



Welcome!

Scientific Programming with Python

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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. Now we have the sixth 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

Support for Python 2 ends on 1 January 2020!



Homepage

www.physik.uzh.ch/~python

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

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 / Python in the Wild



Tutorial Sessions

- ▶ One laptop for two students
⇒ working in pairs = learning from each others
Take this opportunity and also change pairs!
- ▶ School Laptops: Debian Buster with all the packages required for the tutorials installed.
Own laptops: OK, but might cause problem due to non-installed/different-version packages
VirtualBox Image: Allows you to run the system installed on the Laptops on your own computer. (Download the Image from the section “Computing” of the website).
- ▶ 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)



Using the School System

- ▶ **Login: account: student, password: student**

If you reboot some laptops just the terminal appears! To start the GUI, login and type `startx`
All passwords are actually “student”.

- ▶ We make heavy use of the terminal, but you are welcome to use the graphical file manager (“Dolphin”).
- ▶ For editing files use your favourite editor. If unsure, use `kate`.
- ▶ `student` has `sudo`-rights, so you can install additional software.
(Ask us for help if you just understood nothing and would like to install something nevertheless.)



Network

There are two possibilities to connect your personal device 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



Social Evening

We will have a social evening on Wednesday, June 26. (optional and self-paid)

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 Tuesday 09:00!



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 (3458/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.



Acknowledgement

We owe our gratitude to

- ▶ Faculty of Science UZH (for the funding and the first tutor)
- ▶ Department of Physics (for the venue and tutor number 2)
- ▶ Informatikdienste UZH (for the computers)
- ▶ Swiss Re (for the third tutor)
- ▶ PwC (for the fourth tutor)
- ▶ Dectris (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).

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