



**Ed-Tech**  
A F R I C A

# **3D DESIGN & PRINTING**

**6 WEEKS COURSE**





# Ed-Tech

A F R I C A

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Transforming education  
through technology

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## Course Aims & Objectives

This course is designed to teach students with a basic understanding of 3D printing and digital production how to bring their creations into the 3D realm. The course will cover topics such as the fundamentals of 3D printing, modeling software, designing for 3D printing, file organization, and materials selection.

Students will learn how to create optimized 3D models that can be easily fabricated using a 3D printer. By the end of the course, students will have gained the skills and knowledge necessary to bring their designs to life using 3D printing technology.

## What is 3D Design?

3D design is the process of using software to create a mathematical representation of a 3-dimensional object or shape. The created object is called a 3D model and these 3-dimensional models are used for computer-generated (CG) design.

3D design is used in a variety of industries to help artists shape, communicate, document, analyze, and share their ideas. 3D printing is an additive process whereby layers of material are built up to create three dimensional objects, models and figures.

3D printers analyze a design or model given to them by a computer and print it out in real life by depositing some material, like wood filament or polymer resin layer by layer to create a 3D model.



## Curriculum Index

### Introduction to Blender

- Course Introduction
- Navigating
- Blender 2.93 Installation
- Introduction to Blender UI
- Uses of 3D modeling

### 3D Modeling

- Blender interface
- 3D modeling history
- Scene setup
- Terminology
- Methodology
- Low-Poly modeling
- Basic Blender tools
- Basic Blender modifiers

### 3D Reconstruction

- Meshroom and the 3D Reconstruction process
- Reducing Poly count using the Decimate Modifier

### Modeling the Phone Stand

- Import a Reference FBX Phone Model
- Absolute Grid Snap
- Connect Vertex Path & Shrink/Flatten
- Align Rotation to Target when Snapping
- Using a Boolean Modifier to Create Recess
- Applying Transforms and Fixing Model Errors
- The Order of Selection
- Slicing to Create G-Code & 3D Printing

### The Phone Case

- Convert PDF File to SVG
- Importing & Scaling SVG
- Aligning SVG Sections to Different Views
- Separating, Dissolving & Creating the Profile
- Forming the Curved Case
- Converting the Curve to Mesh
- Dissolving Vertices
- Boolean Modifier
- Applying Modifiers & Fixing Errors
- 3D Printing the Phone Case



# CAREER AND EMPLOYMENT OPPORTUNITIES

## Modeling & Printing in Blender

Precautions when MSLA resin printing  
Using the Spin Tool to Form the Base  
Boolean Subtraction to form the Head  
Combing Both Sections into One  
Merging Both Sections Into One  
Increasing Resolution &  
3D Printing Checks  
Exporting STL File  
Slicing The Model in Chitubox  
Rotating The Model, Slicing & Resin  
Printing

## How does it work?

3D printer analyses a computer created model of an object and then deposits material.

Layer by layer the object will be created to real life.

**Models for Educational Purposes**  
**Product Design & Manufacturing**  
**3D Animation**  
**Architecture**  
**Video games**  
**Movie**



*You can also make money by selling 3D business ideas or selling 3D printed products on your website.*

### Examples of 3D printing designs:

- Earphone holder
- Rubik's cube
- Measuring cube
- Ocarina
- Chopstick Trainer
- Hanging planter
- Folding leaf bowl





**WARNING / PRECAUCIÓN**  
HOT NOZZLE / INYECTOR CALIENTE  
DON'T TOUCH / NO TOCAR

# **3D** PRINTING

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**"The art of turning dreams  
into reality."**

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# 3D DESIGN

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**“Is the bridge between the digital and physical worlds.”**



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+267 3914472

ED Tech Africa

Ed-Tech Africa

+267 75 546 649

@edtech.bw

edtechafricabw

[www.ed-techafrica.com](http://www.ed-techafrica.com)



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