

## Remote Energy Lab

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**Subject area:** Chemical Engineering

|                       |   |
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| <b>University:</b>    | TUM   |
| <b>Level:</b>         | MA1, MA2, MA all years  |
| <b>Teaching mode:</b> | completely online, at specific time   |
| <b>Instructor(s):</b> | Daniel Klüh, Tomas Bily, Ondrej Novak, Alar Konist,<br>Mais Baqain, Alejandro Lyons Ceron |

### Short description

The course provides remote lab experience for three energy related technologies: nuclear reactor lab of CTU Prague, redox flow battery lab of TU Munich and biomass boiler lab of Taltech, Tallinn. It consists of an introduction to each technology and one on-line lab experience. Students will connect to labs via a videoconference session and will be provided with on-line experimental data. They will work in international team during the lab and during the preparation of the reports.

### Full description

The course consists of three experiments including one introductory lecture per experiment. Between the lecture and the experimental session, students can perform an online quiz to test their knowledge on the topic. The lecture will be hold online. The experiential session is performed with the whole cohort of participating students. Students will be divided in groups of 4. Each group is supposed to submit a short written report for each experiments presenting the main findings.

The course consists of the following three experiments:

- 1) Nuclear Reactor Safety
- 2) Redox Flow Battery
- 3) Flue gas emissions from a household boiler

Dates and times for lecture and experiment:

One session per week in the late afternoon, Start: mid-September, End: End of October

### Learning outcomes

Students are supposed to:

Understand the basics of each technology and the principles of each experiment

Explain the relevance of each experiment in an energy context

Learn how to communicate and work effectively online in an international and interdisciplinary team

Learn how to obtain and analyze experimental data

Organize, interpret data and present it in a structured report

## General information

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|------------------------------------|--|
| <b>Contact hours per week:</b>     | 3 h per week (6 weeks)   |
| <b>Total workload:</b>             | 60 (in student hours for the whole course)                               |
| <b>ECTS credits:</b>               | 2  |
| <b>Language:</b>                   | English  |
| <b>Course start date:</b>          | 15 September 2022  |
| <b>Course end date:</b>            | 31 October 2022  |
| <b>Add. info about start date:</b> | Start date will be around Mid-September. The course takes 6 weeks        |
| <b>Weekly teaching day/time:</b>   | day not fixed yet, late afternoon  |
| <b>Time zone:</b>                  | CET (Denmark, Germany, France, Netherlands, Switzerland, Czech Republic) |

## Further information:

|                                |  |
|--------------------------------|--|
| <b>Prerequisites:</b>          | Bachelor's degree in engineering                   |
| <b>Activities and methods:</b> | Lectures, Group work, Self-study, on-line Lab-Work |
| <b>Presence on campus:</b>     | no   |

## Final examination

|                                |                           |
|--------------------------------|---------------------------|
| <b>Form:</b>                   | assignment                |
| <b>Date:</b>                   |                           |
| <b>Location/format:</b>        | Submission of assignments |
| <b>Re-sit possibility:</b>     | no                        |
| <b>Transcript available:</b>   | December 2022             |
| <b>Add. info/requirements:</b> |                           |

## Registration

To register for this course, follow the registration requirements of your **home university** as specified here: [www.euroteq.eu/courses-registration](http://www.euroteq.eu/courses-registration).

## Administration

|                          |    |
|--------------------------|----|
| <b>Number of places:</b> | 30 |
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**Minimum participants:**

**Internal course code:**

**Contact:** euroteq.incoming.zv@tum.de

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*This course is part of the EuroTeQ Engineering University joint course catalogue 2023. This is a collaborative activity of the partner universities DTU, L'X, TU/e, TalTech, CTU, TUM as well as Technion. Students from these universities can participate in the offered courses. It is the responsibility of the student to check if you fulfil the requirements to participate in a specific course. Students are also advised to check with their home institution how to get recognition of the ECTS credits gained in courses of the EuroTeQ course catalogue. For further information about EuroTeQ Engineering University, visit [www.euroteq.eu](http://www.euroteq.eu) or get in touch with the above-mentioned point of contact.*