





Welcome to the exercise session !

EPFL Home Dashboard My courses

  JB  E



> Basics of mobile robotics

> 18 September ... **This week**

> 25 September - 1 October

> 2 October - 8 October

> 9 October - 15 October

> 16 October - 22 October

> 23 October - 29 October

> 30 October - 5 November

> 6 November - 12 November

> 13 November - 19 Novem...

> 20 November - 26 Novem...

> 27 November - 3 December

> 4 December - 10 December


> 11 December - 17 Decem...


> 18 December - 24 Decem...


> Exam

Microengineering (MT) / MT - Master

Basics of mobile robotics



Course Settings Participants Grades Reports More 

 Basics of mobile robotics

Collap

Objective

The objective of this course is to provide the basics required to develop autonomous mobile robots. Both hardware (energy, locomotion, sensor, embedded electronics, system integration) and software (control architectures, control theory, localization, trajectory planning, high-level control) aspects will be tackled. Theory will be deepened by exercises and application to simulated robots. Case studies will allow to make a more concrete.

Course organization

This course will start in hybrid mode with:

- **lecture** given in **CE2** (Tuesday from 15:15 to 17:00)
- zoom live transmission of the lecture
- recording of the course
- **exercises** in **Polydôme**
- both local and remote answer to questions

The recording of the lecture will be made available on moodle, like the rest of material.

Exercises and project are made in groups and are based on a Thymio robot. Each student will be able to borrow one.

For the question



During the **session exercise**:

Open shared **Google form** (on Moodle)
→ Wait an assistant

The screenshot shows the EPFL Moodle interface. At the top, the EPFL logo is on the left, and navigation links for Home, Dashboard, and My courses are on the right. A user profile for 'Student' is also visible. A sidebar on the left contains a list of course resources: Basics of mobile robotics (expanded), Announcements, Forum for students, Thymio / tdm client forum, Resources for the course, and Robotacademy (online edu...). The main content area is titled 'Links to ask questions during the exercise sessions' and contains five items: 'Plan of Polydome places', 'Form to ask for assistants (access with EPFL account) - for the entire semester (updated 12/09/2023)', 'Waiting list of the questions (access with EPFL account) - for the entire semester (updated 12/09/2023)', 'Link to discord server (updated 12/09/2023)', and 'Available from 10 September 2024, 7:00 PM'. A large red arrow points from the text 'Open shared Google form (on Moodle)' to the 'Waiting list of the questions' link in the sidebar.

For the question

During the **session exercise**:

Open shared **Google form** (on Moodle)
→ Wait an assistant

Request for an assistant

Small form to request the help of an assistant during the practical sessions

jerome.brender@epfl.ch [Changer de compte](#)



* Indique une question obligatoire

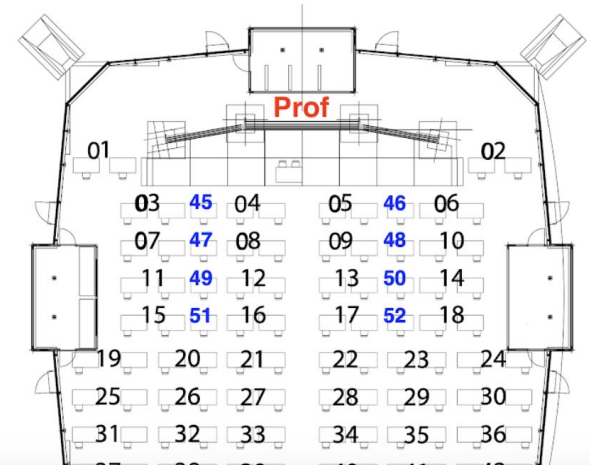
E-mail *

☐ Enregistrer jerome.brender@epfl.ch comme adresse e-mail à joindre à ma réponse

Small description of your problem/question (helps to choose the assistant :-)) *

Votre réponse

Nbr of physical place where to join you (or zoom link) *



For the question

During the **session exercise**:

Open shared [Google form](#) (on Moodle)
→ Wait an assistant




Send on [Discord](#) for real-time
→ Everyone can answer

Outside of the session exercise

Post on [FORUM](#) moodle
→ Help everyone, no stupid question go on !



Timeline for exercises

Week 1	Components of a mobile robot (get a Thymio)	Week 7 	Uncertainties (using chatbot)
Week 2 	Vision (using chatbot)	Week 8	Uncertainties
Week 3	Vision & ANN & ML	Week 9	Localisation 2 + Project week 1 (+ team building)
Week 4	Navigation	Week 10	Project week 2
Week 5 	Navigation (using chatbot)	Week 11	Project week 3 + group work check
Week 6	Localisation 1	Week 12	Project week 4 + Project presentations
Week vac	Vacation	Week 13/14	Project presentations + Conclusion + Dry Exam


Experimentation GPT during 3 sessions



Interactive exercise session with ChatGPT!

Experiment with Us!

- **Interactive Quizzes:** Engage with the material
- **Doing the exercises** at the same time !


 **Earn 15 CHF:** Each participant who participate and attend the **three** interactive (with survey) sessions will receive 15 CHF.


Session Dates during the course exercises :

- 0) End of this week initial survey (5 min)
- 1) September 17th (17h15-19h00)
- 2) October 8th (17h15-19h00)
- 3) October 29th (17h15-19h00)





Exercise session resources

 URL

Experiment Initial survey 

Hidden from students

 FILE

Exercise Session 1 Intro-slides (updated 19/09/2023) 

Hidden from students

Take a Thymio Today



1) Do the **queue**, and **left** to us your **camipro** (student card)



2) Go on **Moodle**, fill the form to borrow a Thymio

Links to borrow a robot / camera

URL
Link to borrow a robot (updated 10/09/2024)

3) Once you have **send the form**, come back to take back your camipro

A



B



C



Installing Python & Jupyter Notebooks

Basics of Mobile Robotics 2023-2024

A dark blue diagonal gradient bar that starts from the bottom left corner and extends towards the top right corner, covering the lower half of the slide.

Installations

Python

If you don't have a version on python 3 installed on your computer : go to <https://www.python.org/downloads/> and download the latest stable release of python 3 for your OS.

⚠ Don't forget to tick ☒ "Add Python 3.8 to PATH"

Pip

If pip was not installed at the same time as python, download <https://bootstrap.pypa.io/get-pip.py> and run in the terminal in the folder where you have downloaded the file : **python get-pip.py**

JupyterLab

Once pip has been installed, run in the terminal : **pip3 install jupyterlab**

JupyterLab Extension for Data Collection

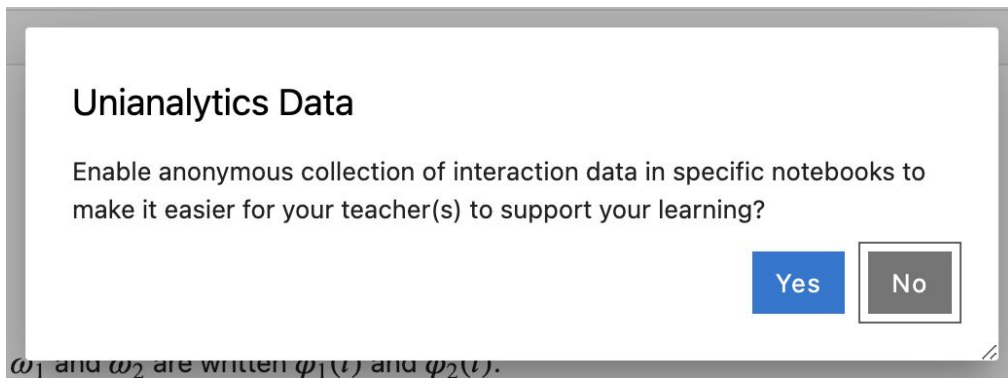
Once JupyterLab has been installed, run in the terminal : **pip3 install jupyterlab-unianalytics-telemetry**



Opening the first notebook

Once you have installed python and JupyterLab :

1. In the terminal navigate to the folder where the notebook is located using `cd`
2. Type `jupyter lab` in the terminal
3. Double click on the file of interest in the jupyter interface to open the notebook
4. Click “Yes” to enable data collection the first time you open the notebook



Only if you consent,
not compulsory

Exercise session 1

All the files you will need are located on [moodle](#).

1. You should have installed everything, following the message in the announcements on moodle
2. Start with the notebook **Exercises Week 1 - Locomotion, Sensors and Architectures.ipynb**
3. When you are done you are encouraged to go over the notebook **Introduction to Python and Jupyter Notebooks.ipynb**
4. When you get access to your Thymio, you should go over the notebook **Control your Thymio in Python.ipynb**

Final Remarks

1. Please do the exercise !

- The purpose of these sessions is to enhance your skills and understanding. Engage actively in the exercises !

2. Handle Robot Thymio Carefully

- These robots are sensitive and expensive equipment. Handle them with care.

3. Use Chatbots Responsibly

- If you use a chatbot, use it to LEARN, not to solve the exercise directly (we will look together soon).

4. Academic Integrity (especially for the project)

- You are in the Master's program at EPFL; we expect the highest level of integrity from you.
- Complete the work on your own or with your team.
- Cite all your references, libraries etc..



Warning: Academic dishonesty is easily detectable and is embarrassing for both you and us !.