Autodesk 3ds Max In 30 Steps

Target Audience

This course is designed for aspiring 3D artists, architects, game designers, visual effects artists, and design students who want to build foundational to advanced skills in Autodesk 3ds Max. It is ideal for individuals entering the game development, film, animation, product visualization, architectural visualization, or digital media industries, as well as for professionals seeking to expand their 3D modeling, rigging, animation, and rendering capabilities using industry-standard tools.

Course Objective

This course aims to provide learners with comprehensive, practical knowledge of Autodesk 3ds Max — from navigating the interface and working with primitive objects, through advanced polygon modeling, materials, lighting, animation, character rigging, dynamics, and rendering. By the end of this course, learners will be able to create professional-quality 3D assets, scenes, animated characters, and rendered outputs using industry-standard 3ds Max workflows.

Course Outcome

- **Interface and Workflow Proficiency –** Navigate 3ds Max's interface including menus, toolbars, viewports, Command Panel, and workspaces with confidence.
- **3D Object Manipulation Mastery –** Create, transform, clone, group, parent, and organize 3D objects and scene hierarchies effectively.
- **Advanced 3D Modeling Skills –** Model with polygons, splines, compound objects, modifiers, and the Graphite Modeling Tools to build complex 3D assets.
- **Materials, Texturing, and UV Mapping –** Apply and configure materials using the Slate Material Editor, work with maps, compound materials, UV unwrapping, and viewport painting.
- **Lighting, Camera, and Rendering Expertise –** Set up cameras, configure lighting types including HDRI and sun/sky, and render scenes using Arnold and standard render settings.
- **Keyframe and Advanced Animation –** Animate objects with keyframes, animation layers, modifiers, constraints, controllers, and the Track View curve editor.
- **Character Rigging and Special Effects –** Build bone systems, use inverse kinematics, animate characters with the CAT system, create particle effects, and apply atmospheric and render effects.
- **Dynamic Simulation Skills –** Simulate physics-based motion with MassFX, create cloth and hair dynamics, and work with fluid simulations.

Course Outline

The course comprises **64-hours** of theory and labs and is structured across **8 parts and 30 comprehensive chapters**, covering the complete range of Autodesk 3ds Max features — from interface foundations through dynamics, character animation, and rendering. Each chapter includes structured lessons with hands-on exercises to reinforce practical skills.

PART I: Getting Started with Autodesk 3ds Max

Chapter 1: Exploring the 3ds Max Interface

Learning the Interface Elements

- Identifying menus, toolbars, viewports, Command Panel, and lower interface bar controls
- Interacting with the interface and setting preferences

Customizing the Workspace

- Using and switching workspaces
- Customizing toolbars, menus, and interface layout
- Accessing help

Chapter 2: Controlling and Configuring the Viewports

Understanding 3D Space and Navigation

- Using navigation gizmos and scroll wheel mouse controls
- Viewport navigation controls and changing viewport display

Enhancing and Configuring Viewports

- Displaying materials, lighting, and shadows in viewports
- Working with viewport backgrounds, visual styles, and display performance
- Defining regions

Chapter 3: Working with Files, Importing, and Exporting

Managing 3ds Max Scene Files

- Creating, opening, saving, and merging scene files
- Auto-backup, file summary, and archiving

Importing, Exporting, and Sharing

- Importing and exporting various file formats
- Accessing file information and sharing views

PART II: Manipulating Objects

Chapter 4: Creating and Editing Primitives and Selecting Objects

Primitives and Modeling Helpers

- Selecting system units
- Creating standard and extended primitive objects
- Using modeling helpers

Selecting and Managing Objects

- Selection methods: click, region, named selections, filters
- Setting object properties, hiding and freezing objects

- Using the Scene Explorer

Chapter 5: Transforming Objects, Pivoting, Aligning, and Snapping

Transforming Objects

- Translating, rotating, and scaling objects
- Working with transformation tools and coordinate systems
- Using pivot points

Aligning and Snapping

- Using Align commands (normal, camera, IK, pattern)
- Working with grids and snap options (vertex, edge, face, grid)

Chapter 6: Cloning Objects and Creating Object Arrays

Cloning and Mirroring

- Cloning objects: Copy, Instance, Reference
- Mirroring objects, cloning over time, spacing cloned objects

Arrays

- Using the Clone and Align tool
- Creating linear, radial, and 3D arrays of objects

Chapter 7: Grouping, Linking, and Parenting Objects

Groups and Hierarchies

- Working with groups: open, close, attach, detach
- Understanding parent, child, and root relationships

Linking and Schematic View

- Building and displaying links between objects
- Working with linked objects, using the Schematic View Window

Chapter 8: Organizing Scenes with Layers, Containers, and XRefs

Layers and Containers

- Creating and managing layers, assigning objects to layers
- Working with containers: adding, loading, unloading, saving

External References (XRefs)

- Referencing external objects and scenes
- Managing and updating XRef objects

PART III: Modeling 3D Assets

Chapter 9: Accessing Subobjects, Modifiers, and the Modifier Stack

Model Types and Normals

- Exploring model types: mesh, poly, NURBS, patch, spline
- Understanding and controlling normals

Subobjects and Modifiers

- Working with subobjects: vertex, edge, face, element
- Introducing and exploring the modifier stack: applying, collapsing, copying modifiers

Chapter 10: Drawing and Editing 2D Splines and Shapes

Drawing in 2D

- Creating splines: Line, Circle, Rectangle, Ellipse, Arc, Donut, NGon, Star, Text, Helix
- Drawing freehand and section splines

Editing Splines

- Editing at vertex, segment, and spline subobject levels
- Attaching, trimming, extending, and boolean spline operations

Chapter 11: Modeling with Polygons

Editable Poly Objects

- Understanding poly objects, creating editable poly objects
- Editing poly subobjects: vertex, edge, border, polygon, element operations

Chapter 12: Using the Graphite Modeling Tools and Painting with Objects

Graphite Modeling Tools

- Polygon modeling tools: constraints, topology, loops, rings
- Freeform tools: paint, relax, smear, flatten, pinch, spread

Selection and Object Paint Tools

- Using advanced selection tools
- Painting objects across surfaces with the Object Paint tools

Chapter 13: Working with Compound Objects

Compound Object Types

- Morphing objects between shapes
- Creating terrain objects and BlobMesh objects
- Working with ProCutter for complex cutting operations

Chapter 14: Using Mesh Modifiers and Deforming Surfaces

Selection and Primitive Modifiers

- Selection modifiers: Mesh Select, Poly Select, Volume Select
- Primitive maintenance: Cap Holes, Delete Mesh, STL Check

Spline and Edit Geometry Modifiers

- Lathe, Extrude, Bevel, Sweep, Renderable Spline modifiers
- Edit geometry: symmetry, smooth, optimize, tessellate

Parametric and Free Form Deformers

- Bend, Taper, Twist, Stretch, Squeeze, Skew, Wave, Ripple modifiers
- FFD 2x2x2, 3x3x3, 4x4x4, Box, and Cylinder deformers
- Deformation painting with brushes and painter options

Subdivision Surface Modifiers

- TurboSmooth, MeshSmooth, and HSDS modifiers

PART IV: Applying Materials and Textures

Chapter 15: Creating and Applying Materials with the Slate Material Editor

Material Properties and Slate Editor

- Understanding material properties: diffuse, specular, opacity, reflection
- Working with the Slate Material Editor: nodes, wiring, material views

OpenPBR Material and Browsers

- Working with OpenPBR Surface material parameters
- Using the Material/Map Browser and Material Explorer

Chapter 16: Adding Material Details with Maps

Understanding and Editing Maps

- 2D maps: Bitmap, Checker, Gradient, Tiles, Noise
- 3D maps: Cellular, Dent, Marble, Wood, Stucco
- Editing map parameters and using the Viewport Canvas for texture painting

Mapping Modifiers and UV Unwrapping

- Applying UVW Map modifier with various projection types
- Using the Unwrap UVW modifier and Edit UVWs interface for UV editing

Chapter 17: Creating Compound Materials and Using Material Modifiers

Compound and Special Materials

- Blend, Composite, Double Sided, Multi/Sub-Object, and Top/Bottom materials
- Matte/Shadow material and Ink 'n Paint material

Architectural and Material Modifiers

- Using Architectural and Autodesk Materials for visualization
- Applying material modifiers: MapScaler, UVW Xform, MaterialByElement

PART V: Setting the Scene — Cameras, Lights, and Rendering

Chapter 18: Configuring Cameras and Environments

Working with Cameras

- Creating Free and Target cameras, setting camera parameters
- Using the Camera Sequencer for multi-camera animation

Environments and Backgrounds

- Adding environment backgrounds, working with environment maps
- Aligning cameras with background images

Chapter 19: Using Lights and Basic Lighting Techniques

Light Types and Positioning

- Standard lights: Omni, Spot, Directional, Skylight
- Photometric lights: Point, Linear, Area
- Creating, positioning, and viewing scenes from lights

Light Parameters and HDRI

- Altering intensity, color, shadows, and attenuation
- Using HDRI lights; positioning the sun and setting the lighting environment

Chapter 20: Rendering a Scene and Working with Arnold

Render Parameters and Frame Window

- Setting output size, file format, render elements, and render passes
- Using the Rendered Frame Window: history, region, zoom, color tools

Working with Arnold

- Configuring Arnold render settings: sampling, ray depth, AOVs
- Using Arnold materials and lights for photorealistic rendering

PART VI: Animating Objects and Scenes

Chapter 21: Understanding Animation and Keyframes

Time Controls and Keyframes

- Using time controls: Time Slider, playback, frame rate
- Setting, moving, copying, and deleting keys using the Track Bar

Animation Viewing and Ghosting

- Viewing and editing key values, using the Motion Panel
- Enabling ghosting, animating objects, working with previews and RAM Player

Chapter 22: Using Animation Layers and Animation Modifiers

Animation Layers

- Creating and managing animation layers
- Blending, collapsing, and disabling animation layers

Animation Modifiers and Wiring

- Using Flex, Skin Morph, Skin Wrap, Melt, and other animation modifiers
- Wiring parameters between objects for driven animation

Chapter 23: Animating with Constraints and Simple Controllers

Animation Constraints

- Attachment, Surface, Path, Position, Link, LookAt, and Orientation constraints
- Restricting and controlling object movement with constraints

Controllers

- Understanding controller types: position, rotation, scale
- Assigning controllers; Noise, Linear, On/Off, Spring, and other simple controllers

Chapter 24: Editing Animation Curves in the Track View

Track View Interface and Keys

- Learning the Track View (Curve Editor and Dope Sheet) interface
- Working with keys: adding, moving, scaling, and aligning

Editing Curves, Filters, and Controllers

- Editing time, reducing and smoothing curves, setting tangent types
- Filtering tracks, creating track sets, working with controllers and ProSound plug-in

PART VII: Working with Characters and Special Effects

Chapter 25: Understanding Rigging, Kinematics, and Working with Bones and Skin

Building Bone Systems

- Creating and editing bone chains, using the Bone Tools
- Forward kinematics vs. inverse kinematics

IK and Skin

- Creating IK systems: HI Solver, HD Solver, IK Limb
- Applying Skin modifier: adding bones, painting and mirroring weights, animated skin modifiers

Chapter 26: Animating Characters with CAT

CAT Rig Creation and Animation

- Character creation workflow with CATRig
- Creating and configuring a CAT rig: hub, limbs, tail, spine, head
- Animating with CATMotion: layers, walk cycle, motion clips

Chapter 27: Using Particles and Space Warps

Particle Systems

- Spray, Snow, Super Spray, Blizzard, PArray, and PCloud systems
- Controlling particles with Particle Flow: events, actions, and helpers
- Using particle system maps

Space Warps

- Creating and binding space warps
- Force warps: Gravity, Wind, Drag, Motor, PBomb, Path Follow, Vortex
- Combining particle systems with space warps

Chapter 28: Using Atmospheric, Render, and Lighting Effects

Atmospheric Effects

- Creating fire effects, fog, and volume fog
- Using volume lights for light rays and glows

Render and Lens Effects

- Adding render effects: blur, brightness/contrast, color balance, depth of field
- Creating lens effects: glow, ring, star, streak, and lens flare

PART VIII: Using Dynamic Animation Systems

Chapter 29: Simulating Physics-Based Motion with MassFX

MassFX Dynamics

- Understanding dynamics and setting up MassFX
- Setting rigid body object properties: dynamic, kinematic, static

Constraints and Cloth

- Using MassFX constraints and baking animation keys
- Working with mCloth for cloth simulation and Ragdoll for character physics

Chapter 30: Working with Hair, Cloth, and Fluids

Hair and Fur

- Adding Hair and Fur modifier, styling and grooming hair
- Rendering hair, using hair dynamics for simulation

Cloth Simulation

- Creating cloth objects, adding garment panels
- Simulating cloth dynamics: collision, stiffness, damping, gravity

Fluid Simulation

- Understanding the fluid simulation system
- Setting up fluid containers, emitters, and simulation parameters