

# Leseprobe

Christiani

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Operational training · Metal working

## Manual material processing

Trainer manual



Trainer

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[www.christiani.de](http://www.christiani.de)

Time (h)	Goals – Contents – Schedule – Notes	Media
0.75	<b>Course Introduction</b> <ul style="list-style-type: none"> <li>▶ Welcome, introductions</li> <li>▶ Schedule and organisation</li> <li>▶ Getting to know the workplace</li> </ul>	Flip chart  Tour of the workshop
0.75	<b>Course contents:</b> <ul style="list-style-type: none"> <li>▶ Manual machining processes</li> <li>▶ Machining processes on a drilling machine</li> <li>▶ Tensioning of workpieces and drilling tools</li> <li>▶ Techniques for manual material processing</li> <li>▶ Reading and using technical documentation</li> <li>▶ Work planning</li> <li>▶ Self-check/evaluation of results</li> <li>▶ Occupational safety, environmental protection and efficient use of energy</li> </ul>	Flip chart
0.50	<div style="background-color: #e6f2ff; padding: 2px;"><b>Learning objectives exercise 1, U-section</b></div> <p>On completion of the exercise, the trainee will be able to:</p> <ul style="list-style-type: none"> <li>▶ Explain the skill of filing</li> <li>▶ Describe the components of the file and how it works</li> <li>▶ Differentiate between different types of tooth</li> <li>▶ Explain types of cut and pitch</li> <li>▶ Select the appropriate files for the work to be carried out</li> <li>▶ Explain what file designations mean</li> <li>▶ Describe the components and function of the parallel vice</li> <li>▶ Explain the safety provision and accident prevention regulations as well as measures for the protection of the environment</li> <li>▶ Dual-file the flange surfaces of a U-steel evenly</li> </ul>	Flip chart  <b>Manufacturing processes</b> Slides I to III
	<b>Trainer manual</b>	<b>Metal working</b>
	<b>Manual material processing</b>	

Time (h)	Goals – Contents – Schedule – Notes	Media
1.50	<p><b>Instructions/technical discussion (exercise 1)</b></p> <ul style="list-style-type: none"> <li>▶ Categorisation of filing</li> <li>▶ Parallel vice</li> </ul> <p>Vice height, jaw protectors, tensioning of workpieces</p> <ul style="list-style-type: none"> <li>▶ General information about files</li> <li>▶ Components of the file and how it works</li> <li>▶ Types of file</li> <li>▶ Replacing the file handle</li> <li>▶ Cleaning the file</li> <li>▶ Work technique for files</li> </ul> <p>Holding and moving the file, posture, pressure distribution and feed</p> <ul style="list-style-type: none"> <li>▶ Checking evenness (light gap method)</li> <li>▶ Material designation (U-steel)</li> </ul> <p>Steel profiles, short name for steel, minimum yield strength, steel grades</p> <ul style="list-style-type: none"> <li>▶ General information about occupational safety and the protection of the environment</li> </ul>	<p><b>Filing</b></p> <p>Text book and slides 1 to 17</p> <p>Book of tables</p> <p>View model of files</p>
8.00	<p><b>Exercise 1: File U-section</b></p> <ul style="list-style-type: none"> <li>▶ Preparation for the exercise</li> </ul> <p>Workflow and equipment Occupational safety and the protection of the environment</p> <ul style="list-style-type: none"> <li>▶ Completion of the exercise</li> </ul>	<p>Documentation for exercise 1</p>
0.50	<p><b>Evaluation with the trainee</b></p>	
0.50	<p><b>Summary/learning objectives check</b></p>	
	<b>Trainer manual</b>	<b>Metal working</b>
	<b>Manual material processing</b>	

Time (h)	Goals – Contents – Schedule – Notes	Media
0.50	<p><b>Learning objectives for exercises 2 and 3, scribing sheets I and II</b></p> <p>On completion of the exercise, the trainee will be able to:</p> <ul style="list-style-type: none"> <li>▶ Explain the skill of scribing</li> <li>▶ Specify reference planes</li> <li>▶ Take direct and indirect measurements with an accuracy of <math>\pm 0.5</math> mm</li> <li>▶ Use a steel ruler and a scriber</li> <li>▶ Explain the skill of punching</li> <li>▶ Describe the components of the punch and how to use it</li> <li>▶ Describe the components of the dividers and how to use them</li> <li>▶ Identify and correct punching errors</li> <li>▶ Use scribing templates</li> <li>▶ Explain the safety provision and accident prevention regulations as well as measures for the protection of the environment</li> <li>▶ Transfer dimensions by drawing scribing lines</li> </ul>	Flip chart
1.50	<p><b>Instructions/technical discussion (exercises 2 and 3)</b></p> <ul style="list-style-type: none"> <li>▶ Categorisation of scribing, punching and mark</li> <li>▶ Scribes and equipment</li> <li>▶ Punches and equipment</li> <li>▶ Marking tools</li> <li>▶ Reference plane</li> <li>▶ Work technique for scribing</li> <li>▶ Work technique for punching</li> <li>▶ Material designation (scribing sheets)</li> </ul> <p>Steel plates, short name, minimum yield strength, steel grades</p> <ul style="list-style-type: none"> <li>▶ General information about occupational safety and the protection of the environment</li> </ul>	<p><b>Scribing, punching, marking</b>            Text book and slides 1 to 14            Book of tables            View model of tools</p>
	<b>Trainer manual</b>	<b>Metal working</b>
	<b>Manual material processing</b>	

Time (h)	Goals – Contents – Schedule – Notes	Media
6.50	<p><b>Exercises 2 and 3, scribing sheets I and II scribing and punching</b></p> <ul style="list-style-type: none"> <li>▶ Preparation for the exercises</li> <li>Workflow and equipment</li> <li>Occupational safety and the protection of the environment</li> <li>▶ Completion of the exercises</li> </ul>	Documentation for exercise 2 and exercise 3
0.50	<p><b>Evaluation with the trainee</b></p>	
0.50	<p><b>Summary/learning objectives check</b></p> <p><b>Note:</b></p> <p>The scribing sheets can be completed by the trainees in a single step. Alternatively, there may be an intermediate evaluation once scribing sheet I is complete.</p>	
0.50	<p><b>Learning objectives exercise 4, fitting</b></p> <p>On completion of the exercise, the trainee will be able to:</p> <ul style="list-style-type: none"> <li>▶ Explain the skill of sawing</li> <li>▶ Describe the individual parts of the hand hacksaw</li> <li>▶ Describe the components of saw blades</li> <li>▶ Differentiate between types of saw blade</li> <li>▶ Select saw blades</li> <li>▶ Clamp saw blades</li> <li>▶ Explain the process of sawing</li> <li>▶ Explain the safety provision and accident prevention regulations as well as measures for the protection of the environment</li> <li>▶ Create straight and uniform cuts with the saw</li> </ul>	<p>Flip chart</p> <p><b>Manufacturing process</b></p> <p>Slides I to III</p>
	<b>Trainer manual</b>	<b>Metal working</b>
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Time (h)	Goals – Contents – Schedule – Notes	Media
1.50	<b>Instructions/technical discussion (exercise 4)</b> <ul style="list-style-type: none"> <li>▶ Components of the hand hacksaw</li> <li>▶ Saw blades Tooth pitch, types of tooth, chip formation, types of saw blade</li> <li>▶ Selection of the saw blade</li> <li>▶ Clamping the saw blade</li> <li>▶ Work technique for sawing</li> <li>▶ Material designation (flat steel) Short name for steel, minimum yield strength, steel grades</li> <li>▶ General information about occupational safety and the protection of the environment</li> </ul>	<b>Sawing</b> Text book and slides 1 to 10 Book of tables View model Hacksaw Saw blades
3.50	<b>Exercise 4: Sawing a fitting</b> <ul style="list-style-type: none"> <li>▶ Preparation for the exercise Workflow and equipment Occupational safety and the protection of the environment</li> <li>▶ Completion of the exercise</li> </ul>	Documentation for exercise 4
0.50	<b>Evaluation with the trainee</b>	
0.50	<b>Summary/learning objectives check</b>	
	<b>Trainer manual</b>	<b>Metal working</b>
	<b>Manual material processing</b>	