

# INNOVAQUEROS MAKERSPACE 3D PRINTING TRAINING

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The InnoVaqueros Makersapce has 3D printers available for trained and approved students. Learn how you can obtain access to these 3D Printers.

**To 3D Print in the Makerspace you must complete this training.**

## THE 3D PRINTING PROCESS

1. **CAD Geometry:** you may use SolidWorks or other CAD software to create your part geometry.
2. **Slicing:** this software takes the CAD geometry and helps you generate the toolpath code (print file) for the specific printer model and filament type with the parameters you indicate (temperature, speed, etc.). For MakerBot printers you must use the MakerBot Print slicer. For Creality Printers you can use the Creality Print slicer or other slicers such as Cura.
3. **Printing:** save the print file in a SD card (for Creality printers) or a USB thumb drive (for MakerBot printers), load the file into the printer, make sure that the printer has the correct filament, run the print job.

This training focuses on Slicing and Printing only.

## STEP 1: SLICING

### 1. Download the Slicing Software

- Download Creality Print [HERE](#), scroll down to “Download Slicing Software”

### 2. Watch Slicing Tutorials

- For Creality Slicer you can find videos on YouTube like this [one](#).

### 3. Slice the Sample Part

- Download the Calibration Cat part (Cali Cat) sample part [here](#). This is a stl file that contains the geometry that you will slice.
- For Creality, make sure you indicate one of the CR-10 models (CR-10S Pro V2 or CR-10 Smart Pro), use PLA with printing temp 190-220 °C, bed temp 25-60 °C, printing speed 40-70 mm/s, and cooling fan ON.

**Reach out to the Makerspace staff or email [makerspace@utrgv.edu](mailto:makerspace@utrgv.edu) if you need help with this training.**

## STEP 2: PRINTING

### 1. Make a Reservation

- Once you have completed the SLICING steps, go to the Makerspace, and ask the staff to schedule your printing training session.
- When you get to your printing appointment, the staff will review with you the slice parameters. Once everything is ready, the staff will show you how to load the print file in the printer and run the print job.

### FUTURE PRINTS

After your training is complete, whenever you want to print, email [makerspace@utrgv.edu](mailto:makerspace@utrgv.edu) or talk to the staff at the Makerspace. Always check in with staff before you start any printing in the Makerspace.

When you get to the printing appointment, the staff will ask you about the print job details:

- Explain the part functionality.
- Indicate the envelope size of the part and the quantity required.
- Filament material selected.
- Printer model selected.
- Printing parameters (Extrusion temperature, Layer Height, Bed Temperature, etc.)
- Why 3D print? Can this part be purchased or manufactured by other means?

**After your training, contact the Makerspace staff or email [makerspace@utrgv.edu](mailto:makerspace@utrgv.edu) for subsequent prints.**

### MAKERSPACE 3D PRINTERS

Currently these are the 3D printers available in the Makerspace, you can learn about their capabilities by searching online:

**Don't know which printer is the best option for your project? Ask our staff for advice.**

STANDARD SIZE PRINTER	MakerBot Replicator plus	<a href="#">LINK</a>
STANDARD SIZE PRINTER	Creality CR-10S Pro V2	<a href="#">LINK</a>
STANDARD SIZE PRINTER	Creality CR-10 Smart Pro	<a href="#">LINK</a>
ENTRY LEVEL PRINTER	Creality Ender-3 V2	<a href="#">LINK</a>
LARGE FORMAT PRINTER	Creality CR-6 MAX	<a href="#">LINK</a>
INFINITE Z-AXIS	Creality CR-30	<a href="#">LINK</a>
SPECIAL PRINTING	MakerBot Method X	<a href="#">LINK</a>

### FILAMENT

These are the filament options:

- **PLA:** hard plastic, the most common filament to use.
- **TPU:** softer than PLA, rubberier, used for flexible parts.
- **Other Materials:** consult with the staff about other filament options such as PETG, ABS, PLA reinforced, ONYX, etc.

**What is the best filament option for your project? Ask our staff for advice.**

**Makerspace Filament Policy:** Typically, we can provide the filament free of charge for small or moderate sized print jobs. If you plan to use more than this or other special filament, contact the staff for more details.