Andreas Weiden, Roman Gredig, Nicola Chiapolini & Christian Elsasser



Story

- ▶ In summer 2013 we organised a summer school about advanced scientific programming in Python ([Link](#)) together with g-node.
- ▶ Due to the large interest, we decided to organise a “UZH-internal” school, which was held in January and June 2015 as well as in June 2016 and September 2017.
- ▶ Now we have the fifth edition.
- ▶ The content of this course was based on the 2013 school and has since been improved, adapted and expanded continuously.
- ▶ Since two years we are using Python 3 throughout the school.



Python 3

Most relevant changes

- ▶ `print("Hello, World!")`
- ▶ Larger use of iterators and views (*e.g.* `range`, `dict.keys()`)
- ▶ Division returns float ($1/2 = 0.5$); integer division is `//`
- ▶ Differentiation between text and (binary) data;
text \rightarrow `str` (UTF-8), data \rightarrow `bytes`

How to port code

1. Bring your code at least to Python2.6 standards
2. Make sure you have good test coverage
3. Use `2to3` to implement the changes
4. Test it and adapt the missed pieces/issues



Homepage

www.physik.uzh.ch/~python

- ▶ Schedule
- ▶ Slides
- ▶ Exercise/tutorial material
- ▶ Computing & network information
- ▶ Image of the used operating system in the tutorial sessions
- ▶ Participant list

Do you have your name tag?



Schedule

One topic per half-day (lectures and tutorials, each about 90 minutes)

Monday to Friday

Morning: 08:30 - 12:00

Afternoon: 13:30 - 17:00

Topics

Monday morning	Best practice and git
Monday afternoon	Object-oriented programming
Tuesday morning	Testing, Debugging, and Profiling
Tuesday afternoon	Pandas intro and self-study time
Wednesday morning	Scientific Programming: Data Structures
Wednesday afternoon	Scientific Programming: Analytics
Thursday morning	Python and C/C++
Thursday afternoon	Hardware-assisted speed-up techniques
Friday morning	Scientific Programming: Tools & Visualisation
Friday afternoon	Projects & questions



Tutorial Sessions

- ▶ One laptop for two students
⇒ working in pairs = learning from each others
Take this opportunity and also change pairs!
- ▶ Debian Stretch installed on the laptops

Appliance: account: student, password: student

Own laptops: OK, but might cause problem due to non-installed/different-version packages

The link to download the appliance (if you want to use it on your personal machine) is listed on the webpage under “Computing”.

- ▶ Topics covered in the tutorial sheets are typically too much ⇒ pick what you are most interested in and you can try the rest later (Tuesday’s and Friday’s session or at home)



Network

There are three possibilities to connect to the university network:

1. **uzh**

University of Zurich members preferably connect via the ssid uzh.
Use your UZH-Shortname and password.

2. **eduroam**

If you are working at a university that is part of the eduroam network, you can use your own eduroam login and password to connect (ask the IT department of YOUR university if you don't know the credentials).

ssid: eduroam

3. **public**

For all the other people we organised a conference account. You need **to register** (<http://t.uzh.ch/coa>) (Event-ID: **18pyth182798**). The conference account ssid is public. After registration you need to authenticate via your webbrowser.



Social Evening

We will have a social evening on Wednesday, June 27.

Location: Linde Oberstrass (www.linde-oberstrass.ch)

Time: 19:00

How to get there: Take Tram Nr. 9 or 10 at “Universität Irchel” in the direction of UZH/ETHZ main buildings and hop out at “Winkelriedstrasse”



For those of you who have not yet filled in the doodle ([Link](#)) or changed their mind, please put in your decision latest at 17:00 today!



ECTS Points / Confirmation

The course allows you to obtain 1 ECTS point.

Students which can log in to the UZH module booking tool (<http://www.students.uzh.ch/en/booking.html>) can book the module (3346/PHY225.1). **Please do so until Tuesday 09:00**

Please inform use in case of problems!

All students will receive a signed confirmation listing also the number of ECTS points.



UZH Communications / Twitter

- ▶ The Science Faculty communication will likely write a short message about the school.
- ▶ Thus we will make a couple of pictures that will be used in this context including on their and the school Twitter account.
- ▶ Please let us know if you do not want to be on them.
- ▶ The school account is @ZRH.py and the handle #python2018.



Acknowledgement

We owe our gratitude to

- ▶ Faculty of Science UZH (for the funding and the first tutor)
- ▶ Physics Department (for the venue and tutors 2 and 3)
- ▶ Informatikdienste UZH (for the computers)
- ▶ Dectris (for the fourth tutor)
- ▶ Swiss Re (for the fifth tutor)



Coffee Breaks – the most important thing

We will have coffee breaks in the morning and the afternoon just outside this room (on the right hand side).

Copyright 2007 by Randy Glasbergen.
www.glasbergen.com



**"Stop drinking coffee for a week, then start drinking it again.
It's the same effect as rebooting your computer."**