



ADON INSTITUTE OF TECHNOLOGY AND ANIMATION



AUTODESK CERTIFIED USER (ACU) HANDBOOK

AUTHORIZED TESTING CENTER FOR



Autodesk Certified User

Maya

COURSE DETAILS



Maya

Course ID: ACU-MAY / AITA-MAYA

Training Program: Certificate in 3D Animation Using Autodesk Maya

Exam Name: Autodesk Certified User (ACU)

Duration: 3 months.

Registration Fees: LKR. 10000

Course Fees: LKR. 150000 (Includes exam and practice test fees)

Note: *The course may be completed in a shorter period depending on the student's prior knowledge and understanding. Fast-paced learning options are available.*

Candidates who are already proficient in the software may take the exam directly without enrolling in the training program. In such cases, only the exam fee (which includes the proctoring fee) is required.

Exam Fees: LKR. 40,000 (Includes proctoring fees)

Practice Test Fees: LKR 7,000

Important Notes:

- * Registration and exam fees are non-refundable.
- * Candidates must take the exam within six months from the date of paying the exam fees.
- * Registration fees must be paid at the time of application.
- * Exam fees are due at the start of the course.
- * The remaining course fees must be paid before taking the exam.
- * All fees are subject to change in the event of significant fluctuations in the USD exchange rate.

Autodesk Certified User Exam Objectives

Maya



Target Audience

The Autodesk Certified User (ACU) Maya exam demonstrates competency in 3D modeling and animation. The exam covers the basic use of the Maya 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 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 joints, 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 Maya

Objective Domain

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

Note: Within the context of this exam series, all references to "create, select, manage, etc." indicate "know how to create, select, manage, etc."

1. Scene Management

1.1 Set up a project

- 1.1.a Use the Project Window
 - i. 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

AUTODESK CERTIFIED USER EXAM OBJECTIVES

1.3 Manage scene objects

- 1.3.a Organize objects
 - i. *Select, group, parent, and duplicate*
- 1.3.b Navigate and rearrange hierarchies
 - i. *Outliner*
- 1.3.c Manage and organize display layers
 - i. *Labeling, visibility, layer type, colors*

1.4 Modify Pivots

- 1.4.a Identify the coordinate system used by the pivot
- 1.4.b Change the coordinate system used by an object or component
- 1.4.c Modifying the pivot
 - i. *Move the pivot, rotate the pivot, use discrete rotate on a pivot, snap the pivot to a vertex, center the pivot on an object, and align the pivot*

1.5 Modify attributes on one or more objects

- 1.5.a Locate the value of an animated attribute
- 1.5.b Change multiple object's attributes
- 1.5.c Use the Input Line for precision transformation

1.6 Change viewport display

- 1.6.a Change viewport shading
- 1.6.b Change viewport lighting
- 1.6.c Determine poly count
- 1.6.d Toggle viewport display types
 - i. *Wireframe, Shaded, Textured, Light, etc.*

2. Modeling

2.1 Create and modify a polygon primitive

- 2.1.a Toggle interactive creation
- 2.1.b Manipulate the parametric attributes
- 2.1.c Duplicate a polygon primitive
 - i. *Duplicate special and duplicate with transformation*
- 2.1.d Align polygon primitives
- 2.1.e Deform a polygon surface
 - i. *Use lattice, non-linear deformers (bend, flare, sine, squash, twist and wave)*

2.2 Edit polygon surfaces

- 2.2.a Identify polygon components
- 2.2.b Add polygon components
 - i. *Insert Edge Loop, Offset Edge, Bevel, Fill Hole, and Append to Polygon.*
- 2.2.c Manipulate polygon components
 - i. *Move and rotate*
 - ii. *Switch between various object and component modes*
- 2.2.d Use the mesh display menu
 - i. *Hard and soft edges*

2.3 Use image planes

- 2.3.a Create an image plane
- 2.3.b Adjust/modify an image plane

AUTODESK CERTIFIED USER EXAM OBJECTIVES

2.4 Modeling tool kit

- 2.4.a Utilize Symmetry and Constraints
 - i. Transform and selection constraints
- 2.4.b Illustrate uses of Soft Selection
 - i. Change Soft Selection parameters
- 2.4.c Perform object operations
 - i. Combine, Separate, Smooth, and Boolean
- 2.4.d Manipulate components
 - i. Extrude, bevel, bridge, and add divisions
- 2.4.e Utilize Tools to modify geometry
 - i. Quad Draw, Multi-Cut, Target Weld, and Connect

3. Texture Coordinates

3.1 Assign UVs to a mesh

- 3.1.a Apply basic UV mapping projections
 - i. Automatic, Planar, Cylindrical, and Spherical
- 3.1.b Change attributes of UV projections

3.2 Use the UV Editor

- 3.2.a Describe UV components
 - i. Define a UV and identifying a UV shell
- 3.2.b Transform a UV shell
 - i. Cut, Flip, Move and Sew, Unfold, Relax, and Layout
- 3.2.c Utilize UV manipulation aids
 - i. Assign a checker map 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. Lambert, Phong, Blinn, Anisotropic, and ai Standard Surface
- 4.1.c Create a material
- 4.1.d Assign material to an object
 - i. Assign materials to selected polygons

4.2 Modify material attributes

- 4.2.a Use Hypershade
 - i. Modifying materials using the graph network
- 4.2.b Apply textures to materials
 - i. Classify texture types (2D and 3D procedurals, file textures), use color and normal textures, texture placement attributes (tiling textures), and identify projection types (when using procedural or using 3D texture types)
- 4.2.c Change shader specific attributes

5. Rigging

5.1 Utilize the Skeleton tools

- 5.1.a Create joints
 - i. Joint orientation

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- 5.1.b Edit joints
 - i. Insert, Mirror, Remove, Connect, Disconnect, and Reroot
 - ii. Forward Kinematics (FK), joint hierarchy
- 5.1.c Implement Inverse Kinematics (IK) on joints
 - i. Solver types (RP/SC)

5.2 Use the Skin tools

- 5.2.a Bind a mesh to joints
- 5.2.b Paint skin weights

5.3 Apply Constraints

- 5.3.a Identify the constraints
 - i. Parent, Aim, Point, and Orient
- 5.3.b Apply a constraint
 - i. Selection order for creation, weights, etc.
- 5.3.c View hierarchy in the Hypergraph
 - i. Identifying object connections

6. Cameras

6.1 Work with cameras

- 6.1.a Differentiate camera types
 - i. Camera, Camera and Aim, and Camera and Aim and Up.
 - ii. Identifying when to use each camera type and knowing the difference between perspective versus orthographic cameras.
- 6.1.b Create a camera
 - i. Lock and unlock a camera
 - ii. Look through a selected camera
- 6.1.c Use the manipulators to adjust camera attributes directly in the viewport
- 6.1.d Use the Camera tools to adjust the camera view
 - i. Roll, Yaw-Pitch, Zoom, Dolly, Track, Tumble, Fly and Walk

6.2 Modify camera attribute 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 Display Film Gate, Resolution Gate, and other view guides

- 6.3.a Demonstrate the use of Safe Title and Safe Action
- 6.3.b Show Resolution gate, film gate, and no gate

7. Animation

7.1 Use the Time Slider and set Animation preferences

- 7.1.a Modify Animation Time Slider and Playback Preferences
 - i. Adjust frame rate and playback speed
- 7.1.b Change the Time Slider range
- 7.1.c Set keyframes using Auto Key and Set Key
 - i. Set a keyframe, move/manipulate a keyframe, and removing a keyframe.
- 7.1.d Create a Playblast

AUTODESK CERTIFIED USER EXAM OBJECTIVES

7.2 Demonstrate how to animate an object along a path

- 7.2.a Create a curve
- 7.2.b Animate an object on the path
- 7.2.c Control object orientation and banking on the path
- 7.2.d Manipulate an object along the path
 - i. Set a motion path key, adjust motion path markers, attributes, and demonstrate how to use a flow path object.

7.3 Edit animation tangents using the Graph Editor

- 7.3.a Differentiate different tangent types
 - i. Auto Tangents, Spline, Clamped, Linear, Flat, Stepped, and Plateau.
 - ii. Switch between spline and stepped tangents
- 7.3.b Break and unify tangents
- 7.3.c Lock and unlock(free) the length of a tangent
 - i. Weighted and unweighted tangents

8. Lighting

8.1 Work with lights

- 8.1.a Differentiate light types
 - i. Ambient, Directional, Spot, Point, and Area
- 8.1.b Create a light
- 8.1.c Adjust light type-specific attributes
- 8.1.d Change common light attributes
 - i. Color and intensity
- 8.1.e Use the manipulators to adjust light attributes directly in the viewport
- 8.1.f Link lights to specific objects
 - i. Make and break light links

8.2 Work with shadow types

- 8.2.a Differentiate shadow types
 - i. Depth Map and Raytraced
- 8.2.b Adjust type-specific shadow attributes
 - i. Shadow quality and color

9. Rendering

9.1 Differentiate the built-in renderers

- i. Arnold, Software, Hardware 2.0, and Vector

9.2 Configure render settings

- 9.2.a Change common settings
 - i. Camera and resolution settings, Frame range
 - ii. Frame/animation extension from single image to multiple images
 - iii. Adjust frame padding
- 9.2.b Change renderer specific settings
 - i. Adjusting basic Arnold settings (Sampling)
- 9.2.c Prepare the render settings for batch rendering

Autodesk Certified User

3ds Max

COURSE DETAILS



3ds Max

Course ID: ACU-MAX / AITA-MAX

Training Program: Certificate in 3D Animation Using Autodesk 3ds Max

Exam Name: Autodesk Certified User (ACU)

Duration: 3 months.

Registration Fees: LKR. 10000

Course Fees: LKR. 150000 (Includes exam and practice test fees)

Note: The course may be completed in a shorter period depending on the student's prior knowledge and understanding. Fast-paced learning options are available.

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Autodesk Certified User Exam Objectives

3ds Max

3 3ds Max

Target Audience

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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
- Understand and locate software preferences
- 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.

Note: Within the context of this exam series, all references to “create, select, manage, etc.” indicate “know how to create, select, manage, etc.”

1. Scene Management

1.1 Set up a project

- 1.1.a Use the Project Window
 - i. Define a project and setting paths and folders
- 1.1.b Create a new project
 - i. Empty and default projects
 - ii. Create from current
- 1.1.c Set the active project

1.2 Setup the scene preferences

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

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- 1.2.c Set the display units
- 1.2.d Set the scene frame rate

1.3 Manage scene objects

- 1.3.a Organize objects
 - i. Use the Scene Explorer, selection sets, and the Display panel
 - ii. Select, group, and parent
 - iii. Use the Layer Explorer to Show/Hide Layers, Freeze/Thaw Layers, and Add/Delete objects from layers
- 1.3.b Navigate and rearrange hierarchies in the Scene Explorer

1.4 Modify the properties of one or more objects

- 1.4.a Change multiple objects' properties
 - i. Differentiate between Instance, Copy, and Reference
- 1.4.b Modify object parameters
 - i. Command panel, Creation panel
 - ii. Size, segment, etc.

1.5 Manipulate objects' transformations and pivot point

- 1.5.a Use the Transform tools for precision transformation
 - i. Specify a Reference Coordinate System
- 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 Create primitives
- 2.1.b Manipulate the parametric properties
- 2.1.c Apply modifiers

2.2 Edit polygon surfaces

- 2.2.a Convert to editable poly
- 2.2.b Identify polygon sub-objects
- 2.2.c Add polygon sub-objects
 - i. Insert Loop, Offset Edge, Chamfer, Cap, and Attach/Detach
- 2.2.d Manipulate polygon sub-objects to modify geometry
 - i. Move, rotate, and scale
 - ii. Switch between various object and sub-object modes
 - iii. Extrude, bevel, bridge, and add divisions
 - iv. Utilize see-through mode
 - v. Check the polygon normal and flip it if necessary
 - vi. Cut, Target Weld, and Connect.
- 2.2.e Modify smoothing groups
 - i. Assign polygons to smoothing groups

AUTODESK CERTIFIED USER EXAM OBJECTIVES

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 Use the material appropriate for the selected rendering engine
 - i. Differentiate material types
 - ii. Differentiate shader types among the different renders
- 4.1.b Create a material
- 4.1.c 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 editors
 - i. Modify material nodes in the view
 - ii. Compact vs. Slate editor
- 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. Bone parameters
- 5.1.c Implement Forward Kinematics (FK)
 - i. Check bone hierarchy in Scene Explorer

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- 5.1.d Implement Inverse Kinematics (IK) on bones
 - i. *IK Solvers*

5.2 Use the Skin modifier

- 5.2.a Edit envelopes

5.3 Apply constraints

- 5.3.a Identify the constraints
 - i. *Link, position, path, and orientation*
- 5.3.b Apply a constraint
 - i. *Selection order for creation, weights, etc.*
- 5.3.c View hierarchy in the Schematic View
 - i. *Identifying object connections*

5.4 Utilize Character Studio

- 5.4.a Apply biped
- 5.4.b Apply physique

6. Cameras

6.1 Work with cameras

- 6.1.a Differentiate camera types
 - i. *Free Camera, Target Camera, and Physical Camera*
 - ii. *Identify when to use each camera type and know 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. *Set a keyframe, move/manipulate a keyframe, remove a keyframe, and locate the value of a keyframe in the Time Slider*
- 7.1.b Change the Time Slider range
- 7.1.c Locate the value of an animated parameter
- 7.1.d Create a Preview Animation
- 7.1.e Adjust Time Configuration Settings
 - i. *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 to animate an object on the path

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- 7.2.b Demonstrate how to control object axis and banking on the path
- 7.2.c Manipulate an object along the path
 - i. *Change the spline/curve*
 - ii. *Modify the percentage along a path*

7.3 Edit animation using the Track View (Curve Editor / Dope Sheet)

- 7.3.a Differentiate different tangent types
 - i. *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
- 7.3.e Manipulate multiple keyframes using the Dope Sheet

8. Lighting

8.1 Work with lights

- 8.1.a Create a light
 - i. *Standard light types: Target spot, Free Spot, Target Direct, Free Direct, Omni, and Skylight*
- 8.1.b Change common light parameters
 - i. *Change common light parameters using Light Lister*
 - ii. *Color, multiplier, etc.*
- 8.1.c Prevent an object from receiving light
 - i. *Use the Light Include/Exclude tool*

8.2 Work with shadow types

- 8.2.a Differentiate shadow types
 - i. *Shadow Map, Ray-Traced, Area, and Advanced Ray-Traced*
- 8.2.b Adjust type-specific shadow parameters
 - i. *Color and density*

9. Rendering

9.1 9.1 Differentiate the built-in renderers

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

9.2 9.2 Configure Scanline render parameters

- 9.2.a Change common parameters
 - i. *View to Render, Output Size settings, Frame Range, and Render Region*
- 9.2.b Change renderer specific parameters
 - i. *Adjust basic settings (Sampling and Ray Depth)*
- 9.2.c Render still image and animation sequence

Autodesk Certified User

AutoCAD

COURSE DETAILS



AutoCAD

Course ID: ACU-CAD / AITA-CAD

Training Program: Certificate in Computer-Aided Design Using Autodesk AutoCAD

Exam Name: Autodesk Certified User (ACU)

Duration: 3 months.

Registration Fees: LKR. 10000

Course Fees: LKR. 150000 (Includes exam and practice test fees)

Note: *The course may be completed in a shorter period depending on the student's prior knowledge and understanding. Fast-paced learning options are available.*

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Autodesk Certified User Exam Objectives

AutoCAD



AutoCAD

Target Audience

The Autodesk AutoCAD Certified User exam demonstrates competency in computer-aided design (CAD). The exam covers the basic use of the AutoCAD software as well as basic drafting and design techniques. 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 the job market.

Candidate Description

The successful candidate is a qualified student, intern, or entry-level user with at least 150 hours of instruction and/or hands-on experience in using AutoCAD.

It is expected that these candidates have foundational knowledge and primarily work under supervision to perform the tasks involved in the job role with assistance from peers and documentation.

Prerequisites

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

- Technical drawing & design
- The AutoCAD user interface
- The help system within AutoCAD
- The draw order of overlapping objects
- Inquiry commands such as List, ID, Distance, and Area

Objective Domain

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Note: Within the context of this exam series, all references to “create, select, manage, etc.” indicate “know how to create, select, manage, etc.”

1. Draw and Modify Objects

1.1 Create basic drawing objects

- 1.1.a Create and edit geometric shapes
 - i. Lines, circles, rectangles, arcs, polygons, rays, etc.
- 1.1.b Create 2D isometric drawings
 - i. Switch between standard isometric planes (ISODRAFT)
 - ii. Use drawing and tracking tools that align with the corresponding isometric axes

1.2 Draw polylines

- 1.2.a Draw open or closed polylines
 - i. Lines and arcs
- 1.2.b Edit a polyline
 - i. Join

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1.3 Select and deselect objects

- 1.3.a Use a selection or crossing windows to select objects
- 1.3.b Remove objects from a selection set

1.4 Manage layers

- 1.4.a Set the current layer
- 1.4.b Create and/or remove layers
- 1.4.c Edit the properties of a layer
 - i. Name, color, linetype, and lineweight
 - ii. Freeze, thaw, lock, unlock, on, and off
- 1.4.d Identify the objects on a specific layer

1.5 Work with blocks

- 1.5.a Create a basic block
 - i. Define the base point
 - ii. Understand the significance of creating a block on layer 0
- 1.5.b Insert and modify instances of a block
 - i. Basepoint, Scale, Rotate, and Explode
 - ii. Blocks palette, Tool palettes, and the Design Center
- 1.5.c Transfer information between drawing files
 - i. Copy with Basepoint
 - ii. Drag and drop across multiple open drawings

2. Draw with Accuracy

2.1 Apply basic object snaps

- 2.1.a Use object snaps and object snap tracking
 - i. Endpoint, midpoint, center, nearest, intersection, perpendicular, quadrant, extension, parallel, geometric center, and tangent
 - ii. Midpoint between two points (M2P) combined with object snap tracking and polar tracking

2.2 Identify and use coordinates

- 2.2.a Enter coordinate values on the Command Line
 - i. Relative, absolute, and polar coordinates
- 2.2.b Use dynamic input and direct distance entry

3. Basic Editing

3.1 Modify object properties

- 3.1.a Identify and alter layer assignments, color, lineweight, and linetype
 - i. Properties palette and Quick Properties
- 3.1.b Match the properties of one object to other objects

3.2 Use basic editing commands to modify objects

- 3.2.a Move, copy, rotate, mirror, scale, and stretch objects
- 3.2.b Move, copy, and stretch objects using grips

3.3 Trim, extend, or lengthen objects

3.4 Create rectangular and polar arrays

3.5 Offset objects at a specific distance

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3.6 Apply a fillet or chamfer to objects

- 3.6.a Rounded corners
- 3.6.b Chamfered corners
- 3.6.c Square corners (zero radius)

4. Annotation

4.1 Create and modify text

- 4.1.a Create and modify text and multiline text
- 4.1.b Apply text and multiline text properties
 - i. *Text height, justification, rotation, text wrapping, and text style*

4.2 Add and modify leaders and/or multileaders

- 4.2.a Apply multileader styles
- 4.2.b Understand multileader options

4.3 Create and edit dimensions

- 4.3.a Add dimensions
 - i. *Linear, aligned, angular, radius, diameter*
- 4.3.b Create multiple dimensions with a single command
 - i. *Continue and baseline dimensions*
- 4.3.c Modify and apply dimension styles
 - i. *Precision, primary units, using overall scale, etc.*

4.4 Apply hatches or fill patterns

- 4.4.a Create a hatch or fill pattern
 - i. *Pick points or select*
- 4.4.b Specify hatch or fill options
 - i. *Angle, scale, pattern, match properties, inherit, and color*

5. Layouts and Printing

5.1 Work with layouts and viewports

- 5.1.a Activate a layout
- 5.1.b Modify viewports on a layout
- 5.1.c Set the viewport properties so the geometry plots to scale
- 5.1.d Add a title block to the layout

5.2 Manage output formats

- 5.2.a Publish a drawing to a plotter, printer, or PDF file
 - i. *Set printing and plotting options*
 - ii. *Use the Page Setup Manager to apply plot settings to a layout*