ACADEMY
TU BERLIN

2 WEEKS · IN PERSON · ENGLISH

# Sustainable Manufacturing in Urban Settings

DATES

## New dates in preparation

Date, price and enrollment deadline appear on the course page as soon as they are confirmed.

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|---|---|---|---|
| FORMAT | In person | LANGUAGE | English |
| DURATION | 2 weeks | LOCATION | Campus of the TU Berlin |
| CERTIFICATE | TU Berlin Summer School Certificate of Attainment including 3 ECTS | | |

## Course Overview

The course will provide students with both hard skills and soft skills necessary to use a FabLab and get an understanding of the concepts of urban factories, “low-tech” design and open source hardware.

The course is built on a theoretical part presenting the different aspects of urban manufacturing, digital design, distributed manufacturing, hardware project development and documentation, and the “low-tech” approach, and a practical part where students will work in groups to develop open source hardware projects, using digital manufacturing tools (3D printer, laser cutter, CNC milling machines) to create objects. The quality of the documentation of their practical work will be examined.

## Course Content

**KURSINHALT**

In this two-weeks course, students will have a mix of theoretical presentation and feedback (2-3h, but for the first day 4h), before being asked to apply that knowledge to one project during the practical part (about 5h per day). The practical part will be documented thoroughly and continuously on a Git Forge. The Git repository will be used to note the course.

- Open source hardware development and documentation
- Using Git and Git Forges
- Low-tech movement
- Community building and inclusivity
- Using 3D printers and laser cutter
- CNC milling machine -1
- CNC milling machine -2
- OSH and business models
- Distributed manufacturing
- Urban manufacturing
- Technical report

## Learning Goals

Technical knowledge

- using Git and Git forges
- using digital manufacturing machines
- applying agile project management practices

Theoretical knowledge

- understanding the strength and limitations of urban and distributed manufacturing
- understanding the concept of open source hardware and relevant development practices
- being introduced to the “low-tech” movement

Social knowledge

- being able to work as a team on a self-developed hardware project
- being able to provide and get help or feedback
- understanding how technology, creative spaces and communities can be more inclusive

## Participation & Requirements

| | |
|---|---|
| TARGET GROUP | We hope to gather an heterogenous group of students bringing different interests and background. Backgrounds in engineering, industrial engineering and computer science will be useful. Yet, other backgrounds such as economics and business studies, natural sciences, social sciences, and many more are equally encouraged. |
| PRIOR KNOWLEDGE | Participants must meet the following requirements:<br>• B2 level English, or equivalent<br>• at least one year of university experience |
| CERTIFICATE DETAILS | Upon successful participation, you will receive a certificate of participation from TU Berlin. |

## Instructors

### Dr. rer. nat. Julien Colomb

Dr. rer. nat. Julien Colomb is a former neuro-geneticist (10 years of research on fruit fly memory and behavior) and has been exploiting his interest in open research, working on reproducible data analysis and research data management. He has been working on ways (technical and social) to implement the principles of FAIR and open data in the lab workflow and ways to foster collaboration between researchers, notably through the GIN-Tonic projects.

Most recently, he moved to the TU Berlin to work full time on FAIR, open source research Hardware (www.openmake.de) and local, urban manufacturing (https://lauds.eu) projects. This combines his interest in project management in collaborative research projects, using data science techniques.

### Dr.-Ing. Robert Mies

Dr.-Ing. Robert Mies is a research associate at TU Berlin, where he studied industrial engineering and completed his D.Sc. in Engineering (Dr.-Ing.). His research is on the intersection of industrial engineering, open source hardware development and open and distributed manufacturing.

His current projects are LAUDS Local Accessible Urban Digital and Sustainable Factories (Horizon Europe), Open.Make – Implementing FAIR and open hardware (Berlin University Alliance) and Fab City (dtec.bw). Since 2025, he also runs the Making Lab at the Central Library TU/UDK and the BUA Mobile Lab.

QUESTIONS ABOUT THIS COURSE?

# Register Now

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QR code to the course page

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