# 0 STUDENT FAB ACADEMY BOOTCAMP 2125

#### **STUDENT BOOTCAMP 2025**

## Luciana Asinari

Global Coordination team of Fab Academy



Fab Lab Barcelona

#### **STUDENT BOOTCAMP 2025**

## Pablo Nuñez Fab Academy alumni



Fab Lab León

# **Student** Bootcamp

A Friendly Guide for Your Fab Academy Journey

MONDAY

GENERAL TIPS TUESDAY

CONTENT AND FINAL PROJECT

### YOU ARE ABOUT TO ENTER AN INCREDIBLE NETWORK

FAB ACADEMY

## SPEAK "FRIEND" AND ENTER

#### **FAB ACADEMY IN NUMBERS**

# **16 EDITIONS 1578 GRADUATES SINCE 2008** 82 NODES THIS YEAR

#### **FAB ACADEMY IN EMOTIONS**

# I've seen things you people wouldn't believe.

#### **FAB 24 MEXICO**



## **FAB X EVENTS**

#### Past events

FAB 24 MÉXICO	FAB	FAB 23 BHUTAN	FAB
The 2024 International Fab Lab Conference in Puebla, México under the theme Fabricating Equity.		The 2023 International Fab Lab Conference in Thimphu, Bhutan under the theme #Designing Resilient Futures.	
BALI FAB FEST	FAB	FAB16	FAB
The 2022 International Fab Lab Conference in Bali (Indonesia) and Fab City Summit under the theme #Designing Emergent Realities.		The 2021 Online International Fab Lab Conference in Montréal (Canada) and the Fab City Summit online under the theme #Fabricating the Commons.	
FABXLIVE	FAB	FAB15	6
The 2020 Online International Fab Lab Conference		The 2019 International Fab Lab Conference in El Gouna, Egypt. Theme: Collectivly Independent	
FAB14	FAB14+	FAB13	FAB13



# **FAB25 CZECHIA**

### JULY 4-11, 2025 BRNO & PRAGUE

#### FAB ACADEMY IN EMOTIONS

# BE PREPARE TO MEET AMAZING PEOPLE

# A NETWORK OF RESTLESS MINDS READY TO HELP YOU IN YOUR JOURNEY

## ¿Where are you from?



https://www.menti.com/alje7us8uk3n

#### **STUDENT BOOTCAMP 2025**

# Adrián Torres

#### Fab Academy guru

## Fab Lab León



# **Student Bootcamp** A Friendly Guide for Your Fab Academy Journey

# FAB ACADEMY

# FAB ACADEMY

Α

## **GENERAL TIPS**

## **IMPORTANT LINKS**

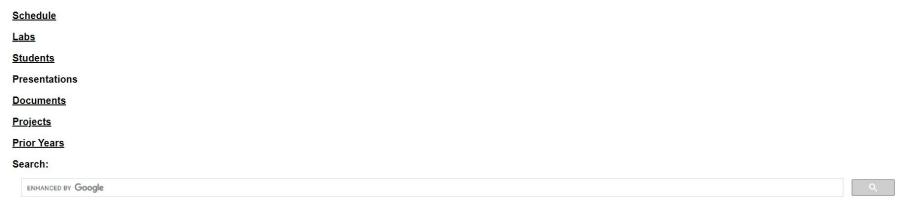
- Fab Academy 2025
- <u>Schedule</u>
- Inventory
- <u>Assessment Nueval</u>
- <u>Tutorials</u>
- Fab Academy Student Agreement
- <u>Projects</u>
- Programmers
- Image compression
- <u>Video compression</u>
- <u>Videos of Reviews, classes, recitations</u>



### https://fabacademy.org/2025/



The Fab Academy 2022

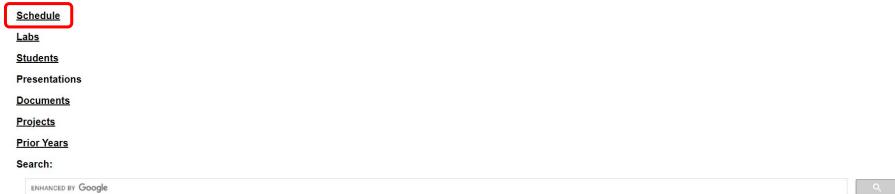




### https://fabacademy.org/2025/



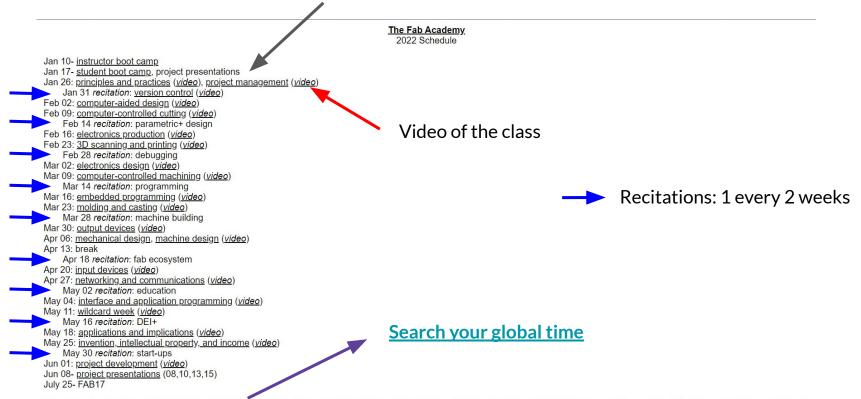
The Fab Academy 2022





### Schedule

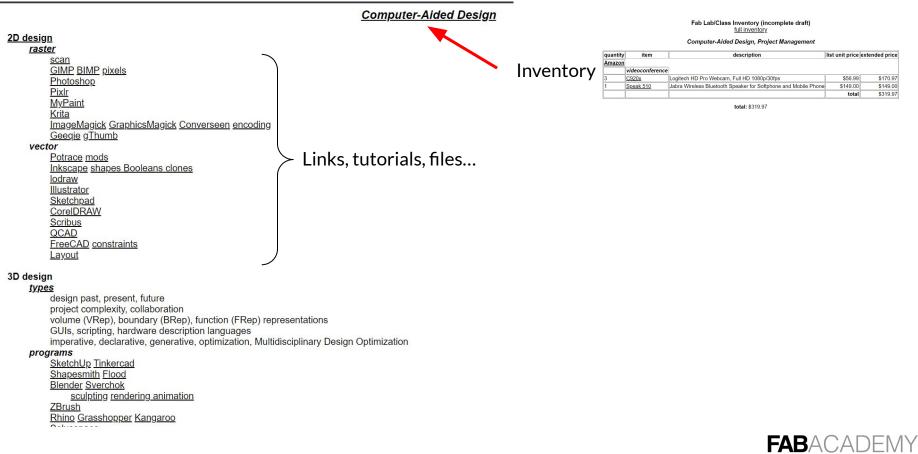
#### Info of the class (links, tutorials...)



Global lectures happen on Wednesdays at 9:00 on the US East Coast (ranging from 6:00 on the West Coast to 23:00 in Japan). Recitations happen on Mondays at the same hour, and global lab sections and regional reviews are scheduled throughout the week.



#### Class



#### Assignments

#### assignment

model (raster, vector, 2D, 3D, render, animate, simulate, ...) a possible final project, compress your images and videos, and post a description with your design files on your class page

#### assignment

group assignment:

- test the design rules for your 3D printer(s)

individual assignment:

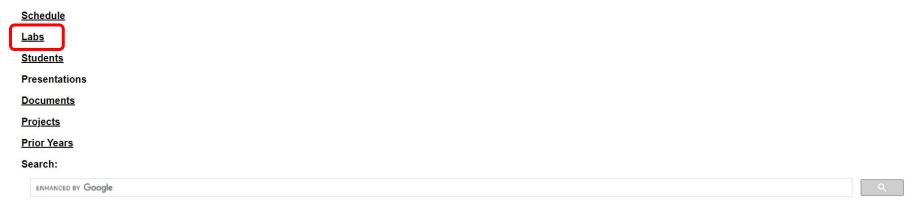
- design and 3D print an object (small, few cm<sup>3</sup>, limited by printer time) that could not be made subtractively
- 3D scan an object (and optionally print it)



### https://fabacademy.org/2025/



The Fab Academy 2022





#### Labs



Aalto Fablab (Espoo, Finland)

AgriLab (Beauvais, France)

Al Jazri Lab (Sharjah, UAE)

Fab Lab Amsterdam - Waag (Amsterdam, Netherlands)

Fab Lab Bangalore (Bangalore, India)

Fab Lab Barcelona (Barcelona, Spain)

Fab Lab Benfica (Lisboa, Portugal)

Berytech Fab Lab (Beirut, Lebanon)

BOLD Lab Seoul (Seoul, Korea)

Fab Lab Bhutan (Thimpu, Bhutan)

C. Entrination Laboratory (Chanady, China)

Websites of the different Fab Labs: Student website, Group Assignments, Machine...



### https://fabacademy.org/2025/



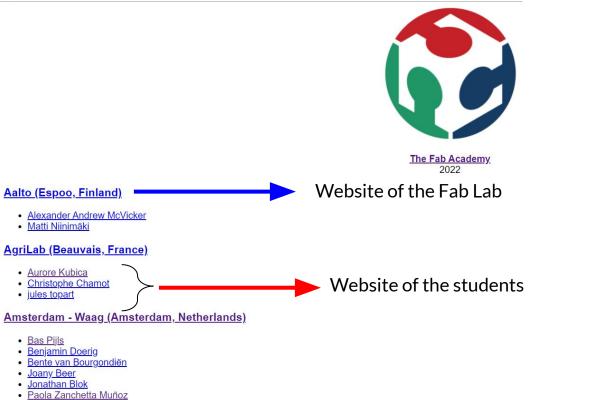
The Fab Academy 2022



ENHANCED BY Google



### Students



- Saco Heijboer
- Sander Blom



#### https://fabacademy.org/2025/



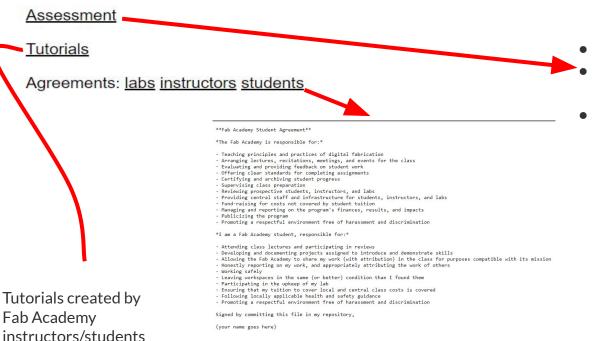
The Fab Academy 2022



ENHANCED BY Google



#### Documents



You should **read it**, and **upload a copy signed** to your repo.

The assignments (what you'll do)

What we want you to learn each week (why you're doing it)

The base-line evidence/proof/things you need to show about what you've learnt each week (what you did and how you did it).

#### **CRITERIA FOR NUEVAL**

FARA

#### Assessment

Type to search

#### Introduction

- General Essentials
- Commercial Board Policy

Principles and Practices, project man...

Computer-Aided Design

Computer-Controlled Cutting

Embedded Programming

3D Scanning and Printing

Electronics Design

Computer-Controlled Machining

Electronics Production

**Output Devices** 

Mechanical Design, Machine Design

Midterm Review

Input Devices

Molding and Casting

Networking and Communications

Interface and Application Decomposing

#### Fab Academy 2025 Assignments and Assessment

Created by Anna Kaziunas France & Bas Withagen (2015) Maintaned by Jani Ylioja, Steven Chew, Vaneza Caycho and Pablo Nuñez

#### What is this document

During Fab Academy, you will learn how to envision, prototype and document your ideas through many hours of hands-on experience with digital fabrication tools. **This document outlines:** 

- The assignments (what you'll do)
- · What we want you to learn each week (why you're doing it)
- The base-line evidence/proof/things you need to show about what you've learnt each week (what you did and how you did it).

#### How to be evaluated

Advise your local instructor when you have completed assignments so they include your work in their weekly round of assessment. Your local instructor will advise of dates and times of assessments.

Not sure what code to use for your favorite smiley? Consult the Emoji Cheatsheet.

Eardback & guartiane

CRITERIA FOR YOUR EVALUATION: NUEVAL

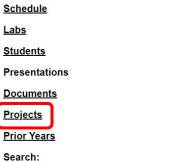
You have a section for each assignment

FABAC

### https://fabacademy.org/2025/



The Fab Academy 2022



ENHANCED BY Google



#### Projects

pub

P pub

Group ID: 1484 Request Access

public, publication

Subgroups and projects Shared projects Archived projects	Search by name	Last updated 🗸 🗸
> D P programmers		🗅 0 🗖 8 🏝 3
> T Tools H Various software tools to make ones Fab life easier.		🗅 0 🗍 1 🏙 1
> D I Inventory  The Fab inventory		🗖 0 📮 1 🖧 1
> D P projects   projects   subgroup for shared public projects		🗖 2 🗖 3 🏙 4
> C L libraries O Group for shared libraries		🗅 1 🔲 1 🖧 1
hello world Group for hello-world projects and documentation		🗖 0 🔲 2 🏙 1
Tutorials   Tutorials   Tutorial repository to be updated continuously.	* 0	1 week ago
n project index  (Maintainer)	<b>A</b> -	4

You will find the new programmers, libraries, hello world, Resources...

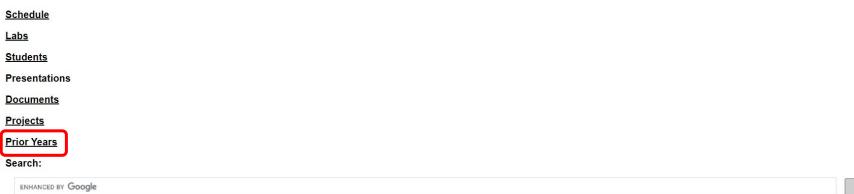
**D** ~



### https://fabacademy.org/2025/



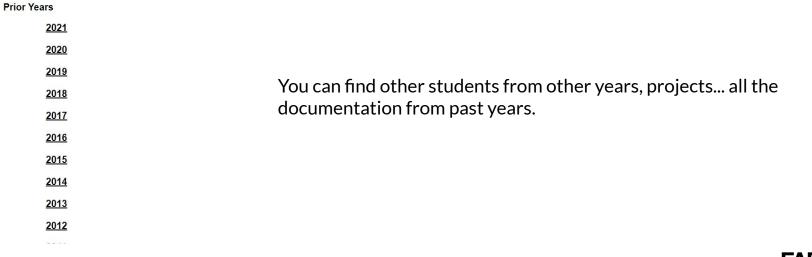
The Fab Academy 2022





#### **Prior Years**

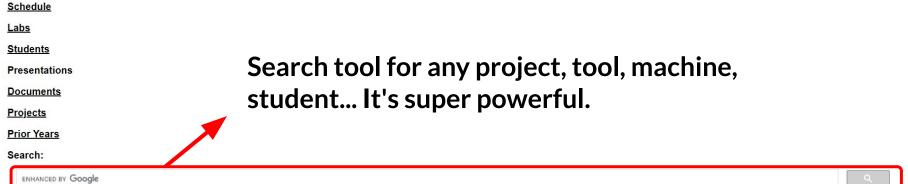






## https://fabacademy.org/2024/







## https://pub.fabcloud.io/project/expert-network-map/

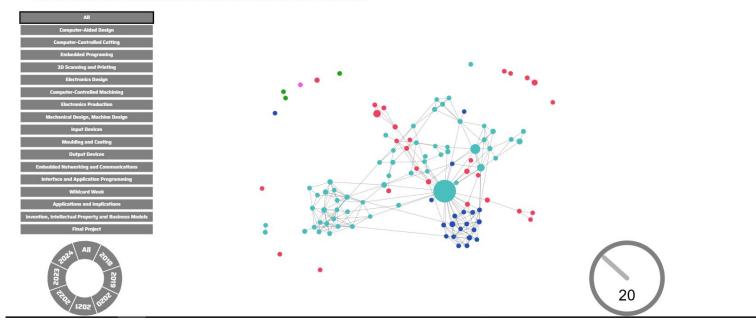
#### Expert Network Map

Seven generations of Fab Academy students intertwined

#### Seek Out Topic Experts

The Expert Nethork Mg allow uses to visually deteits? Topic Experts in the Fab community. Topic Experts are Fab Academy students with an equanty referenced by peers. Fab Academy students often in kead hole wiselists in this documentation, and maging these corrections creatis a network interimide across table, years, and ocumentation. Bending these corrections creates a network interimide across tables, years, and experts Tables. The strenges help to guickly detectly. Topic Experts to access their documentation of the strenges of the st The Expert Network Map allows users to navigate the massive web of interconnected students and highlights Topice Experts dating back to 2018. Each Fab Academy student is represented by a circle. Drag around different students to play with the data and gain insight into the interconnectedness of the Fab community.

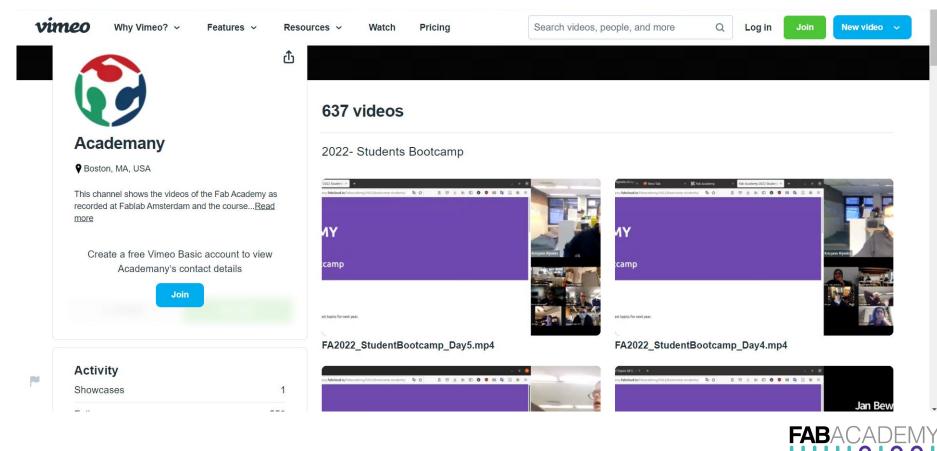
The larger a student's circle, the more times they have been referenced. Hower over a circle to see the student's name, year, lab, and region, and click on it to open their do concremation events. Circle the tabor on the lab filler by topic nave, circle different years on the bottom let circle to lab, and region, and click on it to open their by filler by topic nave, circle difference years on the topic lifter by topic nave, circle difference years on the topic lifter by an use the dopodore on the top filler by topic nave, circle difference years on the topic lifter by an use the dopodore on the top filler by the state of the bottom right to the state of the state of the differences that a student must have, changing the Erpertise Threahold.



Student Adam Stone created a map where all students who mention other students' documentation are related.



### Vimeo: Videos



/

#### Image compression

GIMP compress resize batch ImageMagick list formats: convert -list format JPG: compressed PNG: uncompressed convert PNG to JPG: convert input.png output.jpg convert all PNGs to JPGs: mogrify -format jpg \*.png convert SVG to PNG at 1000 DPT: convert -density 1000 -units PixelsPerInch input.svg output.png compress JPG to quality 50% width 1000: convert input.jpg -quality 50% -resize 1000 output.jpg compress all JPGs to quality 50% width 1000: mogrify -quality 50% -resize 1000 \*.jpg



### Video compression

HTML5 MP4 ffmpeg encoding

variable bit rate 1080p MP3:

ffmpeg -i input\_video -vcodec libx264 -crf 25 -preset medium -vf scale=-2:1080 -acodec libmp3lame -q:a 4 -ar 48000 -ac 2 output\_video.mp4

fixed bit rate 1080p MP2:

ffmpeg -i input\_video -vcodec libx264 -b:v 1000k -vf scale=-2:1080 -acodec mp2 -b:a 256k -ar 48000 -ac 2 output\_video.mp4

no audio:

ffmpeg -i input\_video -vcodec libx264 -b:v 1000k -vf scale=-2:1080 -an output\_video.mp4

crop size (width:height:xoffset:yoffset):

ffmpeg -i input\_video -vf crop=1500:800:200:100 -vcodec libx264 -b:v 1000k -an output\_video.mp4

trim time (-ss start time, -t duration):

ffmpeg -i input\_video -vcodec libx264 -b:v 1000k -an -ss 00:00:10 -t 00:00:10 output\_video.mp4

mix audio and video:

ffmpeg -i input\_video -vcodec libx264 -b:v 1000k -vf crop=1120:876:0:100 -i input\_audio -acodec mp2 -b:a 256k -ar 48000 -ac 2 -ss 00:00:20 -t 00:00:20 output\_video.mp4

crop, pan, composite:

ffmpeg -i input\_video\_1 -i input\_video\_2 -filter\_complex '[1:v]crop=175:95:930:860[cropout];[cropout]scale=350:190[scaleout];[0:v][scaleout]overlay=10:10[outv]' -wcodec libx264 -b:v 1000k -wap 0:a numbered images to video:

ffmpeg -r 30 -i %04d.jpg -vcodec libx264 -b:v 1000k -vf scale=-2:1080 -an output\_video.mp4

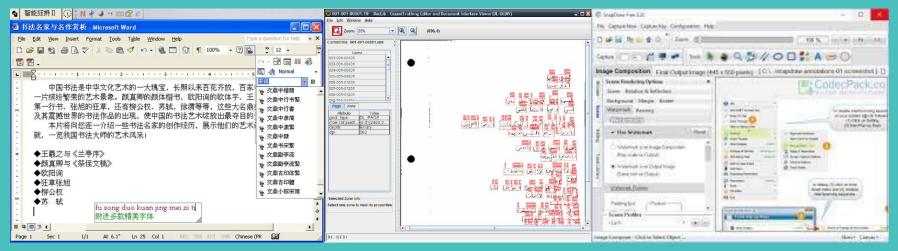


### Keep and Write Notes In A Small Notebook



- Fast. Convenient. Better for memory recall
- Supplement to digital documentation
- Document as you go
- Quick sketches

### English for Documentation...Please



**General Recommendation: Switch Software to English for documentation.** If not possible, clarify images with detailed English explanations describing the procedural steps you made.

## English is the communication standard for Fab Academy...and required for Global Evaluation.

### **The Assessment Book**



FAB ACADEMY

# ¿Whats is this document for?

- The assignments (what you'll do)
- What we want you to learn each week (why you're doing it)
- The base-line evidence/proof/things you need to show about what you've learnt each week (what you did and how you did it).



# **NUEVA** nueval.fabacademy.org

### Communicate...to Make Progress

It's a tool for all the people involved in the Fab Academy learning environment: Student, Local instructor and Global Evaluator. The only way to keep tracking of the learning path.

Give feedback to both your local evaluator as well as your global evaluator.
Work with evaluators toward graduation success!

Fab Academy 2020				Q	Week 04, Electronics Production is finished. adriantrains	2020-03-30 07:07
✓ Final Projects	Local Assessment & Evaluation					
<ul> <li>Local Evaluation</li> <li>Global Evaluation</li> </ul>	Local evaluation 2020-01-01	-01-01 Instructor nunuromi Electronics production			Dear Nuria. Week 04, Electronics Production is finished, you can start correcting whenever you want	
	Principles and Practices	•	OVERALL PROGRESS			
	Project Management				Electronics Production 2020-04-22 06:51	
	Computer-Aided Design	Leave Feedback				2022 04 22 25 54
	Computer-controlled cutting					2020-04-22 06:51
	Electronics production			nunuromi		
	3D scanning and printing	Completed				
	Electronics design		UNIT DESCRIPTION Task: Electronics Production		Hi Adrian,	
	Computer-controlled machining				Although you are the only student in your fablab, maybe its worth to create a separate page for the group assignments. It is not strictly mandatory because you documented the group assignment in your personal	
	Embedded Programming					
	Input Devices		Group assignment:		webpage, but recomendable	
	Applications and Implications	•	Characterize the <b>design rules</b> for your PCB pro			

Lets take a look

### How to make (almost) good &

### Prepare you camera, smartphone and your computer

- Smaller Image Size
  - Open the **Camera** app on your device
  - Tap on the **Settings** icon which should look like gear as always
  - Select Picture Quality
  - Choose a reasonable image File Size > 1MB
- Compress Photo size -> Image Magick
- Compress Video size -> FFMPEG
- Canva
  - Templates.
  - Compress image
  - Video editing

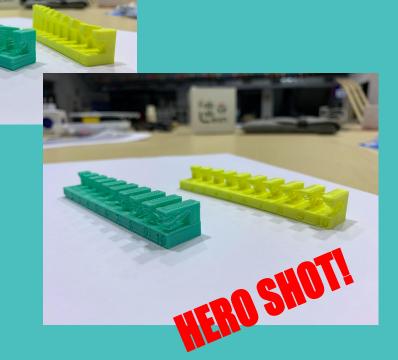




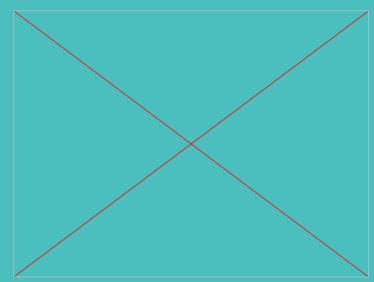
#### **One Good Photo** is Worth 1000 Words



- Good light. Good focus. Horizontal.
- YOU making things



### Save Videos In the Repository



- Horizontal
- Short
- No watermark



#### 🗢 🛛 Week 10: Input Devices

Assignments Week 1: Project Management & Web Development Week 2: Computer-Aided Design Week 3: Computer Controlled Cutting Week 4: Electronics Production Week 5: 3D Printing & Scanning Week 6: Electronics Design Week 7: Computer-Controlled Week 8: Embedded Programmin Week 9: Mechanical Design & Machine Design Week 10: Input Devices Week 11: Molding and Casting Week 12: Output Devices Week 13: Networking and Communications Week 14: Interface and Application Programming Week 15: Wildcard Week Week 16: Applications and Implications Week 17: Invention, Intellectual Property, and Income



Q Search

The sketch worked, but not quite exactly as intended. When the magnet waved over the sensor, the light changed state, and stayed that state until the magnet was flipped back over and waved over the sensor again. For the sake of the pill case, I want the state to flip only when

# TIME MANAGMENT

### **STUDENT BOOTCAMP 2025**

### Rico Kathatham

#### Fab Academy guru

#### Skylab Workshop Fab Lab





FLB ACADEMY Pablo Nuñez Rico Kanthatham Adrián Torres

G

## You Are Not Alone.

Ρ

# Where everybody knows your name...

### EST. 1895

# and your face :)

### What is Global Open Time?



### 10:00AM - 11:00AM EDT Saturday Zoom MCU Room

- Get together with **friends**...in a **fun** place
- Discuss questions and concerns...find answers...most of the time :)
- Seek advice to **focus and redirect** assignments or Final Project

# **Enjoy every moment of your Fab Academy journey...** We are here for you.

FAB ACADEMY



# MATTERMOS chat.academany.org

### How to CHAT with (almost) anyone.

### FIND HIS/HER USER NAME **Osomething** same as gitlab.fabcloud.org user

### chat.academany.org

# FAB ACADEMY HOW TO SURVIVE **ALMOST ANY** 7 ( )

Ρ

# 1) Enter ALWAYS muted.

Your microphone is muted

# Mute Unmute

Check all your devices: computer, laptop, mobile...

	Settings				
	Microphone				
General	Test Mic Built-in Line Input (Line In)				
🕽 Video	Input Level:				
Audio	Input Volume:				
Share Screen	Automatically adjust microphone volume				
	Suppress background noise Learn More				
Chat	O Auto				
Background & Filters	O Low (faint background sound)				
Justiground a ritters	O Medium (computer fan, pen taps)				
Recording	O High (typing, dog barks)				
Profile	Music and Professional Audio				
	Show in-meeting option to "Enable Original Sound" from microphone ③				
Statistics					
Keyboard Shortcuts	Ringtones Default  v ③				
Accessibility	Automatically join computer audio when joining a meeting				
	Mute my mic when joining a meeting				
	Press and hold 'Space Key' to temporarily unmute				
	Sync buttons on headset				
	Advanced				

# 2 TURN ON your camera.



### WE ARE A NETWORK OF PEOPLE

# **3 SPEAK slow** and clear.



#### KEEP CALM AND PREPARE FOR PUBLIC SPEAKING

# 4) SAVE the chat.



	To: Everyone → Type message here	🗅 File 💮
	Save Chat	
	Participant Can Chat With: No One	_
To: Every	Host Only	
Type mess	Everyone Publicly <ul> <li>Everyone Publicly and Privately</li> </ul>	

To:

# **MEMES** and emotions

### **STUDENT BOOTCAMP 2025**

þórarinn Gunnarsson Fab Academy guru



Fab Lab Ísafjörður

# $\square$ STUDENT FAB ACADEMY BOOTCAMP DAV 2 2025