

# Specialization Path 06 – AR/VR & Metaverse for Films (12 Weeks)

## Objective

To equip learners with advanced skills in creating immersive storytelling experiences using AR, VR, and Metaverse technologies, focusing on spatial design, interaction, and real-time production workflows for film and digital media.

## Week 01 – AR/VR Fundamentals & Industry Overview

### Topics Covered:

- Introduction to AR, VR, MR, and Metaverse ecosystems
- Applications in film, entertainment, and virtual production
- Types of immersive experiences (360°, interactive, real-time)
- Hardware overview (headsets, sensors, controllers)
- Pipeline overview for immersive content

### Learning Outcome:

- Understand the AR/VR ecosystem and its role in filmmaking
- Identify different types of immersive experiences
- Set up basic workflows for AR/VR production

## Week 02 – Tools & Software for AR/VR Production

### Topics Covered:

- Overview of development platforms (real-time engines)
- 3D content creation tools for AR/VR
- Integration between DCC tools and engines
- Asset import/export pipelines
- Version control and project setup

### Learning Outcome:

- Identify and use key AR/VR development tools
- Integrate assets into real-time environments
- Establish efficient production pipelines

## Week 03 – Human Perception & Immersion

### Topics Covered:

- Basics of human perception (vision, depth, motion)
- Presence and immersion principles
- Motion sickness and comfort design

- Field of view, latency, and frame rate considerations
- User attention and focus in immersive media

**Learning Outcome:**

- Design experiences aligned with human perception
- Minimize discomfort in VR environments
- Enhance immersion through sensory design

**Week 04 – 3D Graphics for AR/VR**

**Topics Covered:**

- Real-time 3D graphics fundamentals
- Meshes, textures, shaders, and lighting
- Optimization techniques for real-time rendering
- LOD systems and asset efficiency
- Scene setup in real-time engines

**Learning Outcome:**

- Create and optimize 3D assets for immersive environments
- Apply real-time rendering principles
- Prepare assets for AR/VR performance requirements

**Week 05 – Spatial Design & World Building**

**Topics Covered:**

- Spatial storytelling techniques
- Environment layout for immersive experiences
- Scale, proportion, and navigation
- Environmental cues and interaction zones
- World-building for narrative immersion

**Learning Outcome:**

- Design immersive 3D spaces for storytelling
- Guide user movement and attention effectively
- Build cohesive virtual worlds

**Week 06 – Development Platforms & Real-Time Tools**

**Topics Covered:**

- Scene building in real-time engines

- Lighting and rendering in real-time
- Asset integration and scene optimization
- Blueprint/visual scripting basics
- Testing immersive environments

**Learning Outcome:**

- Build interactive scenes using real-time tools
- Implement basic logic using visual scripting
- Optimize scenes for real-time performance

**Week 07 – Interaction Design in AR/VR**

**Topics Covered:**

- Interaction types (gaze, gesture, controller-based)
- Object interaction and triggers
- UI elements in 3D space
- Feedback systems (visual, audio, haptic)
- User flow and experience mapping

**Learning Outcome:**

- Design intuitive interaction systems
- Implement object-based interactions
- Enhance engagement through feedback mechanisms

**Week 08 – UX Design for Immersive Media**

**Topics Covered:**

- UX principles for AR/VR
- Spatial UI/UX design
- Accessibility and usability
- User testing methodologies
- Iterative design process

**Learning Outcome:**

- Design user-friendly immersive interfaces
- Improve usability through testing and iteration
- Create seamless user experiences in 3D space

**Week 09 – Performance Optimization**

**Topics Covered:**

- Frame rate optimization techniques
- Reducing latency and improving responsiveness
- Asset and scene optimization
- Profiling tools and performance metrics
- Platform-specific optimization (VR headsets, mobile AR)

**Learning Outcome:**

- Optimize AR/VR applications for smooth performance
- Identify and fix performance bottlenecks
- Ensure stable and responsive user experiences

**Week 10 – AR Development Workflows**

**Topics Covered:**

- Marker-based and markerless AR
- Plane detection and environment tracking
- AR interaction design
- Integrating AR with real-world environments
- Deployment on mobile devices

**Learning Outcome:**

- Develop basic AR applications
- Integrate virtual objects into real environments
- Deploy AR experiences on mobile platforms

**Week 11 – VR & Metaverse Experience Development**

**Topics Covered:**

- VR scene creation and navigation
- Multi-user environments and social interaction
- Basics of Metaverse platforms
- Persistent worlds and avatars
- Storytelling in virtual environments

**Learning Outcome:**

- Build immersive VR experiences
- Understand multi-user interaction systems
- Design narrative-driven virtual environments

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

**Topics Covered:**

- End-to-end AR/VR project development
- Integration of design, interaction, and performance
- Testing and refinement
- Portfolio presentation and documentation
- Industry standards and review

**Learning Outcome:**

- Develop a complete AR/VR or Metaverse experience
- Demonstrate understanding of immersive production pipelines
- Present a professional portfolio-ready project

**Final Deliverables**

- AR Prototype (Mobile-based experience)
- VR Interactive Scene
- Spatial UX Design Case Study
- Optimized Real-Time Project
- **Final Capstone Project (AR/VR Experience / Virtual Film Environment)**