



University of
Zurich ^{UZH}

Department of Physics



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, which was held in January and June 2015 as well as in June 2016.
- ▶ Now we have the fourth edition.
- ▶ The content of this course is slightly modified and expanded with respect to the 2013 version as well as the previous editions.
- ▶ Since last year 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 Thursday

► Morning: 08:30 - 12:00

► Afternoon: 14:00 - 17:30

Topics

Monday morning	Best practice and git
Monday afternoon	Object-oriented programming
Tuesday afternoon	Test, debug, profile
Tuesday morning	Scientific Programming: Data Structures
Wednesday morning	Python and C/C++
Wednesday afternoon	Hardware-assisted speed-up techniques
Thursday morning	Scientific Programming: Analytics & Visualisation
Thursday 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 in a virtual machine with all the packages required for the tutorials installed.
Own laptops: OK, but might cause problem due to non-installed/different-version packages

Computer: account: guest, password: SL15

Appliance: account: student, password: student

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 (Thursday’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: **16Pyth172326**). The conference account ssid is public. After registration you need to authenticate via your webbrowser.



Social Evening

We will have a social evening on Tuesday, September 5.

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**

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)
- ▶ Physics Department (for the venue and two supporters for the exercise classes → Federica & Andreas)
- ▶ Science Lab UZH (for the computers)
- ▶ Swiss Re (for the second 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."**