



Implementation of Innovative ICT Based Teaching & Learning Methods (related to WP3)

Erasmus+ Project “PHYSICS”

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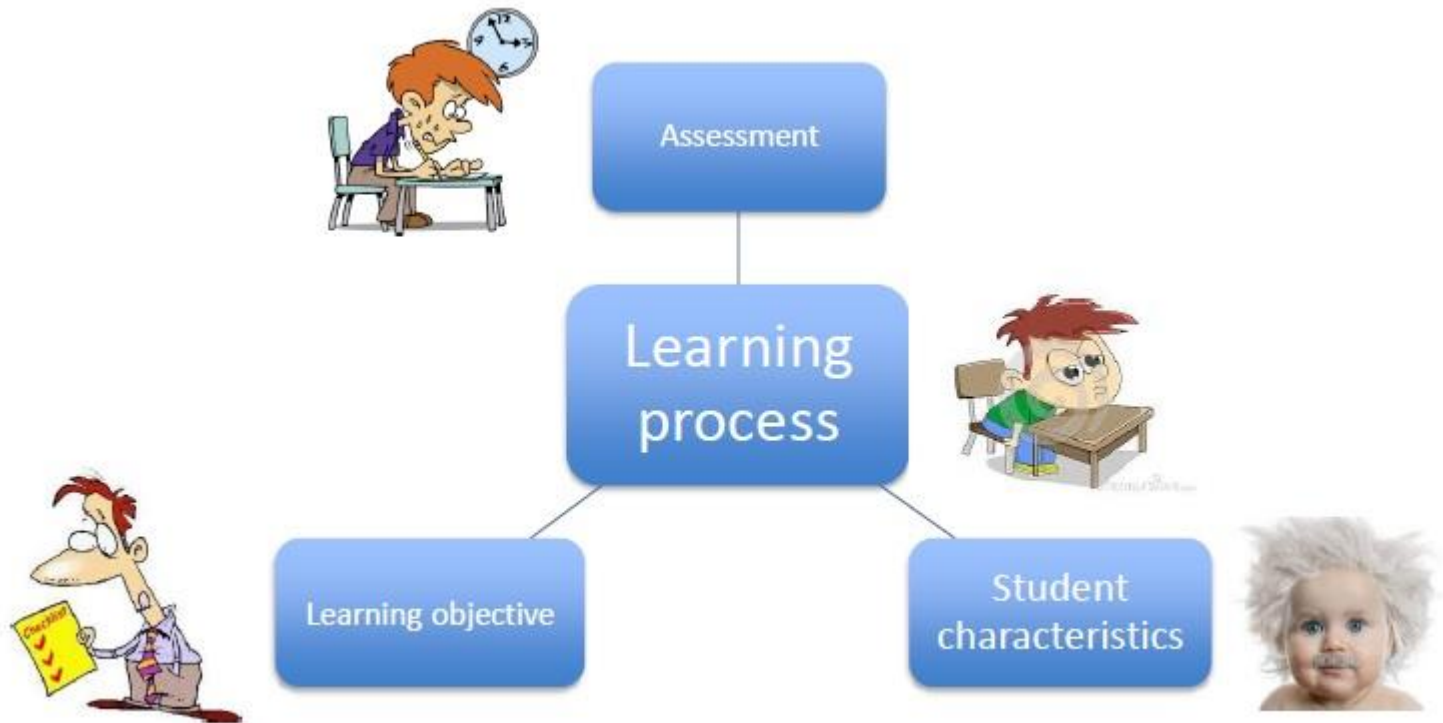
Main goal

- Teaching and preparing students:
 - to think and act as an academically skilled person,
 - to realise an academic and research oriented career,
 - to realise an industry oriented career.

This main goal requires an appropriate **learning process** embedded in a **learning environment**.

Main goal

- The **Learning Environment** can be modelled as:



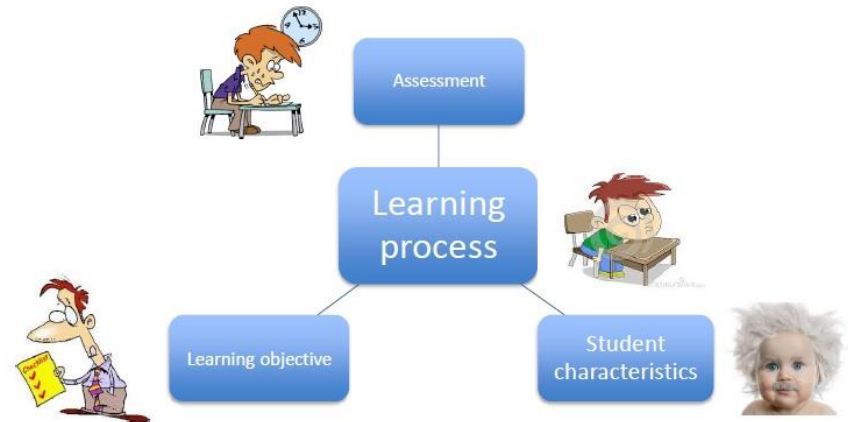
Main goal

- The **learning objectives** for each course need to be formulated:
 - knowledge, attitudes, skills, ...
- The **student characteristics** are important:
 - prior knowledge, motivation, interests, age, ...
- The student needs to be **evaluated (assessment)**:
 - formative and summative assessment
 - when, what, how, who, ...

Main goal

- The **learning process** and the content of the course is also very important:
 - **Digital content** is easy to adjust and elaborate
 - **Digital content** is easy to structure
 - **Digital content** provides new possibilities

A **Virtual Learning Environment** is an important tool.



Virtual Learning Environment

- A Virtual Learning Environment is known to be useful when teaching '**science**' and '**physics**'.
- Objects of many kinds can be used:
 - Text documents
 - Videos and mp3
 - Scanned images
 - Links to websites
 - Animations
 - Simulations
 - ...

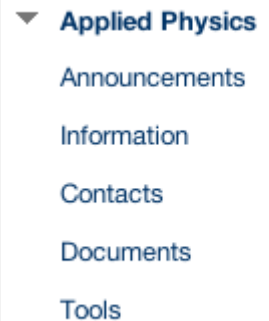


Virtual Learning Environment

- A Virtual Learning Environment provides **useful tools**:
 - uploading of course material i.e. course content
 - Questionnaires + quizzes
 - (peer)assessment
 - Communication, including chat sessions and forums
 - Wikis and blogs
 - Tracking tools
 - Feedback to the students
 - Administration of student groups

The use of Toledo

- In a **Toledo community**, a draft of the online course “applied physics” has been made.
- See: <https://toledo.kuleuven.be/>
- The course is organized in separate blocks:
 - Announcements
 - Information: general and administrative information
 - Contacts
 - Documents: contains several chapters
 - Tools

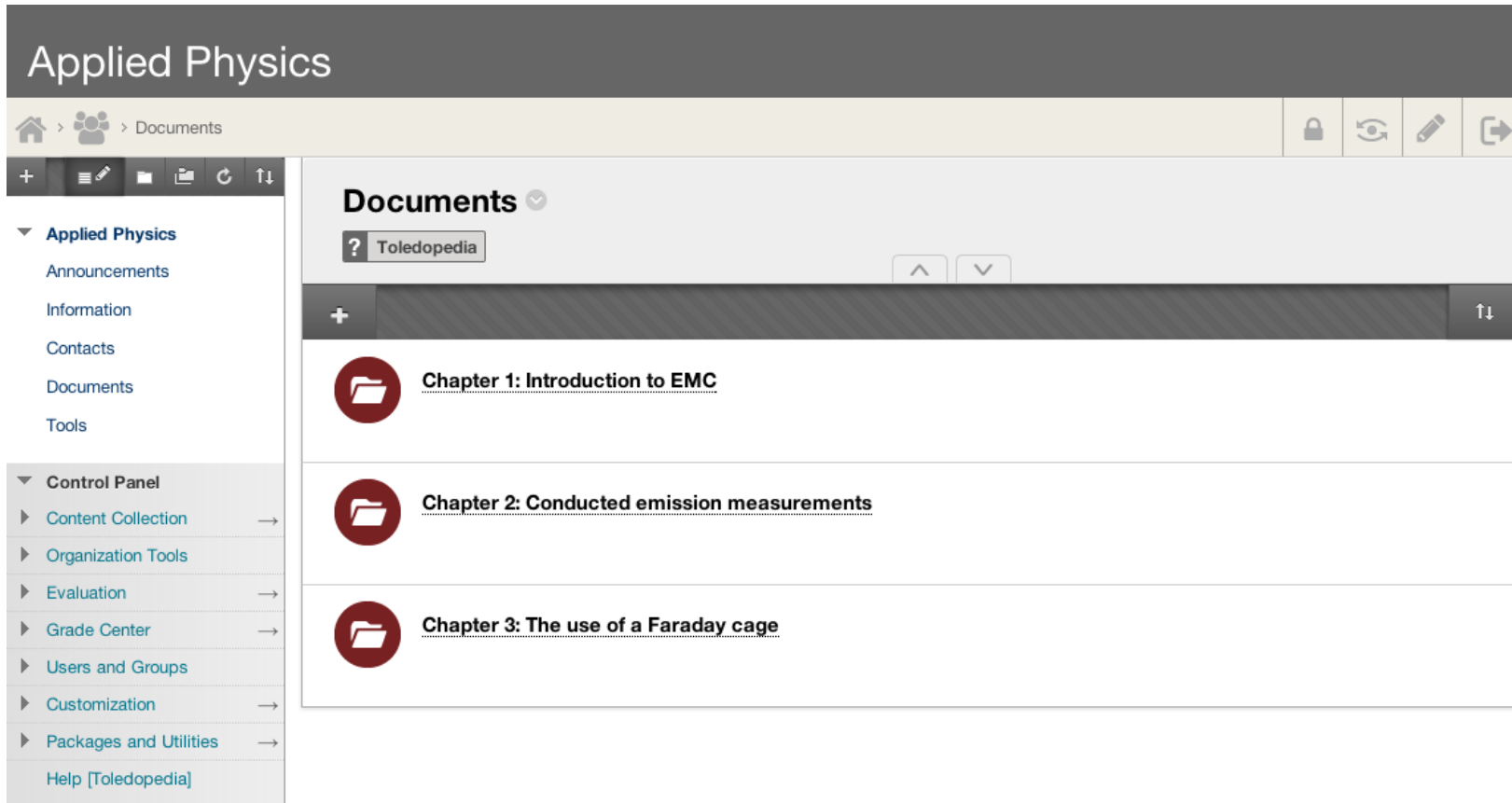


A screenshot of a navigation menu for the Toledo course. The menu is displayed in a light blue box with a dark blue header. The header contains a downward-pointing triangle icon followed by the text 'Applied Physics'. Below the header, there are five menu items: 'Announcements', 'Information', 'Contacts', 'Documents', and 'Tools', each on a new line.

- ▼ Applied Physics
 - Announcements
 - Information
 - Contacts
 - Documents
 - Tools

The use of Toledo

- A screenshot of the block “documents”



The use of Toledo









- **Each chapter** contains a number of items. For example in ‘chapter 1’, we have embedded **a number of items**:
 - Roadmap: the menu to be followed in a chronological order
 - Learning outcomes
 - Pre-requisites: to reveal any lack of prior knowledge
 - Theoretical lecture: e.g. ‘introduction to EMC’
 - Open ended questions
 - Close ended questions
 - Learning tasks: to extend the level of the newly acquired knowledge

The use of Toledo

- Screenshot of 'chapter 1'

Items 1-4 are standard and will be included in each chapter.

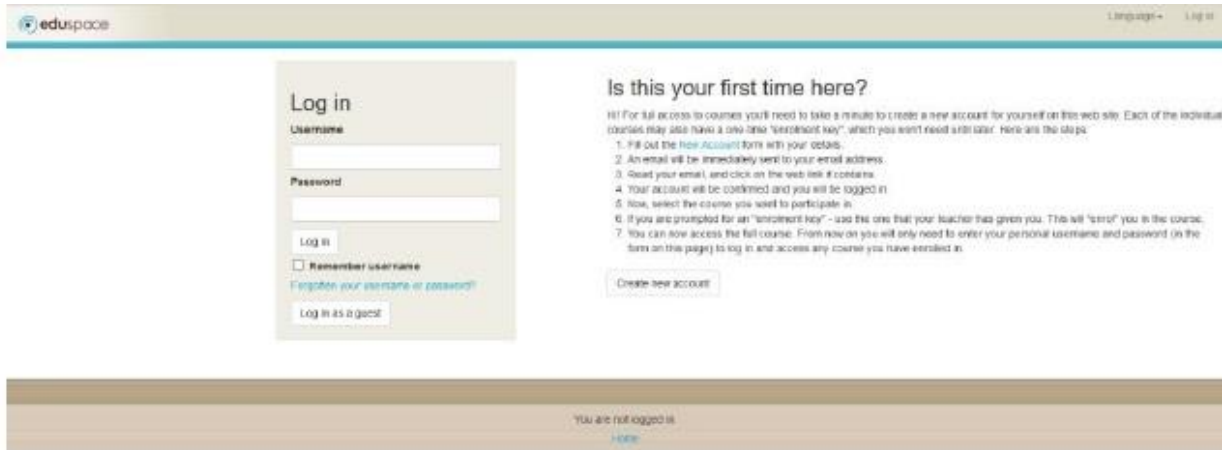
Items 5-7 can vary chapter by chapter.

	Roadmap Enjoy "Applied Physics" and go for a full comprehension of the concepts outlined in chapter 1. Here is the menu to follow in a chronological order: <ul style="list-style-type: none">• take note of the learning outcomes before starting to study• examine the pre-requisites to reveal any lack of foreknowledge• read carefully and try to understand the theoretical lecture "Introduction on EMC"• check your knowledge by answering the open-ended check questions• evaluate yourself by performing the test with the closed-ended check questions• carry out the learning tasks to extend the level of your knowledge
	Learning outcomes
	Pre-requisites
	Theoretical lecture "Introduction to EMC" Attached Files:  Introduction to EMC (943.899 KB)
	Check questions (open-ended)
	Check questions (close-ended) Availability: Item is not available.
	Learning tasks

The use of Moodle

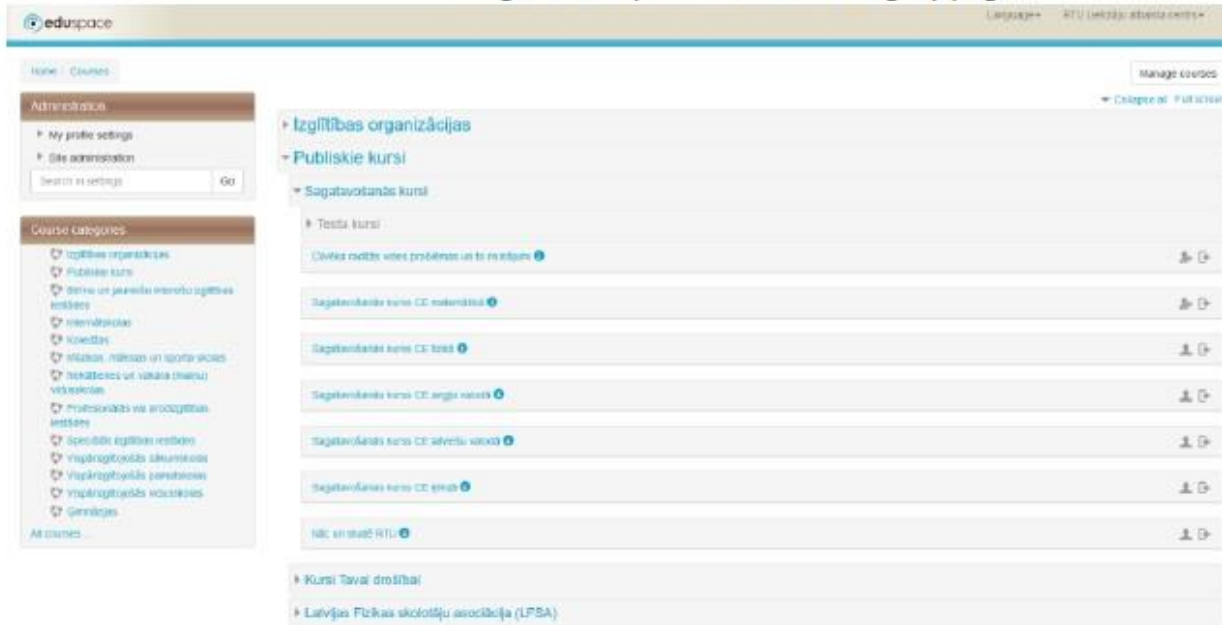
- A Moodle account can be obtained using website <https://eduspace.lv/?lang=en> (eduspace)
- Using Toledo or Moodle, **all educational tools** mentioned before **can be demonstrated**.
 - Uploading content, using questionnaires, ...
 - peer assessment, sending personal messages, communication between teacher and student, ...
- Using Toledo or Moodle, the educational **tools** which are useful **can be used** by all of us.

The use of Moodle



The eduspace login page.

Image 3. Eduspace.lv course category page



Practical approach

- The Erasmus+ “Physics” team needs a **practical approach** to realise the courses on the Moodle environment.

Suggestion:

- Concerning the **course “Applied physics”**, a **practical example** will be realised ‘as fast as possible’ (target: summer time or September 2016).
- **Inspired by this example** other courses can be realised using Moodle.

References

- Martin-Blas T., Serrano-Fernandez A. (2009), The role of new technologies in the learning process: Moodle as a teaching tool in physics, Computers & Education, vol. 52, pp. 35-44.
- Dewulf L., Janssens A., (2010), Actief in de digitale leeromgeving, Mechelen, Uitgeverij Plantyn, ISBN 978-90-301-0386-8
- A lot of other papers discuss the possibilities provided by a learning platform like Moodle

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