

Lesson Plan

Mechanical engineering CAD



Lesson plan

Understanding the different types of engineering drawings and how and why these are used; developing skills in reading them and drawing components and assembly parts.

Skill

Ability to create, read, interpret and understand information in technical drawings.

Duration

Approximately 2.5 hours.

Suitable for

This module is suitable for learners undertaking apprenticeship and technical skills, which include units and modules that focus on understanding and working with technical drawings.

Resources needed

When accessing the learning materials through the WorldSkills UK Skills Development Hub, ensure you have a suitable screen, laptop or other computer, to access the system accordingly.

Students can go through the online materials independently – either at your facilities, if you have access to enough computers, or can go through the materials at home in their own time.

Where students do not have access to the right technology or where you as the educator would prefer to print out resources, you will need to download and print the files from the resource library included in this module.

You will also need access to the technology to play the video demo, which is mandatory watching in order to complete the practical tasks.

The assessment should be taken online through the WorldSkills UK Skills Development Hub.

Learning Outcomes

By the end of the module, students will be able to:

- identify which type of drawing is used for a particular situation
- describe what types of drawings there are and the differences in information they contain
- extract the relevant information from drawings
- recall a range of symbols used in drawings
- explain dimensions and tolerancing
- discuss geometric data on a drawing.
- read and understand technical drawings and use a computer to draw components and assembly parts.

Section	Timings	Key teaching points
Introduction Learning objectives	2 minutes	Introduction slide.
Lesson 1: Basic concepts 1*	45 minutes	Introducing learners to components, assembly and title blocks, drawing information, zones, general arrangement, views and projections used in drawings, drawing views and auxiliary drawings.
Lesson 2: Basic concepts 2*	15 minutes	Introducing learners to drawings and sketches, line types, geometric dimensioning and tolerancing in drawings.
Lesson 3: Summative assessment:*	10 minutes	Interactive activities to check understanding of concepts from Lesson 1 and 2: line types, angle projections, title blocks, drawing parts, views and geometric dimensions and tolerancing.
Lesson 4: Quality aspects	30 minutes	Introducing learners to the quality control process: manual and automated equipment, quality assurance scenario, the Right First Time principle and quality criteria.
Lesson 5: Reading drawings*	10 minutes	Interactive drawings which include hotspots for learners to access detailed information about component and assembly example drawings.
Lesson 6: Video demo	10 minutes	Learners watch the video demo showing the step by step process of drawing a component and an assembly model
Lesson 7: Stretch activity	15 minutes	Learners practise drawing an assembly model using the specifications in the picture provided. A step-by-step guide is provided in the lesson for learners to check they followed the required process.
Lesson 8: Resource library		Drawings and files for learners to download and practise.
Assessment	10 minutes	Learners will be tested on their knowledge of the skill. The pass mark is 80% and learners may retake the test as many times as they like.

- * Please note, these sections include downloadable PDFs through the resource library in lesson 8.
- * Learners on mobile devices will only have access to some of the interactive activities in this module.

Additional info:

Preparation

- familiarise yourself with the WorldSkills UK Skills Development Hub
- make sure that you have printed any resources you may need
- ensure you have access to the technology to play the video demos.

Differentiation/meeting individual needs

- you may need to support some learners who do not have access to the right technology or do not have internet access.