Autodesk User Maya

Target Audience

This course is designed for aspiring 3D artists, animators, and design students who want to build foundational skills in 3D modeling, rigging, animation, texturing, lighting, and rendering using Autodesk Maya. It is ideal for individuals looking to enter the entertainment, gaming, film, or digital media industries, and for those preparing to validate their skills at an entry-level industry standard.

Course Objective

This course equips participants with essential knowledge and hands-on skills in Autodesk Maya, enabling them to confidently create 3D models, animate characters and objects, apply materials and lighting, and render final scenes. Learners will develop the ability to build professional-quality assets and environments suitable for production workflows. The course content is aligned with the competencies required for the **Autodesk Certified User in Maya** certification, preparing participants to validate their foundational skills and pursue industry-recognized certification.

Course Outcome

- **3D Modeling and Topology Mastery** – Gain expertise in creating and editing polygonal models and developing proper topology.
- **Rigging and Animation Skills** – Learn to rig characters with skeletons, apply constraints, and animate with keyframes and motion paths.
- **Materials, Texturing, and Shading** – Develop abilities to create and apply materials, manage UV maps, and work with advanced shaders.
- **Lighting and Rendering Proficiency** – Understand different lighting types, control shadows, and configure rendering settings for high-quality outputs.
- **Scene and Camera Management** – Master managing complex scenes, organizing objects and hierarchies, and setting up camera shots.

Course Outline: The course comprises **40 hours** of theory and practical labs and is divided into 9 comprehensive chapters. Each chapter will be followed by hands-on lab exercises to reinforce learning and gauge understanding of the topics covered.

Chapter 1. Scene Management

Setting Up Projects and Scenes
• Using the Project Window (defining paths and folders)
• Creating and setting new projects
Setting Scene Preferences
• Changing grid spacing, scene units, and frame rate
Managing Scene Objects
• Selecting, grouping, parenting, duplicating objects
• Navigating and rearranging hierarchies (Outliner)
• Managing display layers (labeling, visibility, colors)
Modifying Pivots
• Identifying and changing coordinate systems
• Moving, rotating, snapping, centering, aligning pivots
Modifying Object Attributes
• Locating animated attributes
• Changing multiple object attributes
• Using the Input Line for precise transformations
Changing Viewport Display
• Shading and lighting modes
• Determining poly count
• Toggling display types (wireframe, shaded, textured, etc.)

Chapter 2. Polygon Modeling

Creating and Modifying Polygon Primitives
• Toggling interactive creation
• Manipulating parametric attributes
• Duplicating and aligning primitives
• Deforming surfaces (lattice, nonlinear deformers)
Editing Polygon Surfaces
• Identifying and adding components (edge loops, bevels, fills)

• Manipulating components (move, rotate, object/component modes)
• Using the mesh display menu (hard/soft edges)
Working with Image Planes
• Creating and adjusting image planes
Modeling Toolkit Operations
• Using symmetry and constraints
• Soft selection parameters
• Object operations (combine, separate, smooth, Boolean)
• Component modifications (extrude, bevel, bridge, divisions)
• Using tools to modify geometry (Quad Draw, Multi-Cut, Target Weld)

Chapter 3. Texture Coordinates and UV Editing

Assigning UVs to Meshes
• Basic UV mapping projections (automatic, planar, cylindrical, spherical)
• Adjusting UV projection attributes
Using the UV Editor
• Understanding UV components and shells
• Transforming UV shells (cut, move, sew, unfold, relax, layout)
• Using checker maps and distortion visualization

Chapter 4. Materials and Shading

Working with Materials
• Differentiating material and shader types (Lambert, Phong, Blinn, ai Standard Surface)
• Creating and assigning materials to objects and polygons
Modifying Material Attributes
• Using Hypershade and graph networks
• Applying textures (2D, 3D, color, normal, projection types)
• Changing shader-specific attributes

Chapter 5. Rigging

Using Skeleton Tools
• Creating and editing joints (insert, mirror, connect, reroot)
• Implementing forward kinematics (FK) and inverse kinematics (IK)
Skinning
• Binding meshes to joints
• Painting skin weights

Applying Constraints
- Identifying and applying constraint types (parent, aim, point, orient)
- Viewing hierarchies in Hypergraph (object connections)

Chapter 6. Cameras
Working with Cameras
- Differentiating camera types (perspective, orthographic, camera & aim)
- Creating and locking cameras
- Adjusting camera attributes directly in viewport
Modifying Camera Attributes
- Near and far clip planes
- Lens/focal length/field of view
Displaying Guides and Gates
- Safe title and action areas
- Resolution and film gates

Chapter 7. Animation
Animation Preferences and Timeline
- Time Slider and playback settings
- Changing frame range
- Keyframing (auto key, set key, move/remove keys)
- Creating Playblasts
Animating Objects Along Paths
- Creating curves and motion paths
- Controlling orientation and banking
- Manipulating along paths (motion path keys, markers)
Editing Animation Curves
- Graph Editor (tangent types, breaking/unifying tangents, locking/freeing tangent
  lengths)

Chapter 8. Lighting
Working with Lights
- Differentiating light types (ambient, directional, spot, point, area)
- Creating and adjusting lights (color, intensity, manipulators)

- Linking lights to objects (light links)
- Working with Shadows
- Shadow types (depth map, raytraced)
- Adjusting shadow attributes (quality, color)

Chapter 9. Rendering

Understanding Renderers
- Built-in renderers (Arnold, Software, Hardware 2.0, Vector)
Configuring Render Settings
- Common settings (camera, resolution, frame range, padding)
- Renderer-specific settings (Arnold sampling)
- Preparing for batch rendering