



Practical Practice in 3D Printing



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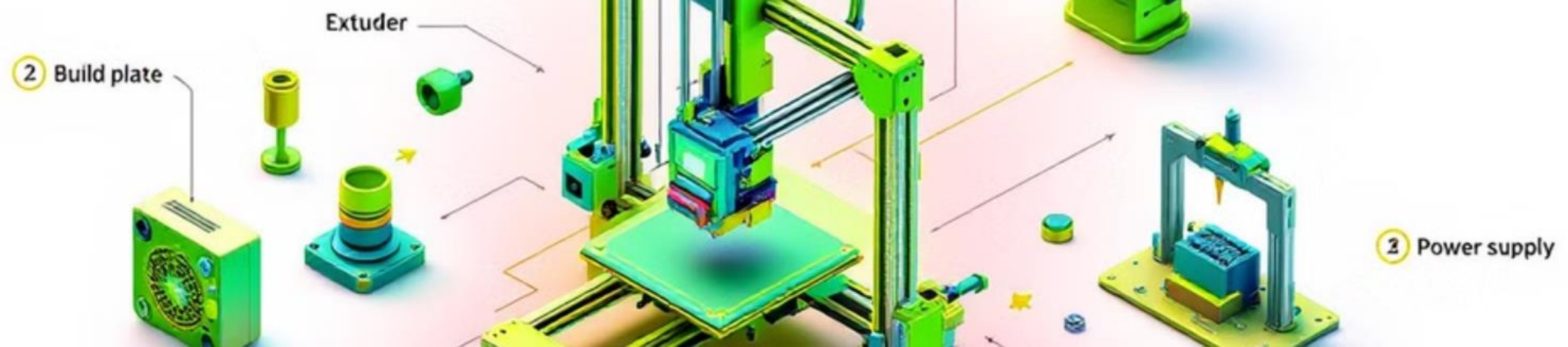


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Seminar Content

- Basic technical characteristics of a 3D printer
- 3D printing materials
- Cura Tool
- Databases for finding 3D models
- Design Tools for 3D models



Basics of a 3D printer



**Print Head (Extruder –
Tool Head)**



**MultiformCreation
(Build Plate)**



**Drive system
XYZ engines**

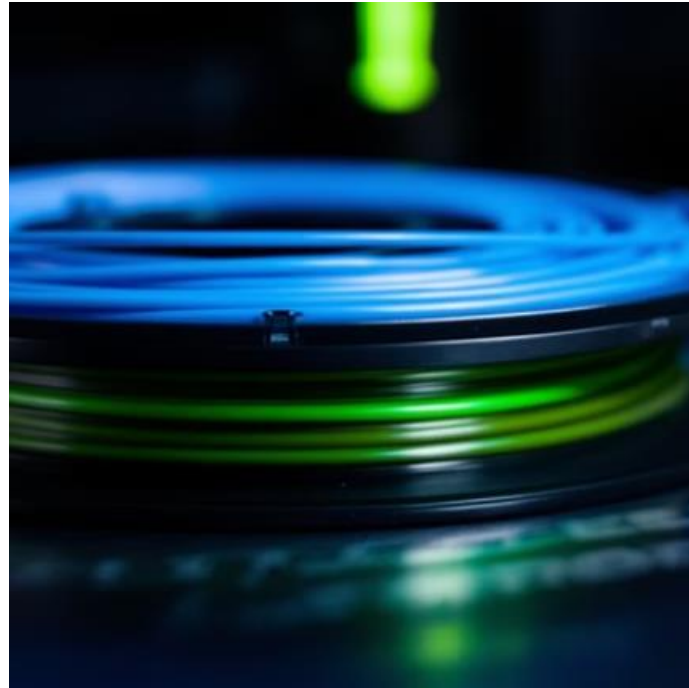
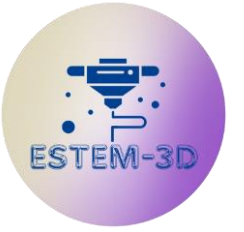


Frame and Housing



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Printing Materials: Choosing the Right Thread



■ PLA (Polylactic Acid)

Biodegradable, easy to print and available in many colours. Ideal for beginners and for **general purpose printing**.

■ PETG (Polyethylene Terephthalate Glycol)

It combines **strength and flexibility** with good chemical resistance. A versatile option for various applications.

■ ABS (Acrylonitrile Butadiene Styrene)

Durable and **heat-resistant**, but requires higher temperatures and can produce fumes. Suitable for functional parts.

■ TPU (Thermoplastic Polyurethane)

Flexible and elastic, ideal for creating soft rubber-like objects and components that require bending.



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Databases for finding 3D models



<https://www.printables.com/>



<https://www.thingiverse.com/>



<https://cults3d.com/en>

3D Model Design Tools



<https://www.tinkercad.com/dashboard>



<https://www.autodesk.com/products/fusion-360/overview>

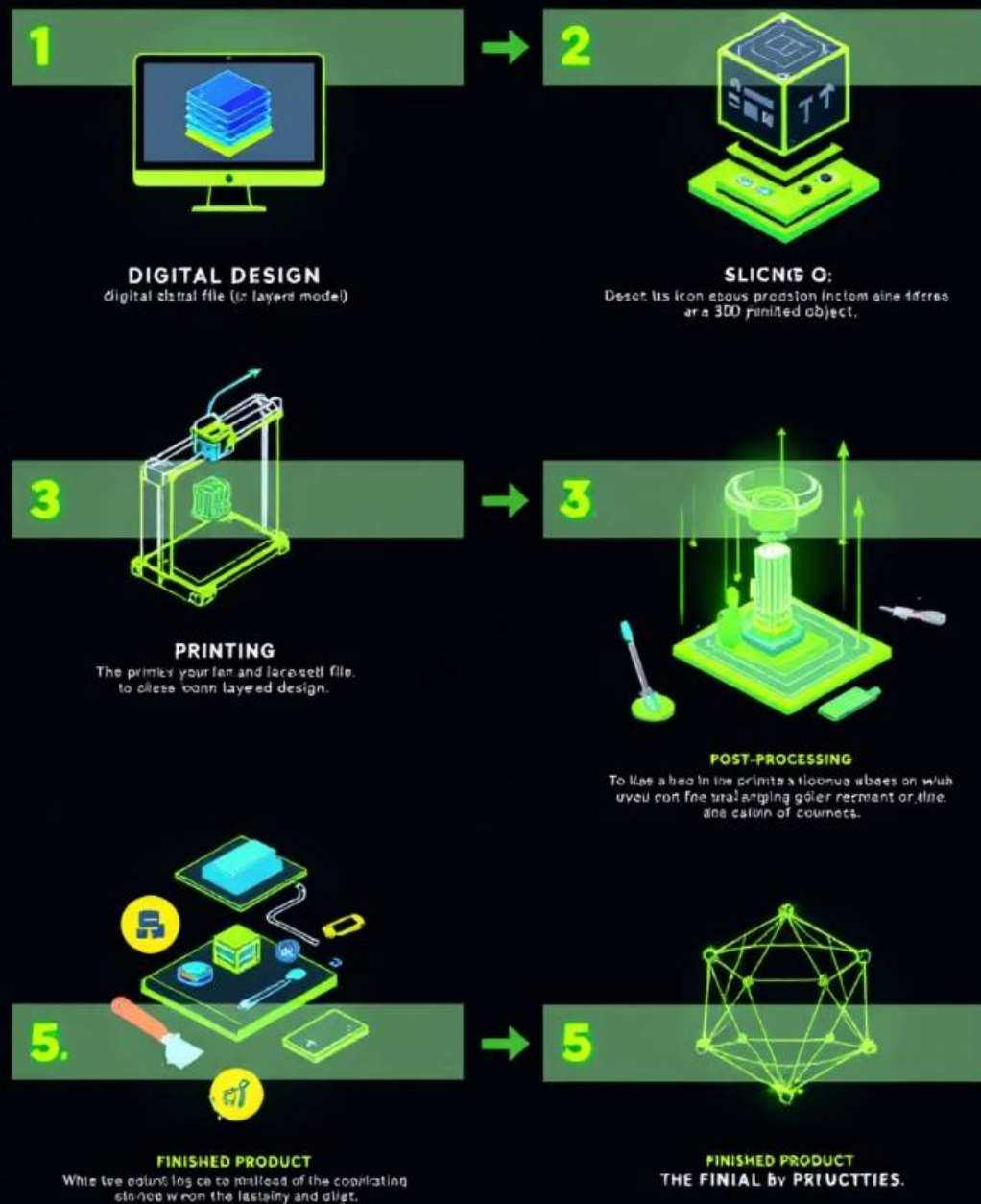


<https://www.blender.org/>



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THE 3D PRINTING PROCESS



The process of 3D printing: From digital to physical

1

Digital Preparation

Create or acquire a 3D model (CAD file), convert it to **STL format**, and use **layering software (Slicer)** to create printable layers and G-code instructions.

2

Printer Setup

Place materials, level the build platform, adjust temperatures, and perform initial calibration to ensure optimal printing conditions.

3

Print Mode

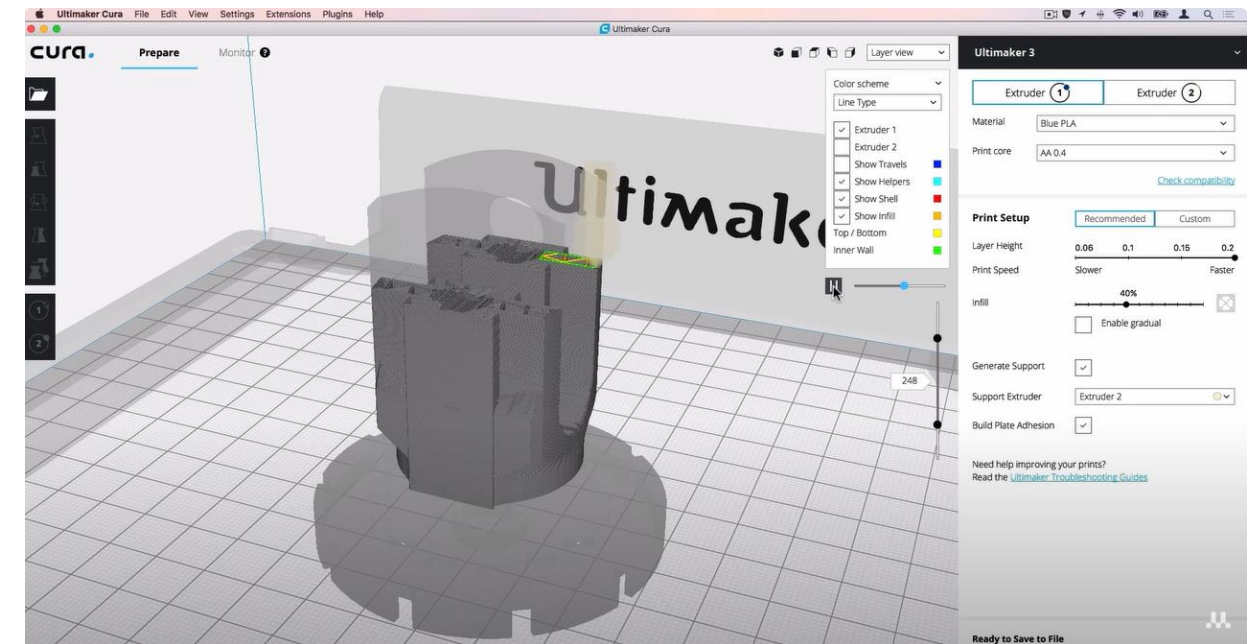
The printer heats up, creates layers, and manages cooling for precise object creation. This phase includes first-layer adhesion, **layer-by-layer depositing**, and backing structure creation if needed.

Cura/Cura Slicer Tool



What is Cura

UltiMaker Cura is a widely used open-source 3D printing software. It serves as a slicing application, which means it takes 3D models (usually in STL, OBJ, or 3MF formats) and converts them into a format that a 3D printer can understand, known as G-code. The G-code contains the specific instructions that guide the printer on how to create an object layer by layer.



<https://curaslicer.com/>



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Cura/Cura Slicer Tool

Software Learning Steps

Step 1: Add a printer

Step 2: Understanding the software (toolbar, settings pane)

Step 3: Import and slice a model

Step 4: Set up basic print parameters (layer height, infill density, supports)



Thank you for your Attention!



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