AUTODESK

Autodesk Certified Professional in Inventor for Mechanical Design

Exam objectives

Target audience

The Autodesk Certified Professional (ACP) certification is designed for candidates who have advanced skills and can solve complex challenges in mechanical design. This type of experience typically comes from having worked with the software on a regular basis for at least two years, or equivalent to approximately 400 hours (minimum) to 1,200 hours (recommended) of Autodesk software experience. Certification at this level demonstrates a comprehensive skill set that provides an opportunity for individuals to stand out in a competitive job market.

Candidates who obtain this certification will have demonstrated advanced skills in Inventor in mechanical design and will be able to tackle intricate challenges in relevant workflows and design. The candidate will have performed routine tasks involved in their job role with limited assistance from peers, product documentation, and support services. Successful candidates will have also used Inventor to configure designs, perform advanced part and assembly modeling, documentation, sheet metal, and weldment design tools to produce quality deliverables.

Prerequisite skills

It's expected that candidates will already know how to:

- Navigate the user interface.
- Identify areas of the browser.
- Transition through various environments.
- Know the available file types.
- Display a part or assembly.
- Create basic fully constrained sketches.
- Use Creation tools like extrude, hole, and revolve.
- Identify various planes and axes.
- Understand dimensions, parameters, and constraints.
- Create and modify basic placed features.
- Fully constrain assembly parts.
- Create patterns and mirror features.

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Exam format

- You won't have access to the software during the exam, as all questions are in a selected response format and are designed to be answered without the software user interface. Learn more about our exam format and question types in our Autodesk Certification FAQs.

Exam outline

Here are some topics and software features that may be covered in the exam. This table lists the main content domains and their weightings, followed by the complete exam content outline.

Exam domain	% of exam
Parts, assembly modeling, management	27%
Drawing, documentation, visualization	14%
Administrative, metadata	17%
Modeling strategies, approaches	42%

Exam objectives

Here are some topics and software features that may be covered in the exam.

1. Parts, assembly modeling, management

1.1. Manage Sheet Metal Design

1.1.a. Demonstrate ability to create a sheet metal part using sheet metal tools

i. May include face, flange, contour flange, bend, etc.

1.1.b. Create or modify by editing sheet metal tools

i. May include modifying a flange length, corner round, hole size, etc.

1.1.c. Utilize sheet metal defaults window to get desired results

1.2. Use and determine the appropriate pattern tools

1.2.a. Utilize the appropriate pattern tool required

i. May include rectangular, circular, and feature based tool

1.2.b. Mirror selected components and features

i. May include, exclude components, and reuse Content Center part

1.2.c. Copy selected components

i. May include creating or reusing the components

1.3. Modify parts and assembly models parametrically

1.3.a. Modify an existing 3D part model or feature using the parameters table

1.3.b. Update drawing views following a change in parameters

1.3.c. Confirm that a drawing accurately reflects the model after altering a parameter

1.3.d. Link a parameter to another part or assembly

1.3.e. Export a parameter to an iPart

1.3.f. Check the Parameters table, change a parameter expression, change the parameter unit

1.3.g. Link the parameters from an Excel spreadsheet, a part, or an assembly

1.4. Insert and position components in an assembly (component/relationship panel)

1.4.a. Place a part, a Content Center part or an iPart into an assembly

1.4.b. Replace selected or all parts and/or sub-assemblies

1.4.c. Constrain parts within an assembly in a manner that is easily understood, fully constrained, and that align with the design intent

1.5. Demonstrate ability to create weldment assemblies

1.5.a. Utilize a weld in a weldment environment

1.5.b. Perform weld prep

1.5.c. Perform machining operations within a weldment

2. Drawing, documentation, visualization

2.1. Utilize place views

2.1.a. Override dimension style for Reference, Critical, and Tolerance

2.1.b. Create required drawing views on a 2D drawing

2.1.c. Display an assembly fully retracted and fully extended in a drawing

2.1.d. Create and edit documentation, Snapshot views, using IPN files

2.1.e. Validate drawing after a model update

2.1.f. Recall when model needs to be modified vs. drawing annotation change

2.1.e. Describe how to update an iProperty update from a model to reflect on the drawing

2.2. Annotate drawings

2.2.a. Edit a geometric tolerance in a detailed drawing

2.2.b. Placing and using symbols such as feature control frames, surfaces, etc.

2.2.c. Manage BOM in an assembly

2.3. Utilize View and Inspect tabs for Parts and Assemblies

2.3.a. Activate and modify section views

2.3.b. Save a view representation

2.3.c. Activate and control surface analysis

i. May include zebra, curvature, or section analysis

2.3.d. Demonstrate knowledge on the tools within the view tab

i. May include object visibility, section views, projections styles, visual styles, navigation, etc.

2.3.e. Obtain interference between components

3. Administrative, metadata

3.1. Recognize function of a project file

3.1.a. Use file and library paths for design projects

3.1.b. Templates, libraries, content center, single user project

3.2. Share company standards

3.2.a. Share Material Libraries

3.2.b. Share Styles

i. May include Sheet metal or drawing styles.

3.2.c. Access the Application options and import a customized ApplicationOptions.xml into your current session

3.2.d. Determine the default thickness that is set within your active sheet metal style

3.3. Manage iProperties

3.3.a. Use and create custom iProperties

3.3.b. Manage drawing properties

3.4. Sharing files

3.4.a Use pack and go to effectively share an assembly

3.4.b. Export or generate files with secondary file formats

i. May include PDF, DXF, STP, or STL.

3.4.c. Understand parent and child file relationships

4. Modeling strategies, approaches

4.1. Utilize appropriate modeling strategies

4.1.a. Design an appropriate strategy for modelling a part with complex repeating geometry

4.1.b. Create models that capture design intent

4.1.c. Recognize modeling strategies that make a parametric model more robust

4.1.d. Explain the differences between the available Derive style types when editing a derived part

4.1.e. Design parts with appropriate reference planes and sketch profiles

4.2. Utilize appropriate model editing strategies

4.2.a. Edit parametric values

4.2.b. Utilize user placed workplanes, Axis, Points

4.2.c. Display a part at its nominal, maximum, minimum tolerance whilst analyzing interference

4.3 . Import secondary file formats

4.3.a. Identify imported geometry that needs repair

4.3.b. Describe the use case for 2D DXF import

4.4 . Recognize browser bar functionality

4.4.a. Promote and demote

4.4.b. End of Part and Assembly

4.4.c. Consumed work features

4.4.d. Share sketch

4.4.e. Rearrange feature order

4.5 . Use model states for parts

4.5.a. Activate a model state

4.5.b. Edit and modify an existing model state

4.5.c. Export the variables from model states

4.6. Leverage model states for assemblies and iParts and iAssemblies

4.6.a. Change a placed model state inside an assembly

4.6.b. Create derived part and identify options

4.6.c. Utilize edit factory scope vs. Edit member scope

4.6.d. Change placed iPart or iAssembly

4.7. Demonstrate knowledge of adaptivity, component relationships, and flexibility

4.7.a. Identify a features relationship to other features or sketches