Collaboration Module CESI-THM

Prof. Dr.-Ing. Michael Arndt
THM

Content

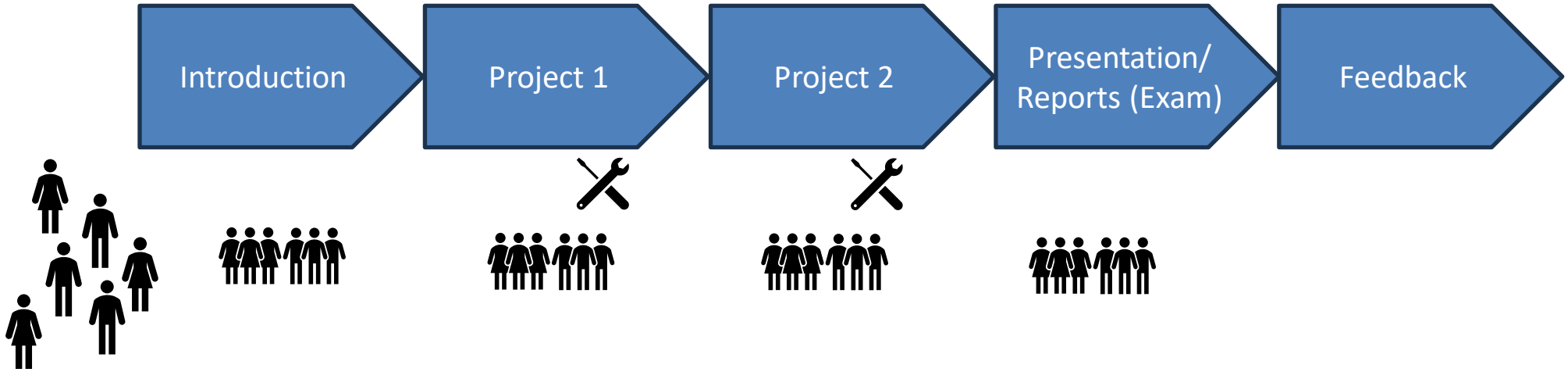
- Introduction to the module
- Focus 1: International Collaboration and Project Work
- Focus 2: Problem Solving in an international Environment
- Practical Issues / Moodle Course
- Organisation of the Module (Schedule, Teams, Lectures etc.)
- Support (Tutor, Consultation Hour, Supervision)
- Examination

Lecturer: Michael Arndt
Duration: 1,5 h
Recorded: Yes

Motivation and Concept

In modern engineering, international virtual collaboration has become very common - especially after the covid pandemic. In order to allow **all** students to experience modern, virtual and international collaboration during their studies, a cooperation project (PBL-concept) between CESI (France) and THM (Germany) has been developed and will be offered first time in summer semester 2024.

COIL will offer a low-threshold course to increase international experience of students at CESI and THM without having to travel physically between locations (If you want, you can still travel to visit your french partners. It is not that far...)

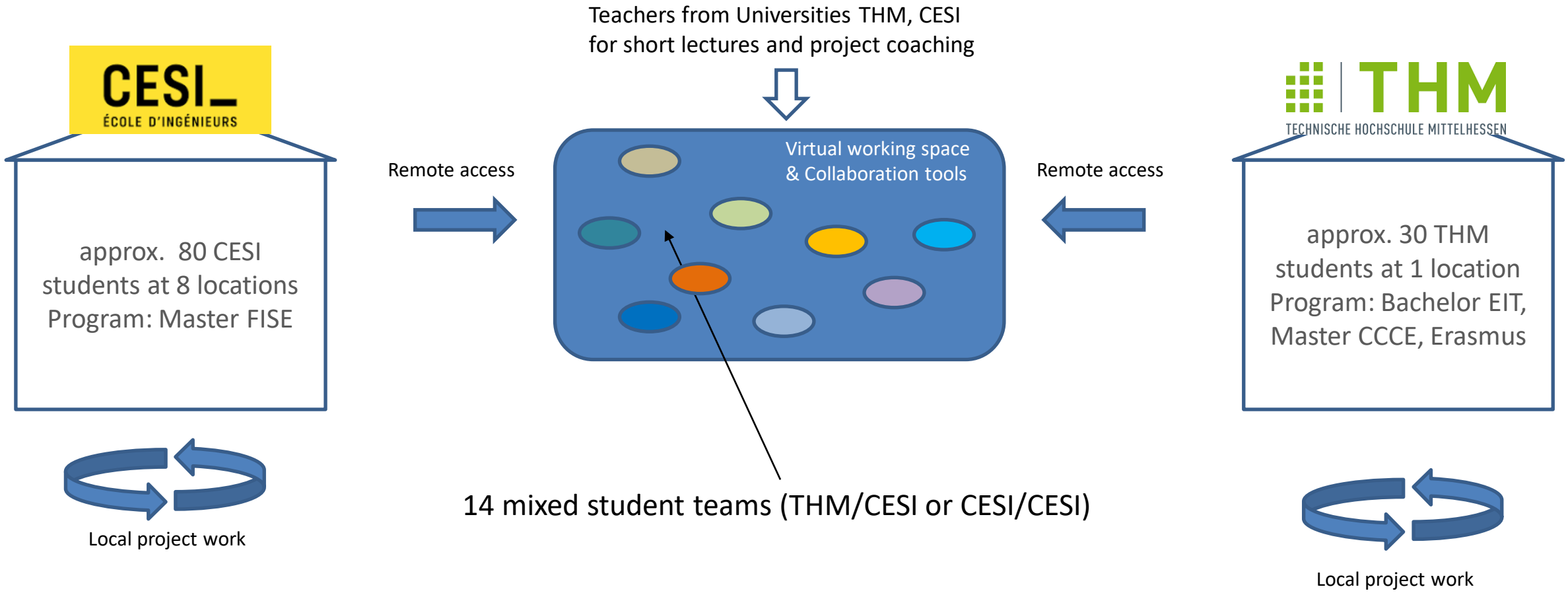


What should you learn from the international collaboration project?

- Cooperation (virtual and in person) with students in remote locations and another country
- Practical english conversation in real world situations
- Transfer of knowledge to other students (locally and remote)
- Extend technical knowledge across boundaries (e.g. into operations research, programming or electronics)
- Comparing approaches, problem solving and engineering methods between France and Germany
- Experiencing a european point of view
- Get to know tools and best practices for virtual cooperation
- Practice your team working and project management ability

- Focus 1 => International Collaboration and Project Management
- Focus 2 => Problem solving in an international environment (Simulation, Optimization, Hard- and Software Development)

Setup


Teachers from Universities THM, CESI
for short lectures and project coaching
CESI
ÉCOLE D'INGÉNIEURS
approx. 80 CESI
students at 8 locations
Program: Master FISE
Remote access
Virtual working space
& Collaboration tools
Remote access
THM
TECHNISCHE HOCHSCHULE MITTELHESSEN
approx. 30 THM
students at 1 location
Program: Bachelor EIT,
Master CCCE, Erasmus
Local project work
14 mixed student teams (THM/CESI or CESI/CESI)
Local project work

Note

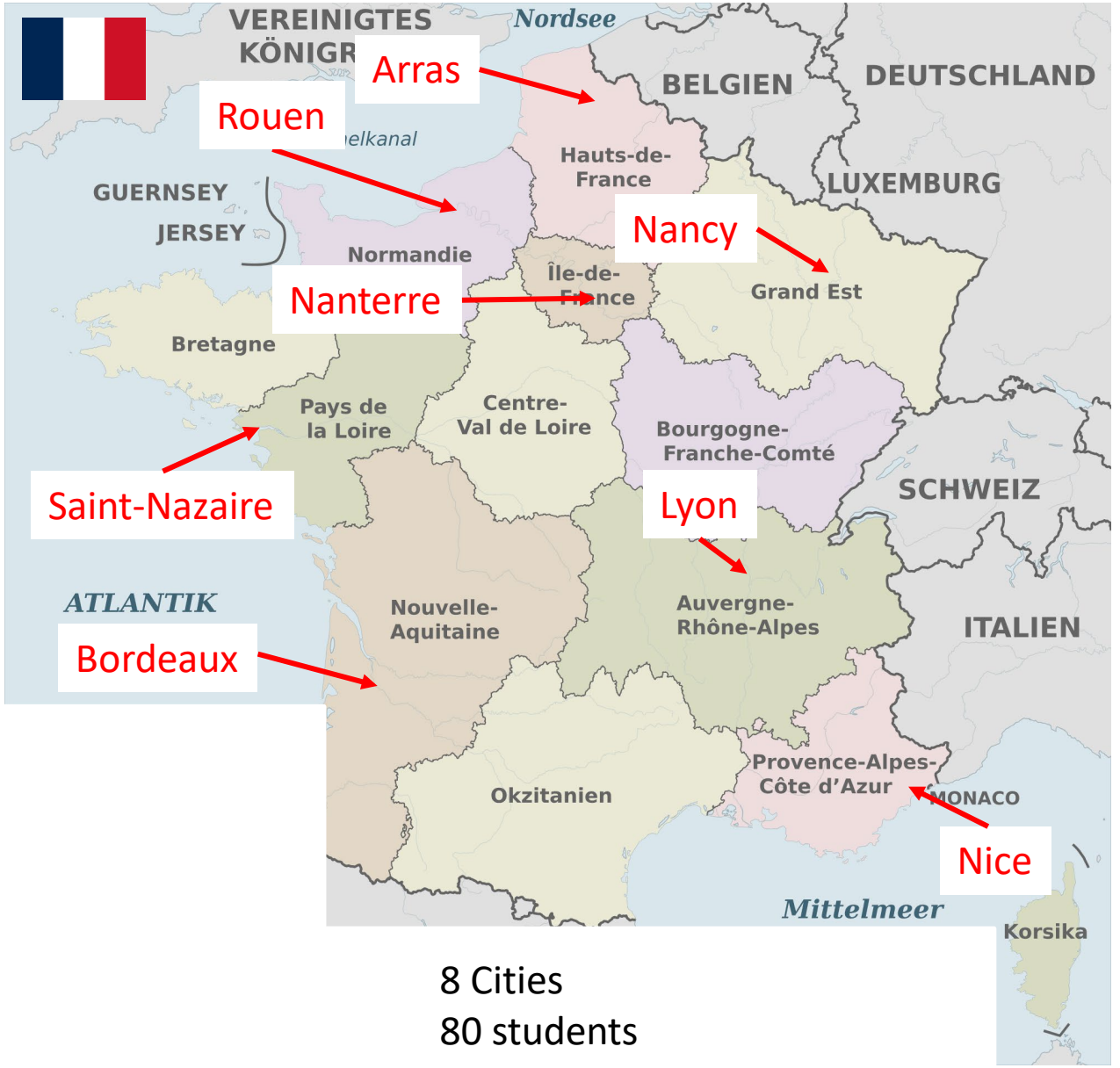
This is a completely new course type and a challenging environment!

Please be patient and help us to identify difficulties and barriers.
We will do our best to get them out of the way during the course.
The key success factor will be **COMMUNICATION**

However, this project will still require a high level of independent working from students.

Locations and Numbers

1 City
30 students



8 Cities
80 students

Enroled Students THM (11.4.2024)

We will have an enrolment meeting on friday 12.4.2024 at 11.30 a.m. There will be a couple more students to be added.

No.	Prename	Surname	Group
1	Mounika	Bandhamravuri	THM_Students
2	Aaron	Beckmann	THM_Students
3	Anilkumar Manubhai	Chhotala	THM_Students
4	Robin	Dietzel	THM_Students
5	Felix	Dirks	THM_Students
6	Gabin Marius	DONGMO TEGUETSA	THM_Students
7	Botond	Fekete	THM_Students
8	Steven	Hölzer	THM_Students
9	Edmund	Jochim	THM_Students
10	Linta	Joseph	THM_Students
11	Lionel	Kamgaing Fokam	THM_Students
12	Maurice	Katzer	THM_Students
13	Mertali	Köprülü	THM_Students
14	Jonas	Krätschmer	THM_Students
15	Miriam	Kress	THM_Students
16	Philip	Malkmus	THM_Students
17	Robin	Mkrtschjan	THM_Students
18	Mohammed	Salman	THM_Students
19	Jessica	Simmons	THM_Students
20	Devraj Ajaykumar	Solanki	THM_Students
21	Carina-Oana	Takacs	THM_Students
22	Brend Arthur	Tapun Sandjeu	THM_Students
23	Janis	von Collas	THM_Students
24	Steven	Walther	THM_Students
25	Gebremichael Teklemariam	Welegergs	THM_Students

To be completed

Focus 1: International Collaboration and Project Work

Related Modules

- **EIT-F-601** "International Project Work and modern working methods" (Bachelor) (4 SWS, 4 CrP, 120 h)
- **M1201** “Case Study in Control, Computer and Communications Engineering with Project Management (CSPM)” (CCCE Master) (5 SWS, 9 CrP, 225 h, partial)

- Within their teams, these students should focus on all aspects of organizing their teams and communicating within and outside of their team. They should evaluate and use modern project management and modern working methods, virtual collaboration and communication tools. They should reflect on things that work and ideas that do not work, difficulties/barriers and best practices and try to continuously optimize the work of the virtual team.

- All these insights should be documented in the **project management part of the report** and be presented in the final presentation.

- There should be up to 2 students per team focusing on this topic.

Focus 2: Problem solving in an international environment

Related Module

- **EIT-F-600** "Projektseminar (International Project)" (Bachelor) (6 SWS, 4 CrP, 180 h)

- Within their teams, these students should focus and work on the solution of the two project tasks. They should interact with those students who do the project management, but their main task is to bring the project content forward. They will have to train themselves in Python and microgrid systems as well as involve themselves with the realization of the solar tracker. For this they will have to use the THM Makerspace in Friedberg to realize the necessary parts. They must however not do this alone, but together with the French students, who they will have to collaborate with.

- All these activities should be documented in the **project part of the report** and be presented in the final presentation.

- There should be up to 3 students per team focusing on this topic.

Moodle Course - Enrolment

Attention: This is a course in the external THM Moodle system. Therefore, you must first register in the external Moodle and then dial into the course.

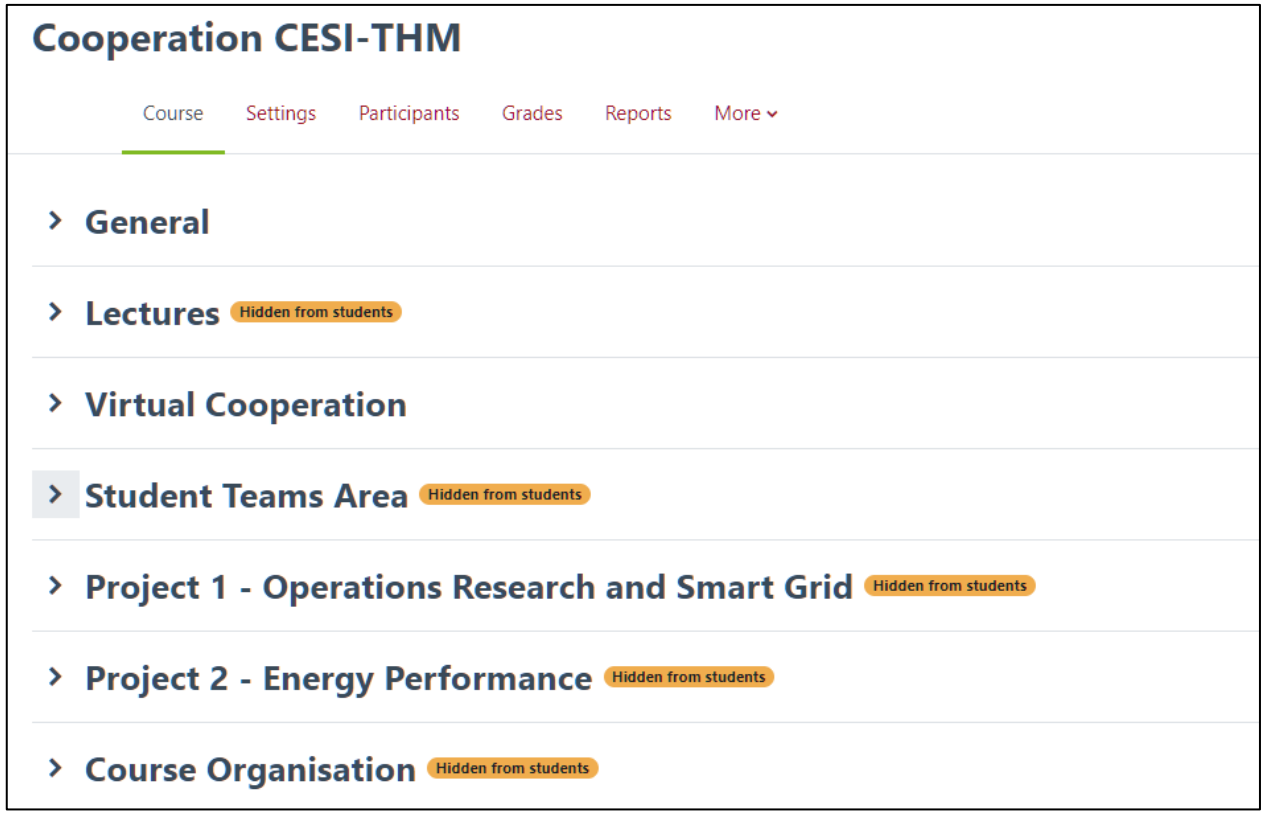
Step 1:
Register on THM's external Moodle platform using the following link: https://moodle-ext.thm.de/login/index.php
(You can change the language at the bottom of the page).
Then go to “Use your user account at CAS” (green bar). Log in with your THM account.

Step 2:
Go to the Homepage (Startseite) (at the top next to the THM logo).
On the Homepage, scroll down to the “Search Courses” box

Enter “**CESI-THM**” in the field. The course “Cooperation CESI-THM” is now available.
Register for this course with the password “**CESITHM24**”.

Moodle Course Content

- Organisational Information
- Group Assignment
- Lecture videos and notes
- Platform for Data Exchange with french students
- Information about the projects
- Upload of reports for examination



Schedule 2 (weekly)

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8.00 - 9.30				Consultation	
9.45 - 11.15				Consultation	
11.30 - 13.00				Consultation	Presence Time
13.00 - 14.00				Consultation	Presence Time
14.00 - 15.30					Presence Time
15.40 - 17.10					
17.20 - 18.50					

Time for Collaboration (self organized)

Time for Consultation (Prof. Arndt)

Presence Time (Lectures, Plenum, Collaboration)

Schedule 1 (overall)

Kick Off 

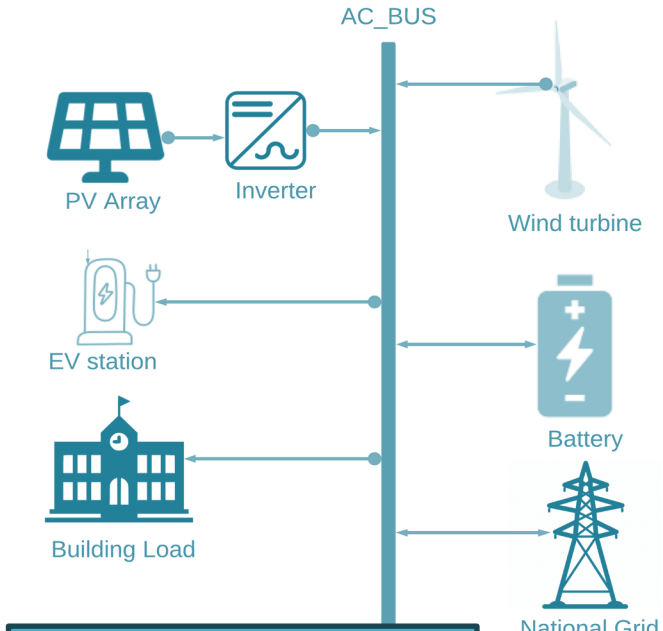
Date	Joint Activity	Activity at THM	Activity at CESI	Information
Friday 12.4.2024	none	Start of the course at THM, Zoom Meeting on course organization. **Meeting ID: 68648506388** **Passcode: 529002** **Link to Zoom Meeting**		
Friday 19.4.2024	none	Lecture on practical project management **Lecture hall B1 1.01, Friedberg**		
Friday 26.4.2024	1. **Lecture on Virtual collaboration and Tools** (THM, Prof. Arndt, recorded), open to THM and CESI students 2. Get to know with CESI students		CESI students may join the online lecture at THM	Start at 11.30 a.m. online using the lecture Zoom link below
Friday 3.5.2024	1. Forming of groups. Socialising activity for the groups. 2. **Introduction to project part 1** 3. **Lecture on Operations Research** (CESI, recorded). 4. Python workshop.			11.30 to 12.30 and 13.30 to 15.30 Start at 11.30 a.m. online using the lecture Zoom link below
Tuesday 7.5.2024	1. **Lecture on Smart Grid and Smart Metering** (CESI, recorded) 2. Collaboration time	THM students can join the CESI lecture if possible. Due to a time conflict this lecture is on a tuesday.		Start at 11.30 a.m. online using the lecture Zoom link below
Friday 10.5.2024	1. **Lecture on Smart Buildings and Smart Cities** (THM, Prof. Arndt, recorded) 2. Collaboration time		CESI is closed, students can anyway join the online lecture at THM.	11.30 to 13.00 and 14.00 to 15.30 Start at 11.30 a.m. online using the lecture Zoom link below
Friday 17.5.2024	Collaboration time			
Friday 24.5.2024	1. **Lecture on Intercultural project work** (THM, Prof. Arndt, recorded). 2. Collaboration time			Start at 11.30 a.m. online using the lecture Zoom link below
Friday 31.5.2024	1. **Lecture on photovoltaic energy** (CESI, recorded). 2. Collaboration time	~~Upload of project report part 1~~		Start at 11.30 a.m. online using the lecture Zoom link below
Friday 7.6.2024	1. **Introduction to the project part 2** 2. Collaboration time			Start at 11.30 a.m. online using the lecture Zoom link below
Friday 14.6.2024	1. Collaboration time			
Friday 21.6.2024	1. Collaboration time			
Friday 28.6.2024	1. Presentation and defense of the project part 1 and 2 in a plenary meeting	~~Upload of project report part 2~~		Start at 11.30 a.m. online using the lecture Zoom link below
Friday 5.7.2024	none	Course feedback at THM, End of course		
Friday 12.7.2024	none	none		

Project 1

Optimization of a microgrid management based on data from

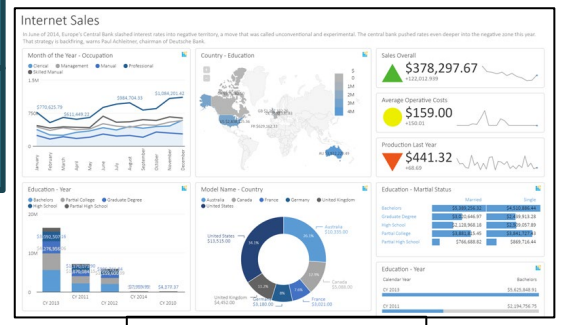
- photovoltaic generators
- energy storage
- grid energy costs
- load data (one building)

Using the programming language python, data should be analyzed and a simulation of a microgrid management should be built. This simulation should be optimized for energy costs step by step.



Energy Management System

Monitoring interface using python



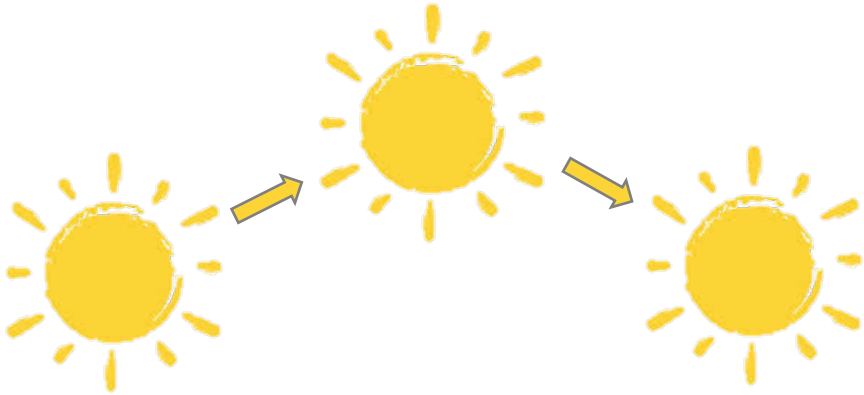
Data Analysis

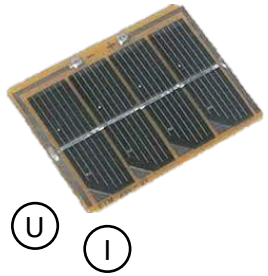
A detailled description of the project will follow in the lecture 3.5.

Project 2

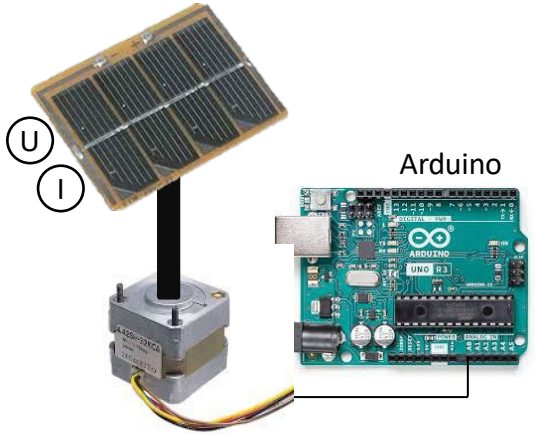
Realization and investigation of a photovoltaic tracking installation.

- 3D printing of the mechanics
- Building an electronic circuit for tracking
- Programming an Arduino for sun tracking
- Carrying our several experiments with the tracking installation





Measurement 1



Measurement 2

A detailled description of the project will follow in the lecture 7.6.

In addition there will be a weekly meeting with the french teachers

Support

We will provide several ways of support for you.

Microlectures

A list of lectures accompanying the collaboration project is being published in moodle. Additional lecture topics can be added if they seem to be necessary.

General Consultation Hour (weekly)

There will be a weekly general consultation hour offered by Prof. Penirschke and Prof. Arndt. This hour is open and everybody can participate and discuss issues and pose questions.

Team Meeting (bi-weekly)

There will be a bi-weekly meeting between the supervisor and the teams. Here the teams should report their progress and their difficulties. The supervisor will try to help with issues. Supervisors are Prof. Arndt and Prof. Penirschke

Tutoring

A student who speaks fluently french will be availabe to support teams, if language becomes an issue. She can convey between the french and german participants.

Examination 1/2

The examination will be based on

- the team meetings with the supervisor,
- a project management report, and/or
- a project content report
- presentation of the project progress and results

Due to the fact, that there will be Bachelor and Master students in the same course, the examination criteria will vary between Bachelor and Master level. They will be published for both levels within 2-3 weeks (Moodle).

The requirements concerning the reports will be published as well in Moodle within 2-3 weeks.

The reports must be uploaded as pdf documents in Moodle until 28.6.2024. The presentation will take place on 28.6.2024.

Examination 2/2

EIT-F-600: The result of the collaboration project will account for 100% of the total mark of this module.

EIT-F-601: The result of the collaboration project will account for 100% of the total mark of this module.

M1201: The result of the collaboration project will account for 20% of the total mark of this module. Other examinations will complete the mark.

Preparation of the Kick-Off Meeting

During the kick-off meeting and after it, there will be a phase of getting to know the other team members. We will provide a first socializing activity during the kick-off. Teams should initiate another team building activity during the first two weeks of cooperation.

Examples are:

- online or offline (video) campus tour with the other team
- organization of a gaming evening together
- organisation of a joint cooking event with the french students
- organisation of a quiz evening

Those who have focus 1. Think about what and how to organize a socializing event with the french students.