

**Duration:**

2 days with an optional 3<sup>rd</sup> day. We recommend 3 core modules, with an option for 3 additional modules, if required.

**Who should attend?:**

Designers who have completed the Essentials course (AD27).

**Prerequisites:**

Students should have a basic understanding of Autodesk Inventor parametric part and assembly design. It is recommended that you have a working knowledge of Microsoft supporting systems.

**Course Description:**

This courseware covers the fundamental principles and recommended workflows for creating complex sketches and curves, creating and analysing complex parts using AutoCAD Inventor®.

Students learn how to use construction geometry to automate and simplify sketches, and the proper techniques and recommended workflows for creating complex 2D and 3D sketches, and 3D curves. Additionally, students learn the proper techniques and recommended workflows for incorporating complex, free-form shapes into a design to create cast and moulded parts and attractive ergonomic products in AutoCAD Inventor.

Lastly, this courseware covers the fundamental principles and recommended workflows for documenting assemblies. Students learn the proper techniques and recommended workflows for documenting assemblies using standard and exploded drawing views, how to customize assembly views, and how to create overlay views that represent multiple mechanism orientations. Students also learn how to annotate assembly drawings with automated balloons and part lists.

**Objectives:**

- To teach students the recommended workflows and basic skills needed to create and use construction geometry, create complex 2D and 3D sketches, and create 3D curves
- To understand the more advanced workflows and techniques for creating complex solid shapes and surfaces in AutoCAD Inventor®.
- Use the Sculpt tool to quickly create complex shapes from multiple surface features.
- Create complex blended shapes using advanced options on the Loft and Sweep tools
- Create complex fillets, including variable radius, full round, and face-to-face fillets
- Create cast and moulded part designs using the Shell, Rib, Draft, Offset/Thicken, and Split tools
- Use the Zebra and Gaussian surface analysis and cross section analysis tools to analyze a design using AutoCAD Inventor®.

<p><b>Course Outline:</b></p> <p><b>Automating and Simplifying Sketches with Construction Geometry</b></p> <ul style="list-style-type: none"> <li>• Construction Geometry vs. Dimensions</li> <li>• Using Construction Geometry for Predictable Results</li> </ul> <p><b>Creating 2D Sketches</b></p> <ul style="list-style-type: none"> <li>• Properly Constraining Sketches</li> <li>• Creating and Constraining Splines</li> <li>• Projecting Geometry from Existing Part Edges</li> <li>• Sharing Sketches</li> </ul> <p><b>Creating Complex 3D Sketches</b></p> <ul style="list-style-type: none"> <li>• Creating 3D Lines and Splines</li> <li>• Creating 3D Sketches Using</li> </ul>	<p>Existing Edges (including geometry)</p> <ul style="list-style-type: none"> <li>• Creating 3D Sketches Using Work Points</li> </ul> <p><b>Creating Complex 3D Curves</b></p> <ul style="list-style-type: none"> <li>• Projecting Geometry</li> <li>• Intersecting Geometry</li> </ul> <p><b>Designing with 2D and 3D Splines</b></p> <ul style="list-style-type: none"> <li>• Introduction to Complex Shape Design</li> <li>• Using 2D Splines for Shape Layout</li> <li>• Using 3D Splines for Shape Layout</li> <li>• Editing Splines</li> </ul> <p><b>Designing Complex Shapes</b></p> <ul style="list-style-type: none"> <li>• Creating Complex Blended</li> </ul>	<p>Shapes</p> <ul style="list-style-type: none"> <li>• Creating Complex Swept Shapes</li> <li>• Combining Solid and Surface Modelling</li> <li>• Creating Thin Walled Parts</li> <li>• Troubleshooting Surface Problems</li> </ul> <p><b>Deriving Designs and Finishing Tools</b></p> <ul style="list-style-type: none"> <li>• Creating Multiple Parts from a Master Model</li> <li>• Techniques and Tools for Castings</li> <li>• Creating Draft for Cast Components</li> </ul> <p><b>Creating Assembly Drawings</b></p> <ul style="list-style-type: none"> <li>• To Be Advised</li> </ul>
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<p><b>Optional Modules:</b></p> <p><b>Functional Design</b></p> <p>This course is designed for anyone who designs standard components, i.e. Shafts, Springs, Bearings, Clutches, Pulleys etc</p> <p><b>Introduction to Functional Design</b></p> <ul style="list-style-type: none"> <li>• Functional Design vs. Traditional Modelling</li> <li>• Calculators, Component Generators, and the Engineers Handbook</li> </ul> <p><b>Mechanical Calculators</b></p> <ul style="list-style-type: none"> <li>• Welding and Solder Joint Calculators</li> <li>• Shaft, Hole Limit, and Press Fit Calculators</li> <li>• Tolerance Stack Up Calculators</li> <li>• Beam and Column Calculators</li> </ul>	<p><b>Component Generators</b></p> <ul style="list-style-type: none"> <li>• Creating Mechanical Connections</li> <li>• Creating Shafts, Bearings, and Gears</li> <li>• Creating Keys and Pins</li> <li>• Creating Power Transmissions</li> <li>• Creating Cams Creating Springs</li> </ul> <p><b>Importing data for Fixture Design</b></p> <p>This course is designed for anyone who imports standard parts from other systems and designs welded assemblies, i.e. Jigs &amp; Fixtures.</p> <p><b>Importing CAD Data from Other Systems</b></p> <ul style="list-style-type: none"> <li>• Importing Geometry</li> <li>• Reviewing Import Results</li> </ul>	<p><b>Analysing and Repairing Imported Data</b></p> <ul style="list-style-type: none"> <li>• Analysing Imported Content</li> <li>• Organising Imported Content</li> <li>• Repairing Surfaces</li> <li>• Promoting Imported Geometry</li> <li>• Managing Engineering Changes</li> </ul> <p><b>Fixture Design</b></p> <ul style="list-style-type: none"> <li>• Defining the Base, Support, and Clamp Locations</li> <li>• Using Surface Geometry in the Fixture Design</li> <li>• Defining Locations for Locator Pins</li> <li>• Spot Welding</li> </ul>
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\* The suggested course duration is a guideline.

Course topics and duration may be modified by the instructor based upon the knowledge and skill level of the course participants.

The course is Autodesk Authorised with Courseware, and Certificate of Completion awarded

Maximum number of delegates: 6 per course

Training can either be taken on site or at one of our conveniently located local training centres.

To book a place on this course please call Graitec on **023 8086 8947**

#### **Graitec Training Centre Locations**

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