

# GALILEO Modular Microscope



XVlllarcano

[VIEW IN BROWSER](#)

updated 23. 2. 2024 | published 23. 2. 2024

## Summary

A modular hobby and education microscope project based on 3d printing, basic hardware and a few 3d printer parts.

[Learning](#) > [Chemistry & Biology](#)

Tags: [modular](#) [children](#) [education](#) [stem](#) [science](#) [learning](#)  
[laboratory](#) [eyepiece](#) [biology](#) [microscope](#) [instrument](#)  
[optical](#) [magnifier](#) [objective](#)

**Check the published mods, you may want some of them right from the start ;)**

This project is about an affordable, expandable and customizable microscope based around basic hardware, 3d printing, and the few specific microscope components that cannot be worked around.

**Visit our Github repository** for the complete details of the project, bill of materials, instructions and source files, mods... and for any questions or feedback you can join our **Discord server**.

I have added some slides about the assembling in the photo gallery here, but you should check the **BOM and components** file for the list of the

necessary materials and the **Printing and assembling** file with the instructions and tips to put them together.

In general, this is what you will need:

- M3 and M5 screws of different lengths, and nuts to suit
- about 60 cm of 12 mm diameter pipe
- Some 3d printer spare parts like bed leveling springs and bowden tube.
- At least one objective, one eyepiece, and a couple other off the shelf microscope accessory

The main feature of this microscope is having each of the core functions carried out by a separate module, that exist independently and can be modded, customized and combined freely:

- Base
- Lighting
- Stage
- Standoffs
- Optical group
- Phone holder (optional, but you will want to share)

The objective is to keep the project lean and possibly cheap, your pricing may vary but for your reference the first functional prototype costed about 50,00 Euros in hardware, plus the printed parts.

While Galileo is expandable, its core design prioritizes simplicity and affordability.

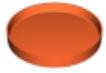
That said, it works, including the stage movement despite ample margins of improvement, and I hereby summon **The Ciliate Swarm Of Proof!**



If you lean more towards looking at far away stuff, the design of this model is directly inspired by the [Hadley telescope \(Metric version\)](#) and, if in doubt, build both!

## Model files

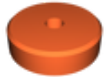
Standoffs		6 files
	phone-holder-standoff-accessory.stl	
	standoff-resize-in-slicer-if-needed.stl	
	standoff-accessory-ring.stl	
	standoff-clip-on-variant-resize-in-slicer-if-needed.stl	
	threaded-standoff-02-clearance.stl	
	threaded-standoff-03-clearance.stl	
Base		3 files



**cover.stl**



**base-module.stl**



**pad-x3-tpu.stl**



**Stage**

4 files



**ghetto\_paper\_diffuser.stl**



**stage-module.stl**



**knob-x2.stl**

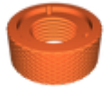


**cart.stl**



**Optical**

9 files



**focus-knob.stl**



**backlash-ring.stl**



**objective-nut-1x-objective.stl**



**split-ring.stl**



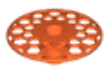
**spider.stl**



**optical-tube-jis-03-clearance.stl**



**optical-tube-din-03-clearance.stl**



**phone-tray.stl**



**accessory-ring.stl**

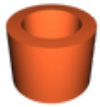


## Phone holder inserts

11 files



**insert-314-mm.stl**



**insert-264-mm.stl**



**insert-284-mm.stl**



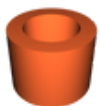
**insert-354-mm.stl**



**insert-294-mm.stl**



**insert-324-mm.stl**



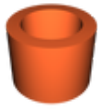
**insert-254-mm.stl**



**insert-304-mm.stl**



**insert-334-mm.stl**



**insert-274-mm.stl**



**insert-344-mm.stl**



**byo-illumination-module.stl**

## License ©



This work is licensed under a  
[Creative Commons \(4.0 International License\)](https://creativecommons.org/licenses/by-nc-sa/4.0/)

**Attribution—Noncommercial—Share Alike**

- 
- ✗ | Sharing without ATTRIBUTION
  - ✓ | Remix Culture allowed
  - ✗ | Commercial Use
  - ✗ | Free Cultural Works
  - ✗ | Meets Open Definition