



# DESIGN TO 3D PRINT (ADVANCED)

Learn how to design accurate, multi-part objects and prepare them for 3D printing – from concept to real product.



## ADVANCED 3D MODELLING

Master professional tools



## PRECISION & ACCURACY

Create accurate, functional designs



## MULTI-PART DESIGN

Build and assemble real-world products



## PRINT READY

Export models and prepare for 3D printing



## DURATION

**2 DAYS**  
(FULL TIME)



## TIME

10:30 AM –  
5:30 PM



## SUITABLE FOR

STUDENTS,  
DESIGN ENTHUSIASTS  
& FUTURE CREATORS



FOR  
STUDENTS



FOR  
PROFESSIONALS



FOR  
TEAMS



TVET  
Smart Choice  
Bright Future



**Shortcourse**  
Programme

# TRAINING OUTLINE

A practical 2-day training programme for students with basic 3D design experience. Learn advanced modelling techniques using SketchUp and design multi-part objects ready for 3D printing.



## DAY 1

### SKETCHUP FUNDAMENTALS & PRECISION MODELLING



#### 1. SKETCHUP BASICS

- Overview of SketchUp interface
- Navigation & camera controls
- Understanding axes & workspace



#### 2. DRAWING & MODIFICATION TOOLS

- Line, Rectangle, Circle, Polygon, Arc
- Push/Pull, Move, Rotate, Scale
- Offset & Follow Me tools



#### 3. ORGANISING MODELS

- Groups & Components
- Layers / Tags management
- Model structure best practices



#### 4. PRECISION MODELLING

- Using measurements
- Creating accurate dimensions
- Aligning & positioning objects



#### 5. PRACTICE ACTIVITIES

- Create a storage box
- Design interlocking shapes
- Create simple mechanical parts



#### MINI CHALLENGE

Design two parts that can connect together and test alignment and fit.



## DAY 2

### MULTI-PART PRODUCT DESIGN & ASSEMBLY



#### 1. DESIGNING FOR ASSEMBLY

- Understanding part separation
- Creating connectors & slots
- Designing peg & hole systems
- Assembly planning & testing



#### 2. MAIN PROJECT DEVELOPMENT

Design a multi-part product.

Project options include:

- ✓ Mini treasure box with lid
- ✓ Pencil holder with detachable compartments
- ✓ Puzzle cube
- ✓ Phone stand with base and support
- ✓ Desk organizer with multiple sections



#### 3. BUILDING COMPONENTS

- Creating individual parts
- Converting parts into components
- Managing dimensions for proper fit
- Testing virtual assembly



#### 4. PREPARING FOR 3D PRINTING

- Checking model accuracy
- Exporting STL files
- Basic 3D printing considerations



#### 5. PROJECT PRESENTATION

- Demonstration of assembly process
- Design explanation

## TOOLS & TECHNOLOGIES



SketchUp Pro



3D Warehouse



Extension Tools



STL Export



3D Printer (FDM)

## KEY SKILLS YOU WILL GAIN

- ✓ Advanced 3D modelling in SketchUp
- ✓ Model organisation & component management
- ✓ Designing multi-part objects
- ✓ Precision measurement & alignment
- ✓ Preparing models for 3D printing
- ✓ Problem solving & design thinking

## WHY JOIN THIS COURSE?



#### Hands-On Learning

Build real projects and solve practical design challenges.



#### Industry-Relevant

Skills you can apply in engineering, design and manufacturing.



#### MTTC Certification

Earn a recognised certificate from MTTC College.



## REQUIREMENTS

Basic computer skills



- ✓ Understanding of simple 3D shapes & dimensions
- ✓ Prior 3D modelling experience is beneficial but not mandatory