

# EXAM OBJECTIVES

## **3** AUTODESK® 3DS MAX®

### **Autodesk Certified User: 3ds Max**

#### **Target Audience**

The Autodesk Certified User (ACU) 3ds Max exam demonstrates competency in 3D modeling and animation. The exam covers the basic use of the 3ds Max software as well as basic computer modeling and animation practices. An individual earning this certification has approximately 150 hours of instruction and hands-on experience with the product, has proven competency at an industry entry-level, and is ready to enter into the job market.

#### **Candidate Description**

A successful candidate can create and set a project, navigate the user interface, and create polygon-based models. The successful candidate can also unwrap a model, rig the model with bones, and animate the model. The successful candidate can create materials and apply them, add cameras, and light and render their scenes. He/she has a good knowledge of proper topology and should be able to troubleshoot their models, rigs, and animations. Furthermore, the minimally qualified candidate can function at a junior level under the supervision of a more experienced person.

#### **Prerequisites**

It is expected that all candidates will have a general understanding of:

- Basic computer skills
- How to navigate the user interface and workspaces
- 3D perspectives
- The Help system within 3ds Max

#### **Objective Domain**

Some of the topics and features of the software that may be covered in the exam are listed below each objective.

## 1. Scene Management

### 1.1 Set up a project

- 1.1.a Use the Project Window
  - i. *May include defining a project and setting paths and folders.*
- 1.1.b Create a new project
- 1.1.c Set the project

### 1.2 Setup the scene preferences

- 1.2.a Change the grid spacing
- 1.2.b Set the scene units
- 1.2.c Set the scene frame rate

### 1.3 Manage scene objects

- 1.3.a Organize objects
  - i. *May include selecting, grouping, and parenting.*
  - ii. *May include using the Layer Explorer to Show/Hide Layers, Freeze/Thaw Layers, and Add/Delete objects from layers.*
- 1.3.b Navigate and rearrange hierarchies
  - i. *May include the Scene Explorer.*

### 1.4 Modify the properties of one or more objects

- 1.4.a Locate the value of an animated property
- 1.4.b Change multiple objects' properties
  - i. *May include being able to differentiate between Instance, Copy, and Reference.*

### 1.5 Manipulate objects' transformations

- 1.5.a Use the Transform tools for precision transformation
- 1.5.b Transform multiple objects using the Align tool
- 1.5.c Create multiple objects using the Array tool
- 1.5.d Duplicate objects using the Mirror tool

### 1.6 Change viewport display

- 1.6.a Change viewport shading
- 1.6.b Change viewport lighting
- 1.6.c Determine poly count

## 2. Modeling

### 2.1 Create a polygon primitive

- 2.1.a Toggle interactive creation
- 2.1.b Manipulate the parametric attributes

### 2.2 Edit polygon surfaces

- 2.2.a Identify polygon sub-objects
- 2.2.b Add polygon sub-objects
  - i. *May include Insert Loop, Offset Edge, Chamfer, Cap, and Attach/Detach.*
- 2.2.c Manipulate polygon sub-objects
  - i. *May include moving and rotating.*
  - ii. *May include specifying a Reference Coordinate System and switching between various object and sub-object modes.*

- 2.2.d Modify smoothing groups
  - i. May include assigning polygons to smoothing groups.
- 2.2.e Manipulate sub-objects
  - i. May include extruding, beveling, bridging, and adding divisions.
- 2.2.f Utilize tools to modify geometry
  - i. May include Cut, Target Weld, and Connect.

### 2.3 Use the Modeling and Selection tools

- 2.3.a Utilize the Symmetry modifier
- 2.3.b Illustrate uses of Soft Selection
  - i. May include changing Soft Selection parameters.
- 2.3.c Perform object operations
  - i. May include Attach/Detach, MSmooth, and Boolean.

## 3. UVW Coordinates

### 3.1 Configure Basic UVW Projections using the UVW Map Modifier

- 3.1.a Apply different mapping types
  - i. May include Box, Planar, Cylindrical, and Spherical.
- 3.1.b Change properties of UVW projections

### 3.2 Use the Unwrap UVW modifier

- 3.2.a Describe UVW sub-objects
  - i. May include identifying a UV Element and using the Select by Element toggle.
- 3.2.b Transform a UVW Element
  - i. May include Cut, Stitch, Unfold, Relax, Layout, and Weld.
- 3.2.c Utilize UVW manipulation aids
  - i. May include assigning CheckerPattern and showing distortion.

## 4. Materials / Shading

### 4.1 Work with a material

- 4.1.a Differentiate material types
- 4.1.b Differentiate shader types
  - i. May include Oren-Nayar-Blinn, Metal, Blinn, and Anisotropic.
- 4.1.c Create a material
- 4.1.d Assign material to an object
  - i. May include assigning materials to selected polygons by Material ID.

### 4.2 Modify material properties

- 4.2.a Use the material editor
  - i. May include modifying material nodes in the view.
- 4.2.b Apply maps to materials
  - i. May include classifying map types (2D and 3D procedurals, Bitmaps), using color and normal maps, and identifying map types (when using procedural or 3D map types).
- 4.2.c Change shader specific properties for a material

## 5. Rigging

### 5.1 Utilize the Bone tools

- 5.1.a Create bones
- 5.1.b Edit bones
  - i. *May include bone parameters.*
- 5.1.c Implement Inverse Kinematics (IK) on bones
  - i. *May include IK Solvers.*

### 5.2 Use the Skin modifier

- 5.2.a Edit envelopes

### 5.3 Apply constraints

- 5.3.a Identify the constraints
  - i. *May include Link, Position, and Orientation.*
- 5.3.b Apply a constraint
  - i. *May include selection order for creation, weights, etc.*
- 5.3.c View hierarchy in the Schematic View
  - i. *May include identifying object connections.*

## 6. Cameras

### 6.1 Work with cameras

- 6.1.a Differentiate camera types
  - i. *May include Free Camera, Target Camera, Physical Camera, and Arnold Camera.*
  - ii. *May include identifying when to use each camera type and knowing the difference between perspective versus orthographic cameras.*
- 6.1.b Create a camera
  - i. *May include activating a camera view.*
- 6.1.c Use the Camera Viewport controls to adjust the camera view
  - i. *May include Dolly, Truck, Roll, and Orbit/Pan.*
- 6.1.d Use the Walkthrough Assistant

### 6.2 Modify camera property names or values

- 6.2.a Define the functions of near and far clip planes
- 6.2.b Adjust lens/focal length/field of view

### 6.3 Show Safe Frames

- 6.3.a Demonstrate the use of title safe, action safe, and user safe areas

## 7. Animation

### 7.1 Use the Time Slider and set the Time Configuration settings

- 7.1.a Set keyframes using Auto Key and Set Key
  - i. *May include setting a keyframe, moving/manipulating a keyframe, removing a keyframe, and locating the value of a keyframe in the Time Slider.*
- 7.1.b Change the Time Slider range
- 7.1.c Create a Preview Animation
- 7.1.d Adjust Time Configuration Settings
  - i. *May include Frame Rate, Playback, Time Display, and Re-scale Time.*

## 7.2 Demonstrate how to animate an object along a path

- 7.2.a Create a spline/curve
- 7.2.b Animate an object on the path
- 7.2.c Demonstrate how to control object axis and banking on the path
- 7.2.d Manipulate an object along the path
  - i. May include changing the spline/curve.

## 7.3 Edit animation tangents using the Graph Editor/Curve Editor

- 7.3.a Differentiate different tangent types
  - i. May include Auto Tangents, Spline, Fast, Slow, Linear, Flat, Step, and Smooth.
- 7.3.b Break and unify tangents
- 7.3.c Lock and show tangents
- 7.3.d Switch between spline and stepped tangents

# 8. Lighting

## 8.1 Work with lights

- 8.1.a Differentiate light types
  - i. May include Target spot, Free Spot, Target Direct, Free Direct, Omni, and Skylight.
- 8.1.b Create a light
  - i. Create a spot and then change it to an Omni.
- 8.1.c Adjust light type-specific parameters
- 8.1.d Change common light parameters
  - i. May include color and multiplier.
- 8.1.e Prevent an object from receiving light
  - i. May include using the Light Include/Exclude tool.

## 8.2 Work with shadow types

- 8.2.a Differentiate shadow types
  - i. May include Shadow Map and Ray-Traced.
- 8.2.b Adjust type-specific shadow parameters
  - i. May include color and density.

# 9. Rendering

## 9.1 Differentiate the built-in renderers

- i. May include QuickSilver Hardware Renderer, ART Renderer, Scanline Renderer, VUE File Renderer, and Arnold.

## 9.2 Configure render parameters

- 9.2.a Change common parameters
  - i. May include View to Render, Output Size settings, and Frame Range.
- 9.2.b Change renderer specific parameters
  - i. May include adjusting basic Arnold settings (Sampling and Ray Depth).