



# Resource-efficient 3D Printing

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# Agenda

- Why resource-efficient 3D printing?
- Module structure
  - Digital Content Library
  - Discord
  - Practical work
- Learning Goals and Evaluation
- Questions

# 7 Ways 3D Printing Helps You Go Green

## Make Parts Locally

3D printers can fit in your office so you can make parts, prototypes, and products locally, as opposed to shipping them from a far away. The result is less environmental impact from planes, ships, and trucks.



## Smaller, Quieter Factories

One 3D printer can replace several pieces of traditional manufacturing equipment because it can print a wide variety of parts in a wide variety of materials. Less equipment makes for smaller, quieter factories and fewer emissions.



## Repairability & Spare Parts

3D printers can quickly and cheaply make repair parts for unique or out-of-production equipment, keeping old machines and vehicles off the scrap heap and eliminating the need for more raw materials and energy to manufacture new machines.



## More Efficient Design

3D printers can make parts with shapes and features unachievable with other manufacturing methods. You can redesign your part to make it more efficient and use less material. Products that were once made of multiple parts can now be printed as one thus reducing material, time, and labor.



## Streamline Manufacturing

3D printers require fewer tools and processes than traditional manufacturing thus eliminating a lot of labor, equipment, and energy. 3D printing is often faster.



## Less Raw Material

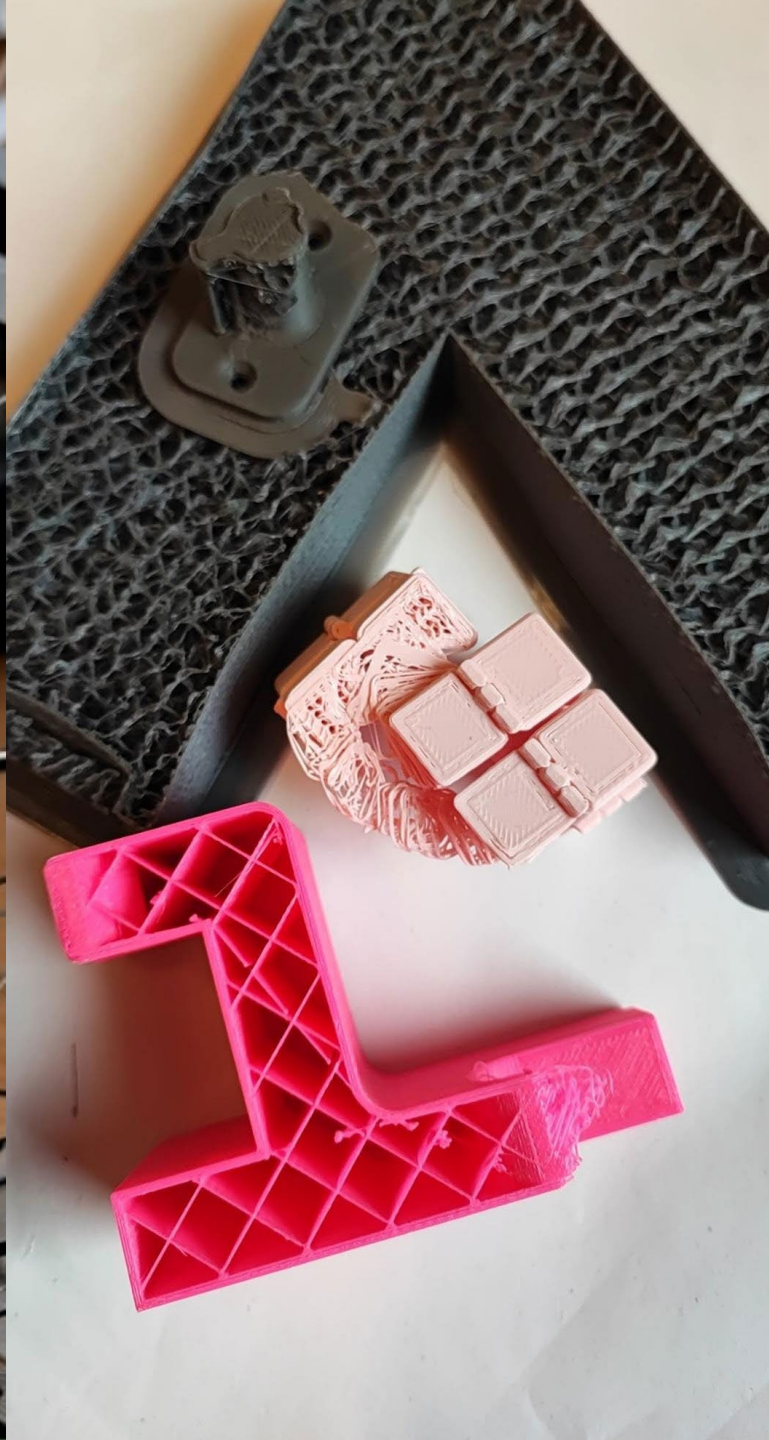
3D printers make parts with only the material needed and minimal support material instead of carving a part from a block of metal, wood, or plastic, which produces waste.



## Eliminate Inventory

With 3D printers, you can print on demand or print small batches instead of having a warehouse of spare and overstock parts, many of which may never be needed.







# Module structure

- The module will be offered during the time period: **13. march until 23.june 2023**
- **Digital Content Library**
- **Discord as Community Platform**

# Digital Content Library



[About Project](#) [Project Consortium](#) [Outputs](#) [Contact](#) [Logout](#)

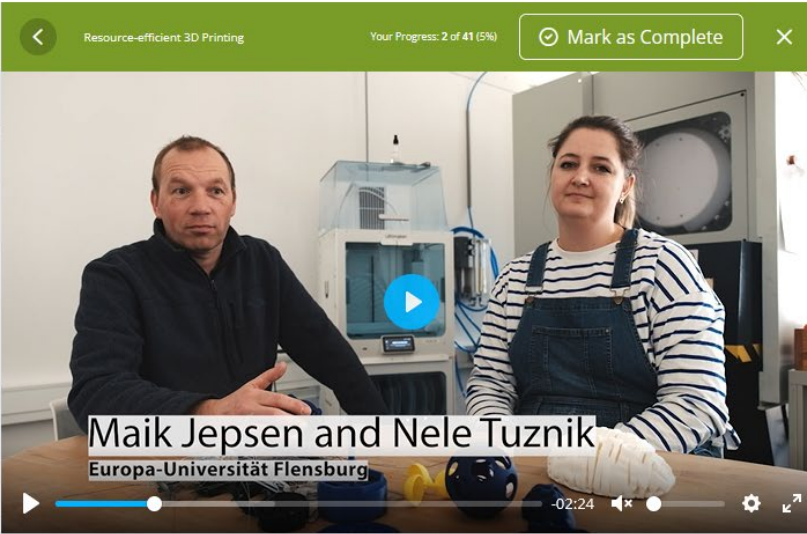
Course Content

1. Introduction	0/5	▲
▶ Welcome!	02:59	○
▶ Learning goals	00:00	○
▶ Timeframe and Organisation	00:00	○
▶ Evaluation of the module	00:00	○
▶ Sign up for this module on Discord	00:00	○
2. How to get started with 3D Printing?	2/4	>
3. Why is sustainability important?	0/2	>
4. 3D Printing is not rocket science	0/3	>
5. How to include sustainability in your 3D-printing process?	0/2	>
6.1. How to create a 3D-model?	0/5	>
6.2. How to get a 3D model in other ways?	0/2	>

Resource-efficient 3D Printing

Your Progress: 2 of 41 (5%)

Mark as Complete



About Lesson

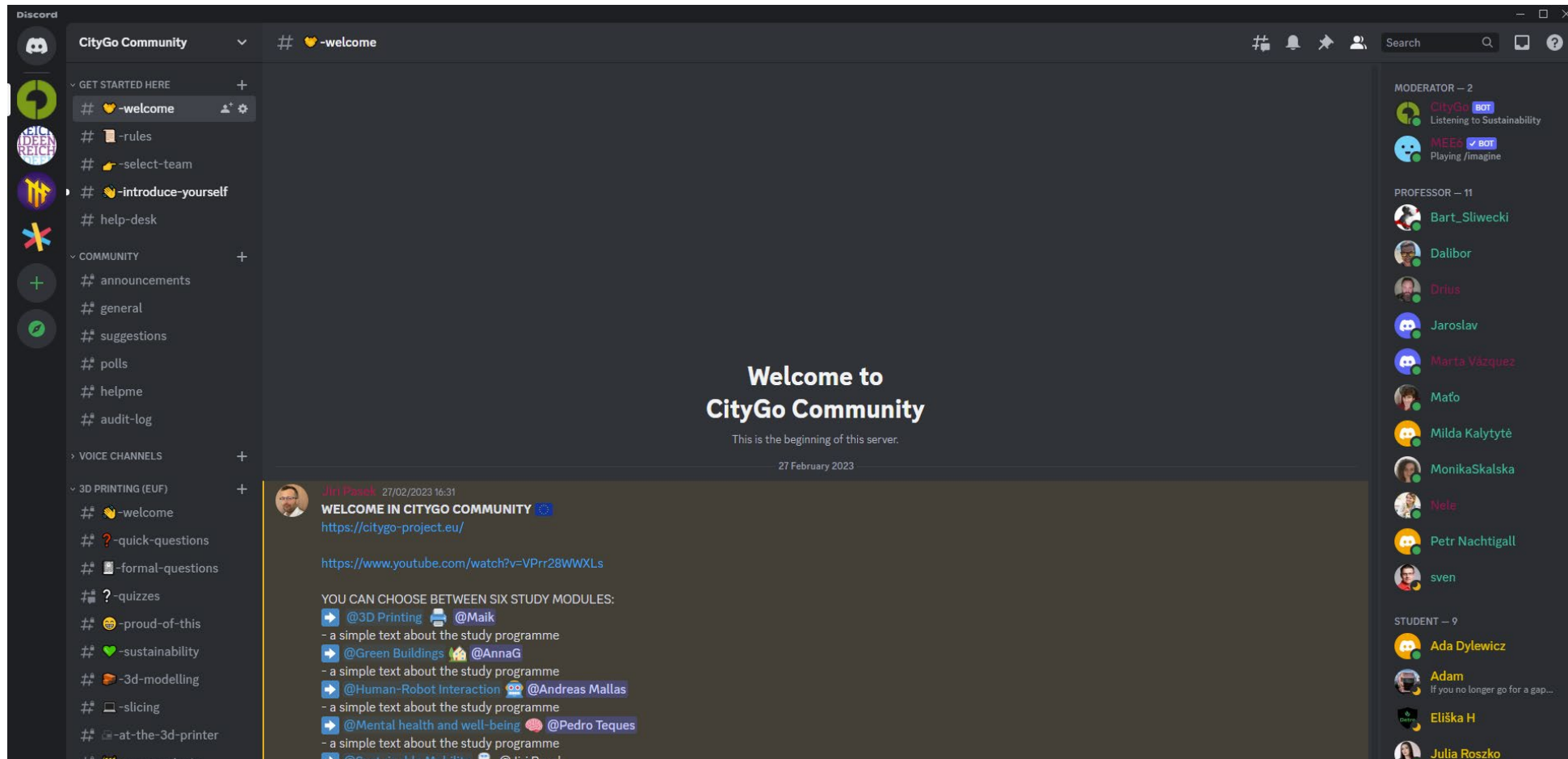
Welcome!

In this section you will learn about the structure of this module, learning outcomes, the time schedule and organizational information. In this section you will also be introduced to our collaboration platform/ online community discord. Further would we like to know a little bit more about you and your motivation to join this online learning community.

Asynchronous learning material with videos, literature and quizzes

Prompt to share results on Discord

# Discord as Community Platform

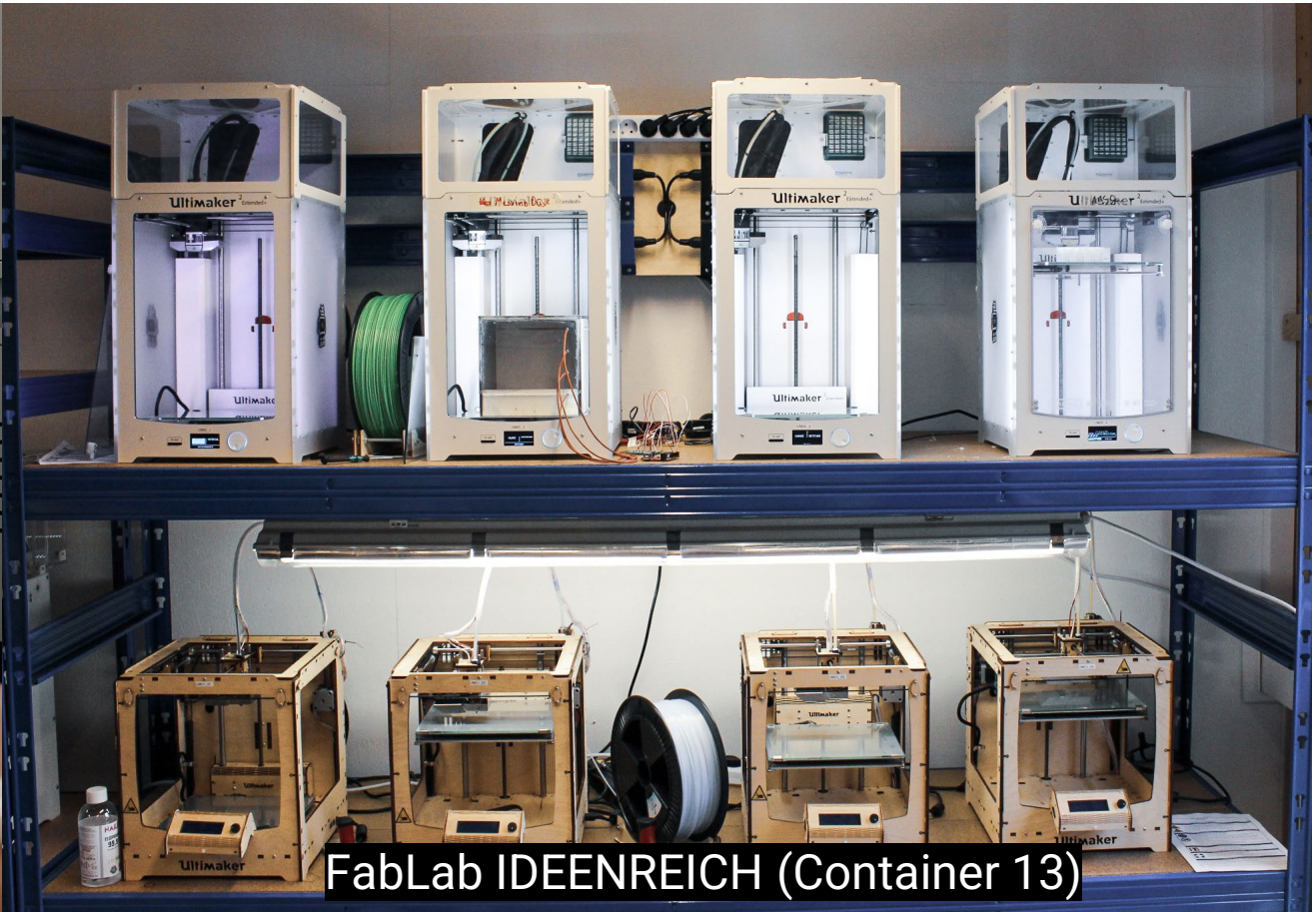




# Module structure

- The module will be offered during the time period: **13. march until 23.june 2023**
- During this time, you can regularly contact Nele on Discord if you have any questions
- **Every Friday between 10-12** Nele will be available on Discord to talk about the module. *#Get-Together*
- You can work in the FabLab everyday between 10-11:30 AM or in the OpenLab on Wednesday and Thursday from 5 to 9 PM.

# Practical work





# Learning Goals

After completion you...

- can explain the role of 3D printing in relation to sustainability.
- can handle a FDM 3D printer in a professional way.
- know and can explain different 3D printing technologies.
- know and can explain different aspects within the sustainable 3d-printing process.
- know about different CAD software and can create simple 3D models within TinkerCAD.
- are able complete a sustainable 3D printing process from 3D modelling, slicing to 3d-printing.
- can judge the different aspects of sustainable 3D printing in terms of resource-efficiency.

# Evaluation

for the assessment the following aspects are taken into account:

- self-chosen project on sustainable 3D printing
- quizzes on the Digital Content Library
- participation and collaboration on Discord

**There are two options for the deadlines:**

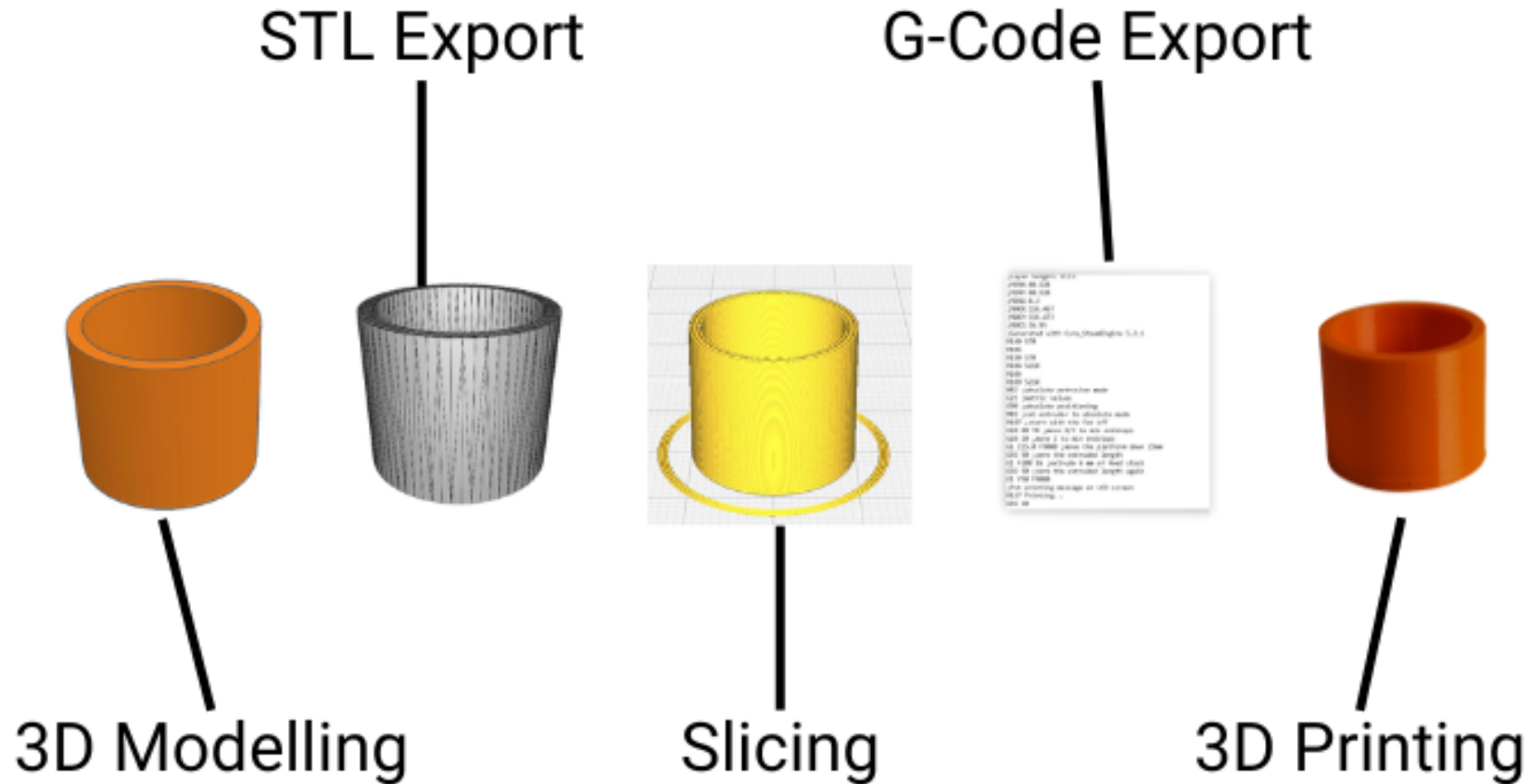
**early hand-in**

- project report hand-in until 15.6.
- project defence 23.6

**late hand-in**

- project report hand-in until 15.8

# 3D Printing Process





The study material was created within the project Challenge-Oriented Collaborative Online Communities in the Paradigm of Sustainable City (Project No: 2021-1-LT01-KA220-HED-000023277)

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