Learn CAM in 90 Minutes - Metric

Instructor guide

Course duration: ~775 minutes

Level: Beginner

Product: Autodesk® Fusion®

This instructor guide is a comprehensive tool for facilitating this in the classroom. Prepare to teach this course by thoroughly reviewing this document, as well as all related course materials and resources.

We’ve summarized the core Fusion Skills in the Learn CAM in 90 minutes course so you can familiarize yourself with them before delivering this learning content in the classroom. It’s always recommended that you work through the course yourself in preparation for each lesson.

**Learning objectives:**

* Set up stock for CNC Milling in Autodesk Fusion.
* Create toolpaths to rough and finish a mechanical part.
* Validate toolpaths and stock removal with simulation.
* Create documentation and G-code to control a CNC Mill.

Each module is listed below along with suggested time allocations for instruction. The referenced demonstrations are based on the step-by-step instruction included in the course. Review the video tutorials for the detailed instruction in each module.

**Getting started**

**Total time required for module**: 20 minutes

**Discuss objectives:** 3 minutes

**Demonstrate:** 10 minutes

* Review course overview and learning objectives
* Download the course resources and software
* Create an Autodesk ID
* Install the software
* Review the starter activity and articles

**Hands-on time:** 5 minutes

**Review objectives:** 2 minutes

**Stock setup for a 2.5-axis CAM project**

**Total time required:** 95 minutes

**Discuss objectives:** 3 minutes

**Demonstrate:** 15 minutes

* Define digital stock size.
* Locate a WCS.
* Define post processor settings in the setup dialog.

**Hands-on time:** 20 minutes

**Review objectives:** 2 minutes

**Datasets:**

*Cell Phone Stand – Metric Assembly.f3d*

*Vise.f3d*

*Cell Phone Metric CAM Setup.f3d*

**Assignments:**

* **Practice exercise:** 20 minutes
  + *Cell Phone Stand Practice – Metric Assembly.f3d*
* **Challenge exercise:** 20 minutes
  + *Cell Phone Stand Practice – Metric Assembly.f3d*
* **Module quiz:** 15 minutes

**Tool Library Setup**

**Total time required:** 115 minutes

**Discuss objectives:** 3 minutes

**Demonstration:** 15 minutes

* Create a cloud tool library.
* Copy and Paste tools.
* Create a new tool.

**Hands-on time:** 20 minutes

**Review objectives:** 2 minutes

**Datasets:**

*CAM 90 Library Metric.tools*

**Assignments:**

* **Practice exercise:** 20 minutes
* **Challenge exercise:** 40 minutes
* **Module quiz:** 15 minutes

**Toolpath Creation - Stand**

**Total time required:** 115 minutes

**Discuss objectives:** 3 minutes

**Demonstration:** 15 minutes

* Create toolpaths to rough a part.
* Create toolpaths to finish a part.
* Use in-process stock to validate toolpaths.

**Hands-on time:** 30 minutes

**Review objectives:** 2 minutes

**Datasets:**

*Cell Phone Metric – Face.f3d*

*Cell Phone Metric – Rough.f3d*

*Cell Phone Metric – Finish.f3d*

*Cell Phone Metric – Chamfer.f3d*

**Assignments:**

* **Practice exercise:** 20 minutes
  + *Cell Phone Stand Practice Toolpaths – Metric Assembly.f3d*
* **Challenge exercise:** 30 minutes
  + *Cell Phone Stand Practice Toolpaths – Metric Assembly.f3d*
* **Module quiz:** 15 minutes

**Toolpath Creation - Base**

**Total time required:** 110 minutes

**Discuss objectives:** 3 minutes

**Demonstration:** 15 minutes

* Create toolpaths to rough a part.
* Create toolpaths to finish a part.
* Use in-process stock to validate toolpaths.

**Hands-on time:** 25 minutes

**Review objectives:** 2 minutes

**Datasets:**

*Cell Phone Stand Metric - Face.f3d*

*Cell Phone Stand Metric - Rough.f3d*

*Cell Phone Stand Metric – Finish.f3d*

*Cell Phone Stand Metric – Debur.f3d*

**Assignments:**

* **Practice exercise:** 20 minutes
  + *Cell Phone Stand Practice – Metric Assembly - Modify.f3d*
* **Challenge exercise:** 30 minutes
  + *Cell Phone Stand Practice – Metric Assembly - Modify.f3d*
* **Module quiz:** 15 minutes

**Simulation and Post Processing**

**Total time required:** 95 minutes

**Discuss objectives:** 3 minutes

**Demonstration:** 15 minutes

* Use toolpath simulation.
* Create an NC Program.
* Create a Setup Sheet.
* Post Process toolpaths.

**Hands-on time:** 10 minutes

**Review objectives:** 2 minutes

**Datasets:**

*Cell Phone Metric - Simulate.f3d*

**Assignments:**

* **Practice exercise:** 20 minutes
  + *Cell Phone Stand Metric Practice - Simulate.f3d*
* **Challenge exercise:** 30 minutes
  + *Cell Phone Metric – Final.f3z*
* **Module quiz:** 15 minutes

**Assignments:**

* **Course Assessment:** 45 minutes
* **Course Challenge:** 180 minutes

**Module:** Next steps

**Total time required:** 30 minutes