

# Specialization Path 03 – 3D Asset Creation (12 Weeks)

## Objective

To equip learners with advanced skills in creating high-quality 3D assets for films, games, and immersive media, covering the complete pipeline from modeling to rendering and optimization for production-ready outputs.

## Week 01 – Introduction to 3D Asset Creation Pipeline

### Topics Covered:

- Overview of asset creation workflows (Film, Games, XR)
- Asset types: props, environments, sets
- Scale, units, and real-world accuracy
- File organization and naming conventions
- Introduction to industry tools and pipelines

### Learning Outcome:

- Understand end-to-end 3D asset creation workflows
- Differentiate asset requirements across industries
- Set up organized and production-ready project structures

## Week 02 – Basic Props Modeling (Hard Surface Fundamentals)

### Topics Covered:

- Polygon modeling fundamentals
- Hard surface modeling techniques
- Edge flow and topology basics
- Use of modifiers and non-destructive workflows
- Creating simple production props

### Learning Outcome:

- Model clean and efficient hard surface props
- Apply correct topology for animation and rendering
- Build assets using non-destructive workflows

## Week 03 – Intermediate Props & Detailing

### Topics Covered:

- Complex prop modeling (mechanical & organic mix)
- Boolean workflows and refinement
- Adding fine details (bevels, paneling, trims)
- High-poly vs low-poly concepts

- Introduction to sculpting for detailing

**Learning Outcome:**

- Create detailed and visually rich props
- Balance complexity with clean topology
- Prepare models for high-quality texturing

**Week 04 – Environment Creation Fundamentals**

**Topics Covered:**

- Principles of environment design
- Blockout techniques and layout planning
- Composition and scale in 3D space
- Modular asset creation
- Terrain and natural elements basics

**Learning Outcome:**

- Design and block out immersive 3D environments
- Apply modular workflows for efficient production
- Establish scale and composition effectively

**Week 05 – Set Modeling (Games / VFX / Spatial)**

**Topics Covered:**

- Set construction workflows for different mediums
- Game-ready vs film-ready asset considerations
- Modular kits and asset reuse
- Level design basics (for games/XR)
- Scene assembly and layout optimization

**Learning Outcome:**

- Build complete 3D sets for games, films, or XR
- Adapt assets based on platform requirements
- Optimize scene construction using modular design

**Week 06 – Advanced Modeling Techniques**

**Topics Covered:**

- Subdivision modeling workflows

- High-resolution sculpting (organic & hard surface)
- Retopology techniques
- Kitbashing and procedural modeling basics
- Preparing assets for production pipelines

**Learning Outcome:**

- Execute advanced modeling workflows efficiently
- Convert high-poly assets into production-ready models
- Integrate sculpting and procedural techniques

**Week 07 – Texturing Fundamentals**

**Topics Covered:**

- UV mapping and unwrapping techniques
- Texture types (diffuse, normal, roughness, metallic)
- Texture painting workflows
- PBR (Physically Based Rendering) principles
- Texture resolution and texel density

**Learning Outcome:**

- Create clean UV maps for complex models
- Apply PBR texturing workflows
- Produce realistic and consistent textures

**Week 08 – Advanced Surfacing & Material Creation**

**Topics Covered:**

- Shader creation and material networks
- Procedural texturing techniques
- Realistic material creation (metal, skin, fabric, glass)
- Layered materials and masking
- Look development workflows

**Learning Outcome:**

- Develop advanced materials and shaders
- Achieve realistic surface qualities

- Control material properties for different lighting conditions

## **Week 09 – Optimization & Exporting for Production**

### **Topics Covered:**

- Polygon optimization techniques
- LOD (Level of Detail) creation
- Baking maps (normal, AO, curvature)
- Export pipelines for game engines and VFX
- File formats and asset packaging

### **Learning Outcome:**

- Optimize assets for real-time and offline rendering
- Prepare assets for integration into different pipelines
- Export assets efficiently with correct settings

## **Week 10 – Lighting for 3D Assets & Environments**

### **Topics Covered:**

- Lighting principles (key, fill, rim)
- HDRI lighting workflows
- Cinematic lighting setups
- Lighting for mood and storytelling
- Real-time vs offline lighting techniques

### **Learning Outcome:**

- Create effective lighting setups for assets and scenes
- Enhance visual storytelling through lighting
- Adapt lighting for different rendering engines

## **Week 11 – Rendering & Look Development**

### **Topics Covered:**

- Rendering engines (real-time vs offline)
- Render settings and optimization
- Camera setup and composition
- Render passes and compositing basics
- Turntable and presentation renders

### **Learning Outcome:**

- Produce high-quality renders of 3D assets

- Optimize render settings for efficiency and quality
- Present assets professionally for portfolios

## **Week 12 – Final Project & Portfolio Development**

### **Topics Covered:**

- Final asset/environment project production
- Integration of modeling, texturing, lighting, rendering
- Portfolio presentation and breakdown sheets
- Industry standards for asset presentation
- Review and feedback

### **Learning Outcome:**

- Create a complete, production-ready 3D asset or environment
- Present work professionally with detailed breakdowns
- Build a strong portfolio aligned with industry expectations

### **Final Deliverables**

- Basic & Advanced Props
- Modular Environment/Set
- Textured & Surfaced Assets
- Optimized Game/VFX Ready Assets
- Lighting & Rendered Outputs
- **Final Capstone Project (Hero Asset / Environment)**