**IoT Green Transformation for Academic Society
and Business Oriented Ecosystem in Western Balkans**

https://iot-eco.eu/

UNIVERSITY OF PATRAS
ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΑΤΡΩΝ

On-line training for sharing content via IoT-ECO Hub (part of D4.2)

UPAT Team

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# Outline

▶ General concept of the IoT-ECO hub

▶ Structure of the educational part

▶ Services to the students

▶ Examples

▶ Administration and guides

General concept of the IoT-ECO hub (1/2)

▶ The general concept for the hub relies on the principles of modularity to allow each partner to develop and deploy their respective courses as they see fit.

▶ The IoT-ECO hub consists of the educational and experimental parts.

▶ In the **educational part**, the users will have access to the educational content produced in the frame of the IoT-ECO project.

  ▶ Centralized, deployed at the premises of UBT.

▶ In the **experimental part**, the users will have access to the Azure-based IoT solutions provided by the IoT-ECO partners.

  ▶ Decentralized, provided via the partners that develop the digital twins

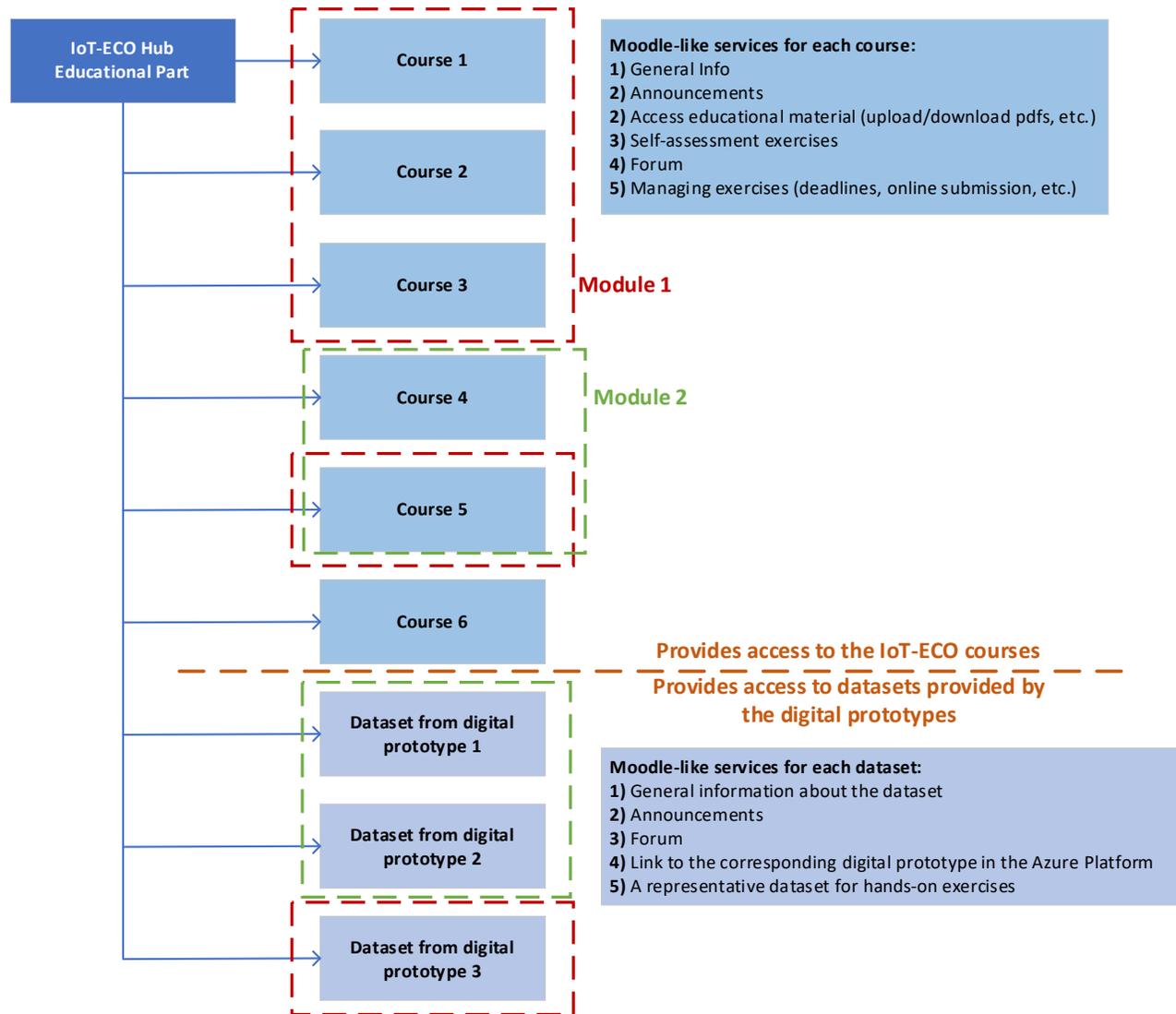▶ These choices made for a sustainable IoT-ECO hub solution, remaining operational after the completion of the project

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General concept of the IoT-ECO hub (2/2)
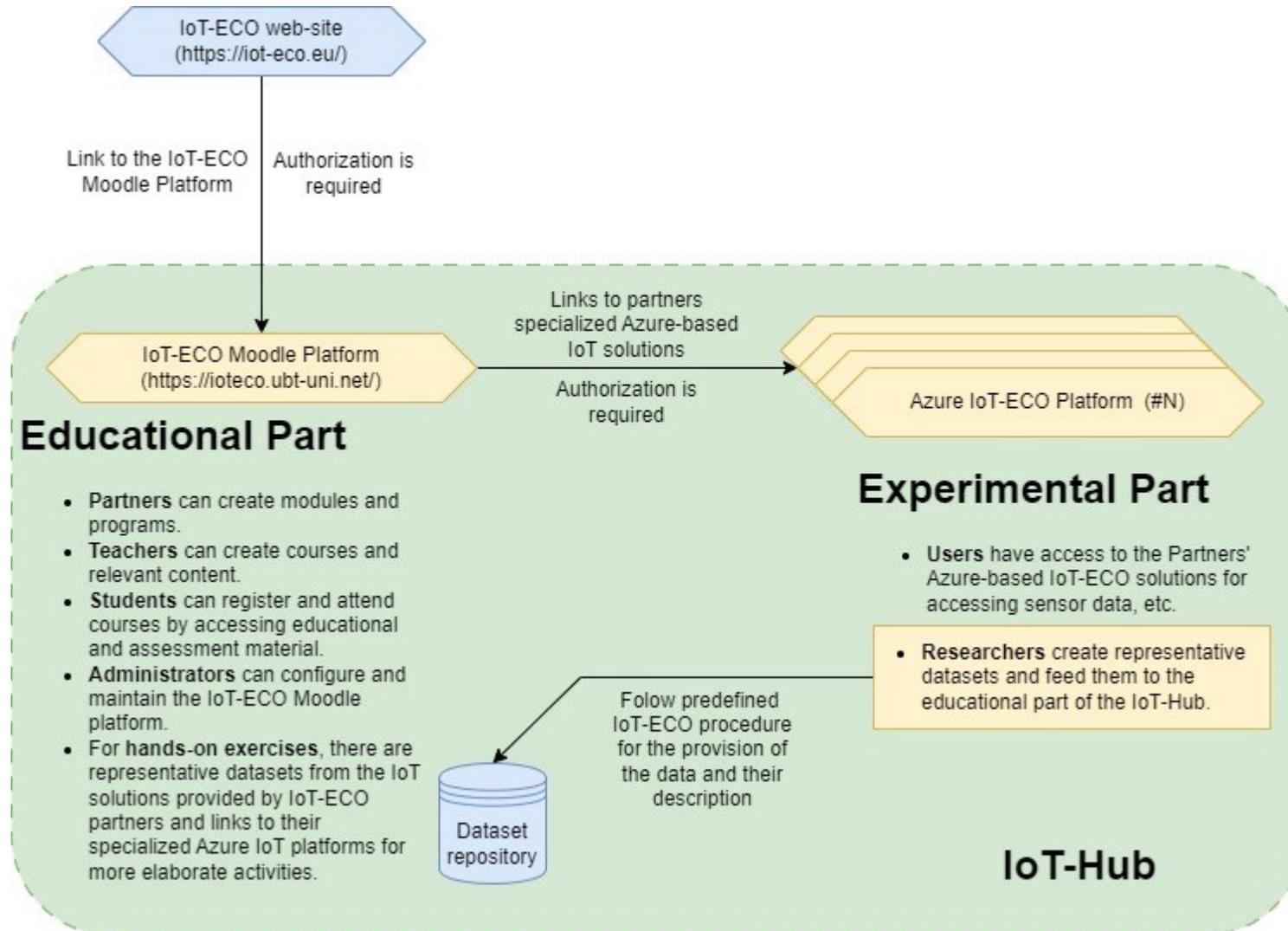
Structure of the Educational Part (1/2)

- ▶ The structure of the educational part aims at:
  - ▶ Accommodate several courses (it has been discussed that **6 courses** will be created in the frame of IoT-Hub).
  - ▶ For each digital twin developed within IoT-Hub , there will be also a **laboratory course**, providing a representative dataset as well as links to the actual digital prototypes to enable students to elaborate further in data collection and analysis depending on their interests.
  - ▶ **Access to students** will be granted by teachers in a per course/dataset fashion. This way, each teacher will have the flexibility to allow a student to attend and use a specific number of courses and datasets, thus, **defining a module**.
  - ▶ A **module** is defined as **a collection of courses/datasets** that cover a particular thematic area. For example, a module on "Signal processing over IoT" may consist of three courses on "Fundamentals of Signal Processing", "Statistical Signal Processing" and "Distributed Estimation & Learning over an IoT network" plus any of the available datasets for supporting laboratory exercises.

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Structure of the Educational Part (2/2)

```
IoT-ECO Hub Educational Part
    ├──► Course 1  ┐
    ├──► Course 2  │ Module 1
    ├──► Course 3  ┘
    ├──► Course 4  ┐ Module 2
    ├──► Course 5  ┘
    ├──► Course 6
    ├──► Dataset from digital prototype 1
    ├──► Dataset from digital prototype 2
    └──► Dataset from digital prototype 3
```

Moodle-like services for each course:
1) General Info
2) Announcements
2) Access educational material (upload/download pdfs, etc.)
3) Self-assessment exercises
4) Forum
5) Managing exercises (deadlines, online submission, etc.)

Provides access to the IoT-ECO courses

Provides access to datasets provided by the digital prototypes

Moodle-like services for each dataset:
1) General information about the dataset
2) Announcements
3) Forum
4) Link to the corresponding digital prototype in the Azure Platform
5) A representative dataset for hands-on exercises

Services to the students - Courses

▶ Course outline: objectives, learning outcomes, syllabus, teaching and evaluation methods, etc.

▶ Course announcements.

▶ Educational material (e.g., pdfs, docx or relevant, ppt or relevant, etc.).

▶ Projects and assignments.

▶ Self-assessment mechanisms.

▶ Forum for enabling interactions among involved parties.

▶ A mechanism for managing exercise assignments.

▶ Experimental data: representative datasets

Services to the students – Lab courses

- General description of the dataset, its structure, usage-related information, etc.

- Announcements.

- Forum for enabling interactions between involved parters.

- The **link to any of the available digital prototypes** for further experimentation

  - Access to the digital prototype - being part of the Experimental Part of the IoT-ECO hub - is expected to be managed independently by corresponding partner.

- Access to representative datasets for allowing teachers devise **laboratory exercises** and students to gain experience by studying the datasets and developing data processing and analysis techniques.

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Examples

Access to the IoT-ECO hub
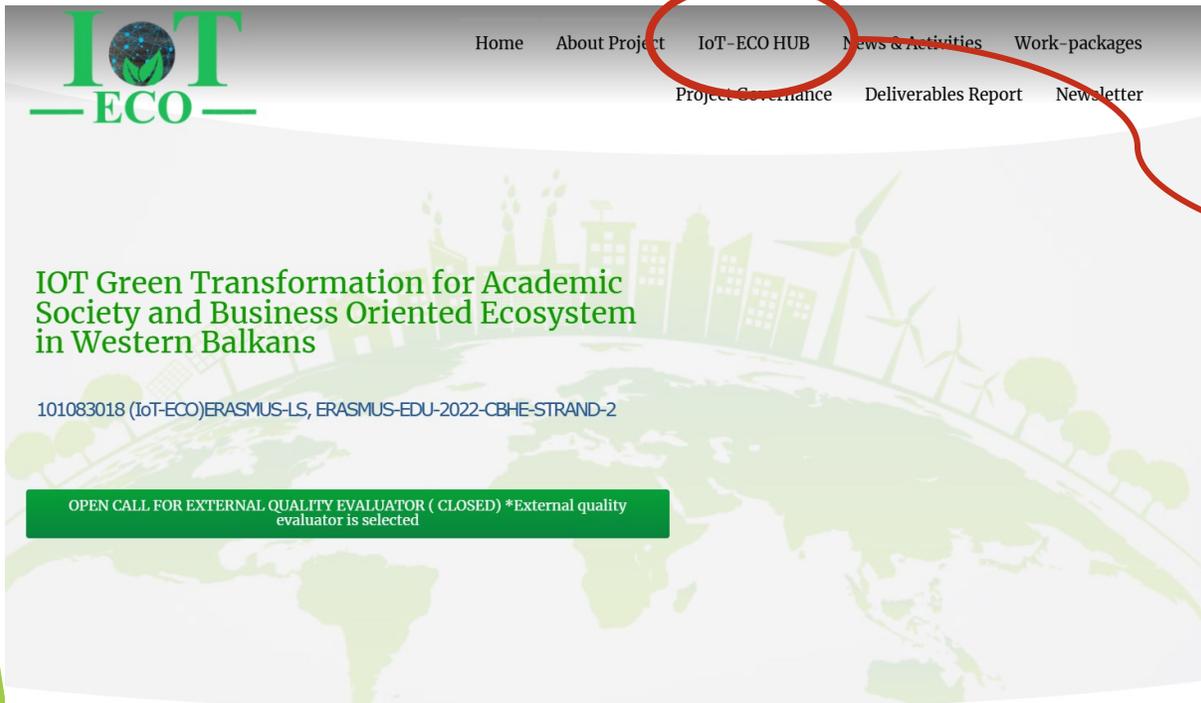
▶ IoT-ECO hub can be accessed via the IoT-ECO web-site

▶ Access to teachers can be granted via site administrators (UPAT, UBT)

Home page when logged in
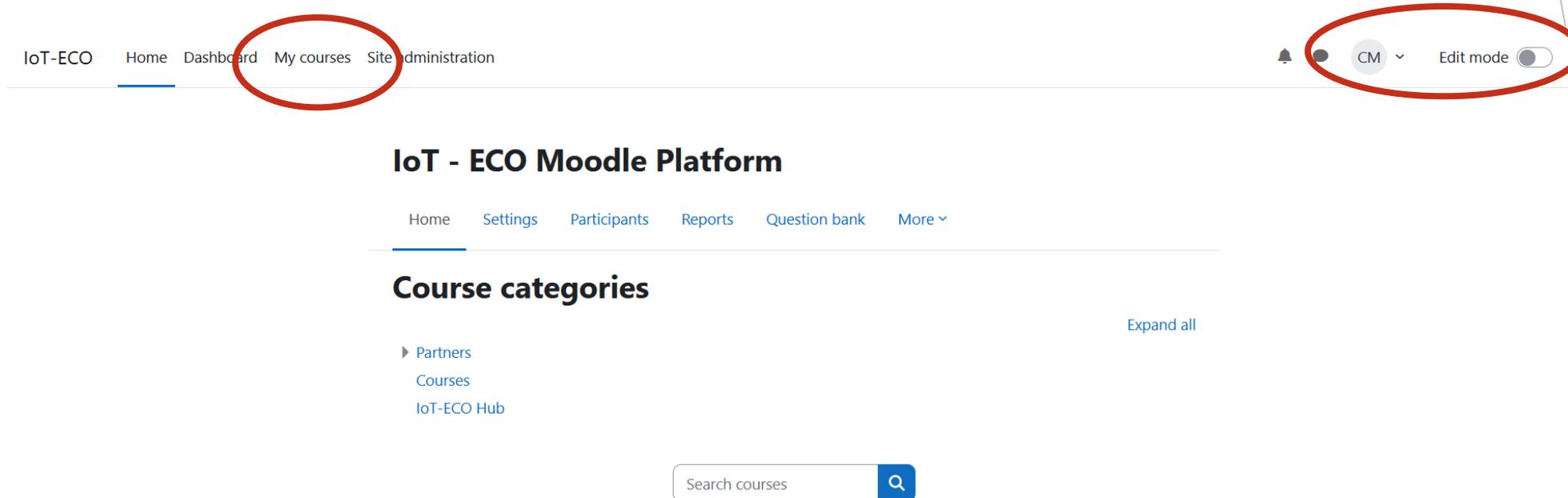
▶ Via the home page, a user can perform various actions (profile settings, new courses, edit mode, etc.)

▶ "My courses" is particularly relevant in our context

Create a new course (1/4)
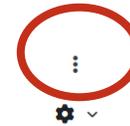
▶ Via the "My courses" category, one can create a new course or edit existing courses

Create a new course (2/4)

Add a new course

Expand all

> **General**

> **Description**

> **Course format**

> **Appearance**

> **Files and uploads**

> **Completion tracking**

> **Groups**

> **Tags**

Save and display   Cancel

▶ Several menus for filling in information

Create a new course (3/4)

▶ Provide name, dates, etc.

Create a new course (4/4)

Course format

Format	Custom sections ⌄
Number of sections	4 ⬍
Hidden sections ❓	Hidden sections are completely invisible ⬍
Course layout ❓	Show all sections on one page ⬍

Appearance

Force language	Do not force ⬍
Number of announcements ❓	5 ⬍
Show gradebook to ❓ students	Yes ⬍
Show activity ❓ reports	No ⬍
Show activity dates ❓	Yes ⬍

Files and uploads

Maximum upload ❓ size	Site upload limit (2 MB) ⬍

▶ Course format for defining sections

▶ Show various info like "number of announcements", etc.

▶ File sizes

Structure of a course (1/2)

▶ When a course is selected, it is shown in "My courses" page

Structure of a course (2/2)

▶ A course has a general section and other four sections as determined during the creation of the course.

Adding activities
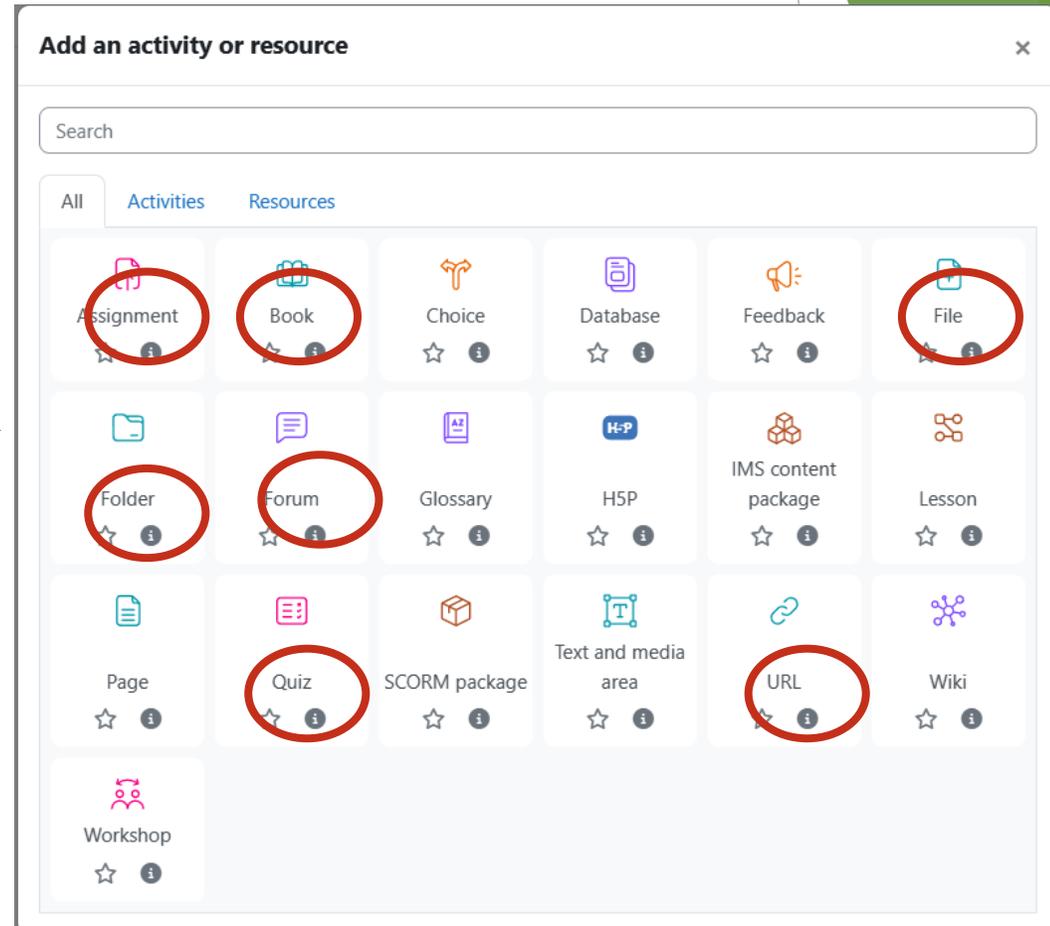
▶ Many choices for adding activities (forums, quizzes, files, etc.)

Adding a quiz (1/4)

signal processing for iot

Course | Settings | Participants | Grades | Reports | More ˅

New Quiz

Expand all

> **General**
> **Timing**
> **Grade**
> **Layout**
> **Question behaviour**
> **Review options** ❷
> **Appearance**
> **Safe Exam Browser**
> **Extra restrictions on attempts**
> **Overall feedback** ❷
> **Common module settings**
> **Restrict access**

▶ Description

▶ Timing

▶ Layout

▶ Etc.

Adding a quiz (2/4)

- ▶ Provide a description
- ▶ Open and close day, etc.
- ▶ Grading
- ▶ Etc.

Adding a quiz (3/4)

▶ Add questions

▶ Several options concerning the format (e.g., multiple choices)

Adding a quiz (4/4)

▶ A preview of an example when a "multiple-choice" question is defined

Adding a forum (1/2)

▶ As usual several configuration menus for setting up the forum according to the professor's needs

Adding a forum (2/2)

► Add a topic in the forum and start discussing

Create and use a folder
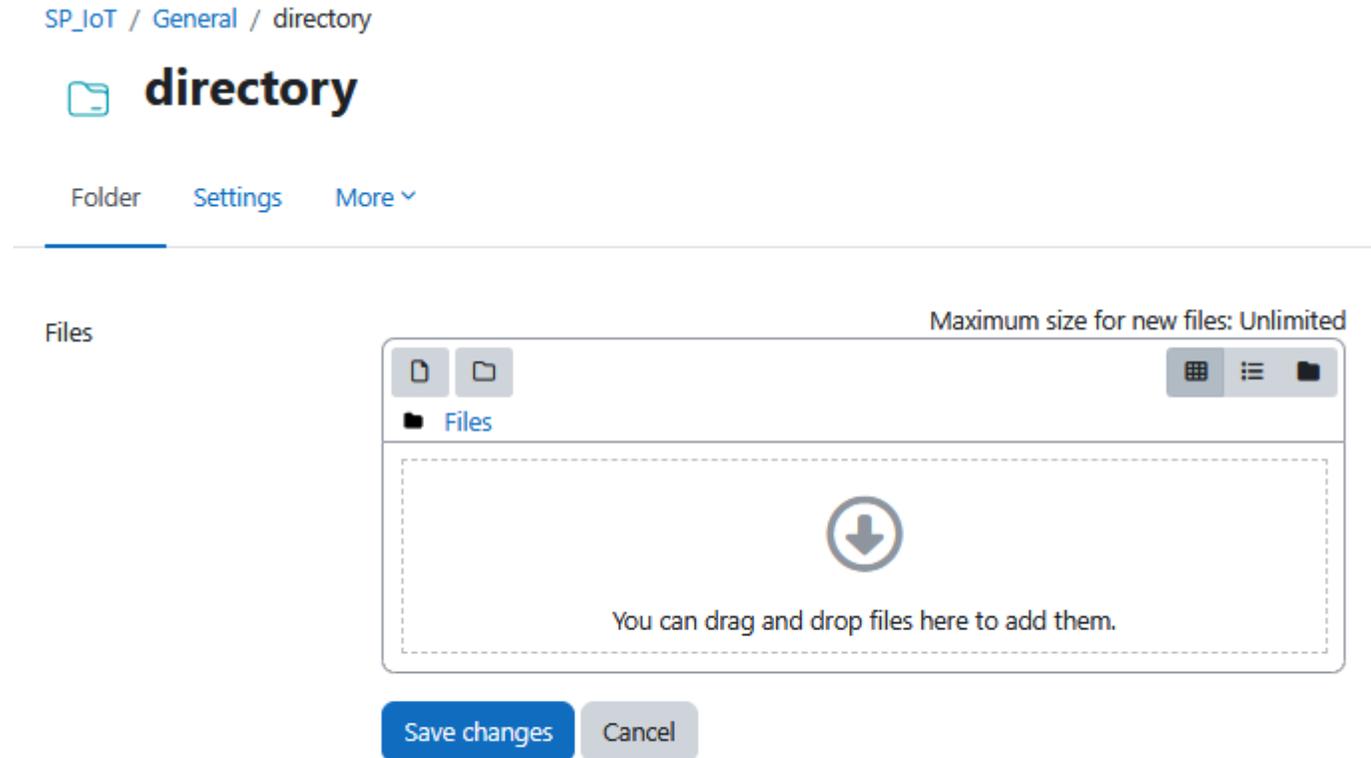
▶ Create a folder to store files with simple "drag and drop"

Administration and guides

▶ UPAT (along with UBT) will be the site administrator

▶ The IoT-ECO hub supports several user roles:

    ▶ Managers (administrative privileges)

    ▶ Content creators (create courses and can manage them)

        ▶ This will be used for the time being

    ▶ Teachers (manage courses)

▶ Students need to have an account to the platform

    ▶ Self-registration may give rise to potential security risks (e.g., spammers)

    ▶ The teachers define whether enrollment to a course can be done by them or by the students themselves

▶ More detailed information can be found, e.g., here (i.e., @moodle.org)

Thanks!!!