Open edX for Helmholtz

Norbert Spyra, n.spyra@hzdr.de
HZDR / HIFIS

TEACH V
Berlin, 29.09.2025

Agenda

- Introduction
- About Open edX
- LMS-Interface
- CMS-Interface
- Administration desk
- Plugin concept and basic functionalities
- Launching walkthrough
- Documentation and sources
- Project timeline and tests invitation

Introduction

Introduction
Initial E-Learning tool at HZDR: instruction portal

- Integral part of CMS,
- A little obsolete UI,
- Learning materials as:
  - web objects,
  - SCORM-modules.
- Integral qualification tests.

Not recommended anymore, however still supported.

Slide 12 of 14

Movement and breaks

- keep moving and regularly interrupt sitting in the same position:Dynamic sitting (alternating between front, middle and rear sitting positions).
- unlocking the seat back of the office chair
- standing up regularly or working in a standing position
- consciously plan and use short breaks for stretching and stretching
- relieving eye strain
- you can prevent eye fatigue by regularly looking out into the distance.

Ideal division:

- 60 % sitting= ca. 5 hours
- 30 % standing= ca. 2½ hours
- 10 % going= ca. 50 minutes

← back | next →
this user Spyra, Norbert (FWCA)
report error

Introduction
Latest E-Learning tool at HZDR: *ILIAS*

- **Open source PHP-based** platform,
- Extendable with plugins,
- Learning materials as:
  - **HTML**,
  - **SCORM**,
  - **ILIAS**.
- Oriented mostly to user-management and self-learning.
- Active documentation, support, and community.

Introduction
E-learning tool for HIFIS - criteria

- **Extendable open source** tool,
- Learning materials as:
  - **SCORM**,
  - Further **universal formats**.
- Focus:
  - **Programming**,
  - **Data science**,
  - **Interactivity**,
  - Scalability,
  - Blended-learning methods.

HIFIS

HZDR
HELMHOLTZ ZENTRUM
DRESDEN ROSSENDORF

About Open edX

About Open edX
Technical aspect

- **Open source Python-based** tool,
- **Extendable** with 3rd-party software,
- REST API,
- Compatible with numerous technologies (e.g. storage systems),
- Easily **scalable (MOOS-applications)**,
- Active support, documentation, community,
- Multiple users around the world,
- Many advantages from the HIFIS/HIDA/Helmholtz standpoint.

About Open edX
Assignment around the world – a few examples

- Massachusetts Institute of Technology,
- Harvard University,
- Stanford University,
- XuetangX – initiated by Tsinghua University,
- France université numérique - national French MOOC platform,
- Zurich University of Applied Sciences,
- Turkish Tourism Promotion and Development Agency,
- Charles III University of Madrid,
- And many others.

About Open edX
Sandbox

Provider	Link(s)	Credentials	Comment
EdX	https://sandbox.openedx.org/	Requires registration	Official sandbox
Edly	https://sandbox.openedx.edly.io/	Login: *admin* Password: *admin* E-mail: *admin@overhang.io* Login: *student* Password: *student* E-mail: *student@overhang.io*	Restarted daily at 9:00 a.m. CEST
HZDR | HIFIS	https://apps.learn-test.helmholtz.cloud/	Reachable via Helmholtz AAI[1]	LMS
HZDR | HIFIS[1]	https://studio.learn-test.helmholtz.cloud	Reachable via Helmholtz AAI[1]	CMS

About Open edX
Availability of the HIFIS-sandbox

[1] - As per 12.09.2025, HIFIS E-Learning Platform's test instance is set up to be accessible without restrictions only temporarily! Access to the studio requires manual confirmation from administrators.

As a production instance appears, it is about to be announced among the **stakeholders.** Its adress has been selected in a survey:

learn.helmholtz.cloud/

studio.learn.helmholtz.cloud/

Feel free to register and log in. Contact n.spyra@hzdr.de for educator rights.

LMS-Interface

LMS-Interface
Demo

1) How does the UI look like?
2) How can I sign up for a course?
3) What details are visible?
4) How does the course structure look like?

CMS-Interface

CMS-Interface
Demo

1) What does the tutor/superuser see?
2) How can I create new course?
3) What structure do the courses have?
4) How can I add e.g. SCORM-Module into the course?

HIFIS

HZDR
HELMHOLTZ ZENTRUM
DRESDEN ROSSENDORF

Administration desk

Administration desk
Demo

1) Accessible via studio for superusers (administrators) only.

HIFIS

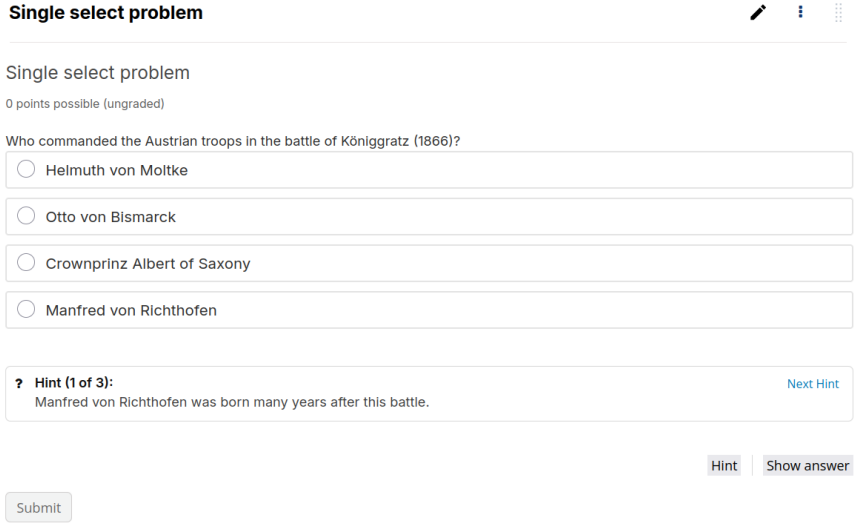
HZDR
HELMHOLTZ ZENTRUM
DRESDEN ROSSENDORF

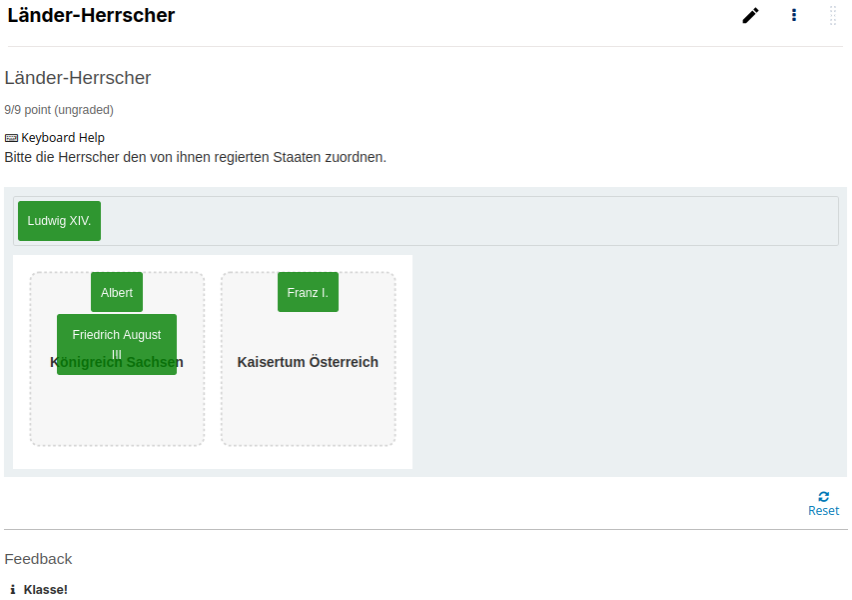
Plugin concept and basic functionalities

Plugin concept and basic functionalities
Basic functionalities: integrated editor

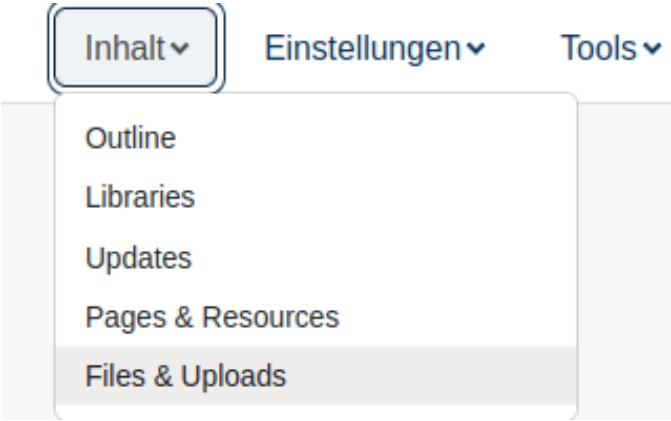
- Integrated course editor allows creation of learning materials in the Open edX environment,
- Courses are exportable and thus also importable,
- Multiple universal formats are supported (SCORM, cmi5, LTI, HTML),
- Many ways to customize the interface and page elements,
- More about the editor in the section about CMS – live demo.

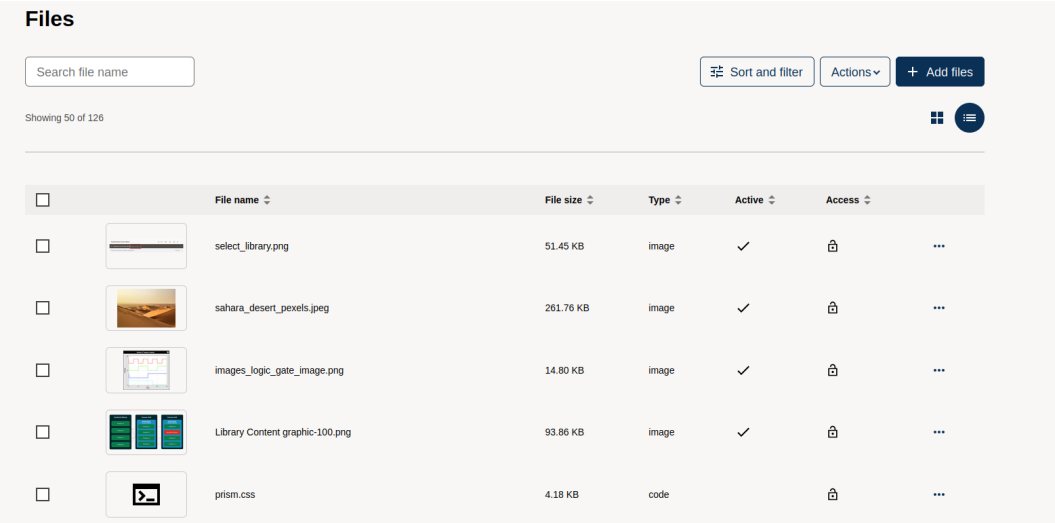
Plugin concept and basic functionalities
Basic functionalities: assessment methods





Plugin concept and basic functionalities
Basic functionalities: attachments and object banks (libraries)

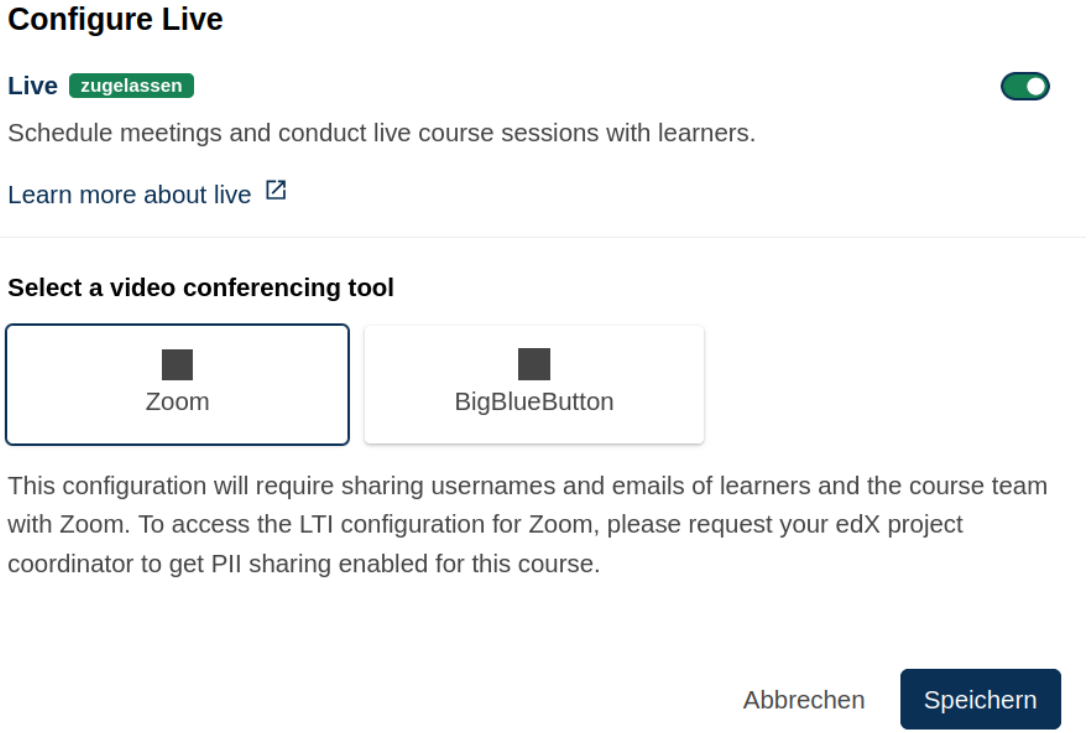




Plugin concept and basic functionalities
Basic functionalities: learn-sequence control

- Course A
  - Section(s)
    - Subsection(s)
      - Unit(s)
- Course B with prerequisity Course A
  - Section(s)
    - Subsection(s)
      - Unit(s)

Plugin concept and basic functionalities
Basic functionalities: blended learning methods – video calls

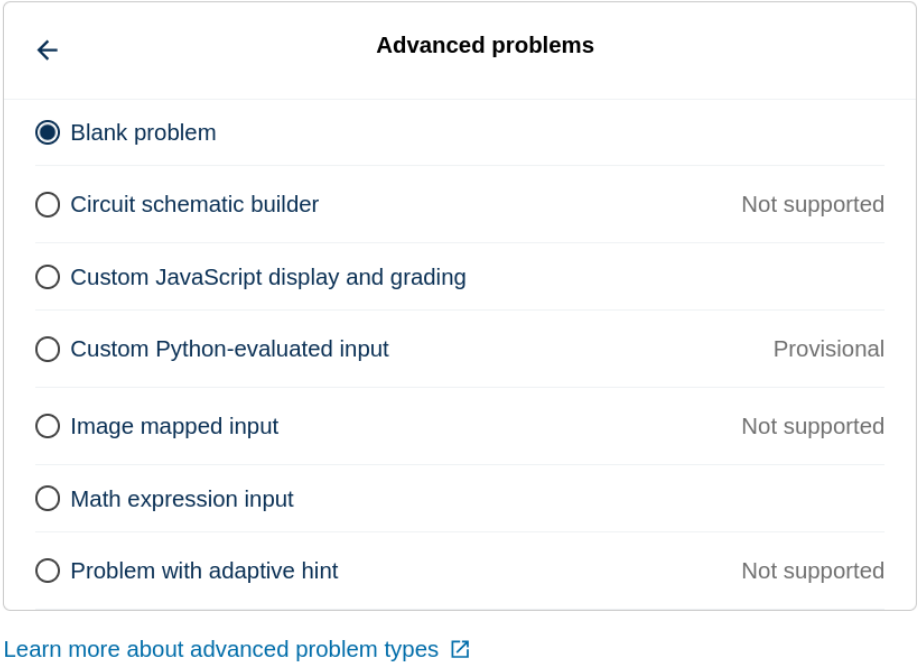


Educators can create a variety of assessment methods with preferable criteria.

Examples:

- Homework,
- Lab,
- Midterm exams,
- Final tests,
- ...and so on

There are various advanced evaluation techniques available:



Plugin concept and basic functionalities
Basic functionalities: blended learning methods – miscellaneous

- Courses can be hosted as events,
- Course enrollment and dates are settable and managable,
- Communication with students succeds via e-mails and announcements,
- Forum can be attached to each course,
- Attendees can be organised in **cohorts** to face particular tasks,
- There are many asynchronous assessment and learning tools available,
- Progress measurement allows visible advancement tracking,
- ...and many, many more.

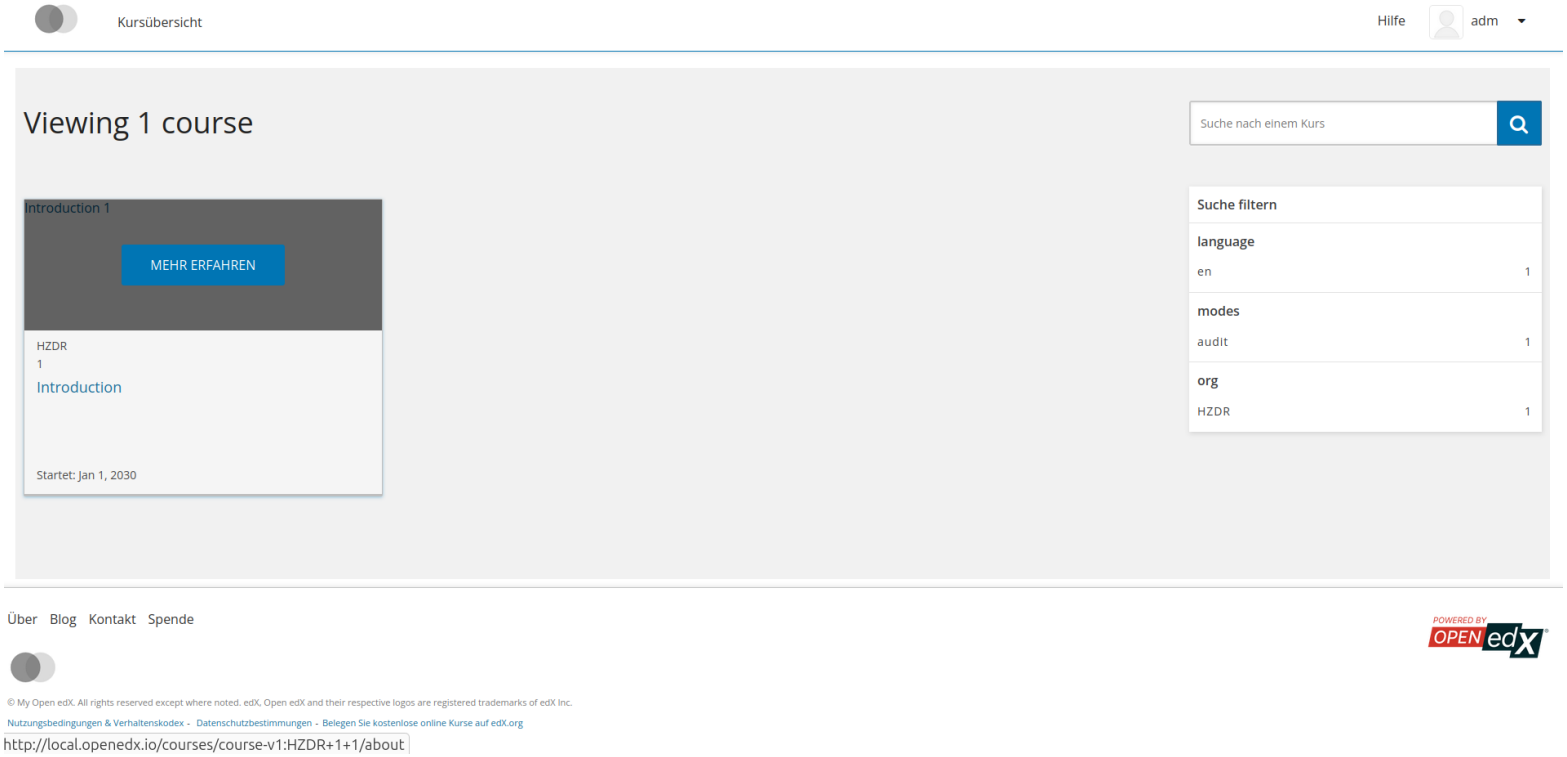
Plugin concept and basic functionalities
Plugins

The instance is just kind of frame, which is extendable with **plugins**.

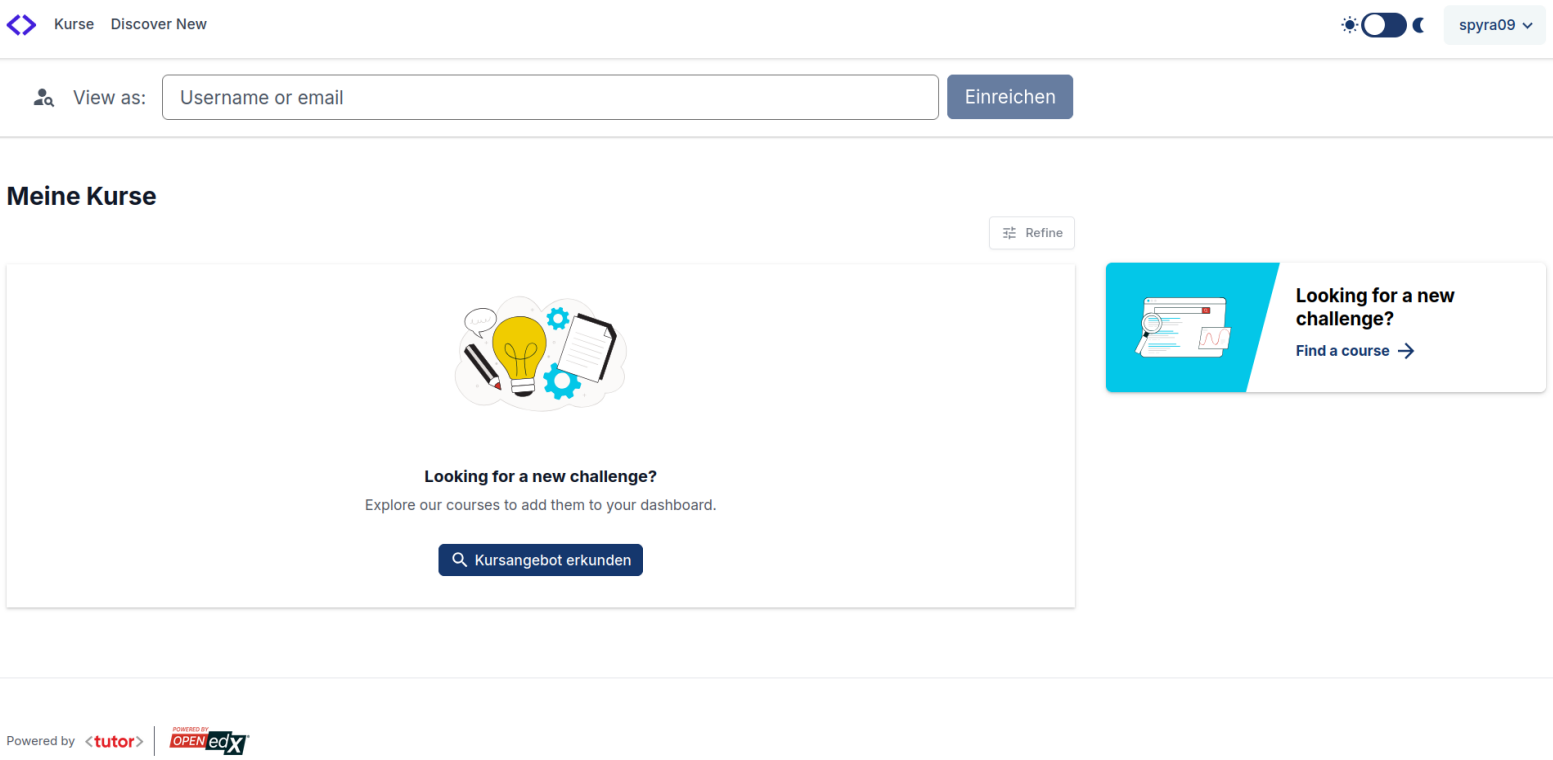
Plugins are stored in repositories. There are official, community and commercial plugins. Internal development is also possible.

Desired plugin combinations are adjustable both global and per each course separately.

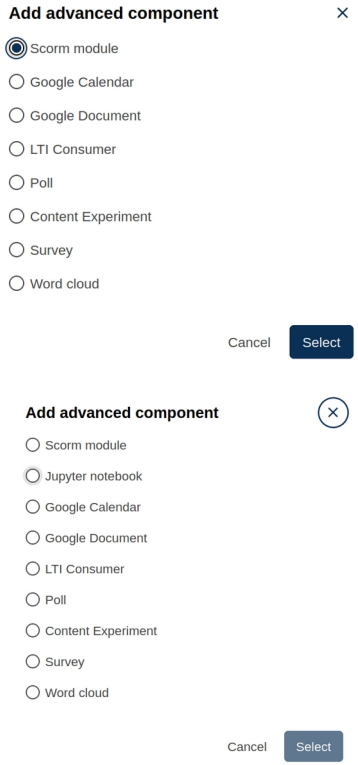
Plugin concept and basic functionalities
Exemplatory plugins: Indigo (theme)



Plugin concept and basic functionalities
Exemplatory plugins: Indigo (theme)



Plugin concept and basic functionalities
Exemplatory plugins: Jupyter (installation example)




```
(tutor-venv) openedx@ubuntu2204:~$ tutor plugins install jupyter
```

...and a few more steps apart from that

Plugin concept and basic functionalities
Exemplatory plugins: Jupyter (applying plugin locally in the course)

Optional modules might be activated locally (in settings), as they’re needed.

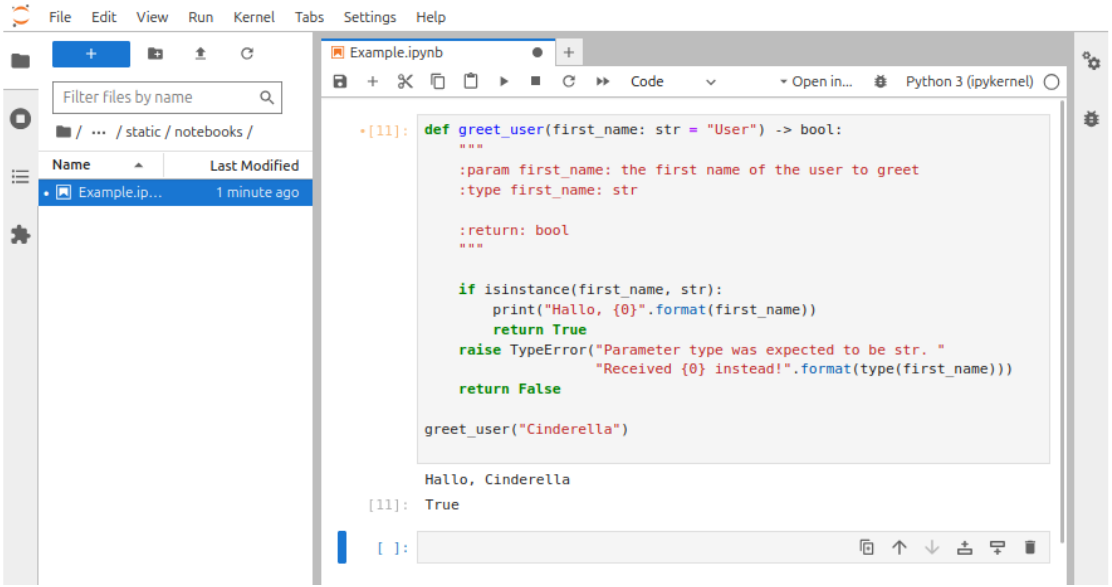
Advanced module list ⓘ

```
[
    "scorm",
    "jupyter"
]
```

Plugin concept and basic functionalities
Exemplatory plugins: Jupyter (element on development instance)

Jupyter notebook

JUPYTER NOTEBOOK (EXTERNAL RESOURCE)



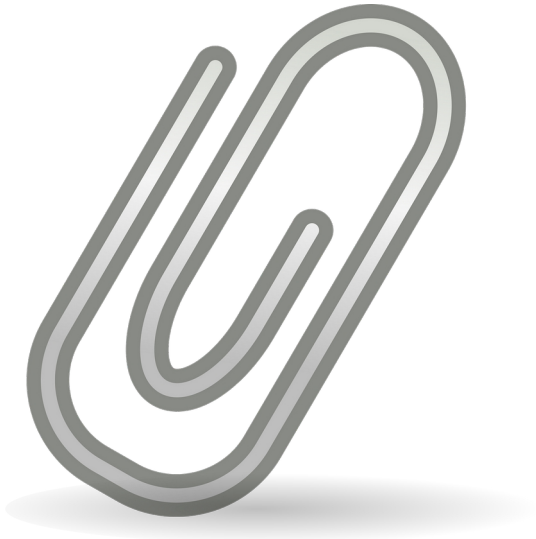
Launching walkthrough

Launching walkthrough
Installation with Tutor

Please refer to attachment with a prefix *002*.

The instruction contains:

- Sequence of steps to start a local instance up,
- Most useful commands,
- References to important configuration files,
- References to documentation.



Documentation and sources

Documentation and sources
Official documentation

1) Open edX Documentation:
   https://docs.openedx.org/en/latest/
2) Community forum:
   https://discuss.openedx.org/
3) Tutor (edly distribution):
   https://docs.tutor.edly.io/
4) Open edX YouTube channel (conferences, tutorials, updates):
   https://www.youtube.com/@OpenedX

Documentation and sources
Open edX sandboxes and HIFIS

1) **Staging (test) instance:**
   https://learn-test.helmholtz.cloud/
2) **Production instance (...is about to be accessible via):**
   https://learn.helmholtz.cloud/
   https:/studio.learn.helmholtz.cloud/
3) Official sandbox (requires registration):
   https://sandbox.openedx.org/
4) Edly sandbox (restarted daily, credentials as follows):
   https://sandbox.openedx.edly.io/
   login*: admin* password*: admin* e-mail: *admin@overhang.io*
   login*: student* password*: student* e-mail: *student@overhang.io*

Documentation and sources
How to-s:

1) Build a course :

https://docs.openedx.org/en/latest/educators/quickstarts/build_a_course.html

2) **Educators guide:**

https://docs.openedx.org/en/latest/educators/index.html

3) SCORM Overview:

https://docs.openedx.org/en/latest/educators/references/course_development/exercise_tools/SCORM_overview.html

4) Jupyter (just a repository, nothing helpful for educators, but just FYI):

https://github.com/overhangio/tutor-jupyter

Open edX for Helmholtz

Norbert Spyra, n.spyra@hzdr.de
HZDR / HIFIS

TEACH V
Berlin, 29.09.2025