



A - Section - Macro Level

School IPSIA MERONI LISSONE (Milano) – Country: Italia

Title	EQUIP A CNC CENTER TO PRODUCE A DOOR OR A PANEL OF COMPLEX SHAPE		
Reference Class	THIRD CLASS - OIMA		
Working Hours	15	Implementation Period	FEBRUARY/MARCH
Competence at the end of this module	Choose the correct tools for different types of production		
Skills	knowledge	Involved Subjects	
<p>Identify how important is to choose the suitable tool for a requested production</p> <p>Choose correctly the necessary tools for sizing, boring and milling on traditional Machine Tools and CNC</p> <p>Understand technical catalogues of tool manufacturers</p>	<p>Basic single cut tool theory</p> <p>Materials for tools</p> <p>Sawing indicators</p> <p>Typology and features of sizing, cutting and boring tools.</p>	Production Technique.	
Competence verification method			
Competence verification method will be effected during two different moments:			
<ul style="list-style-type: none"> • While student is working assessing his/her actions 			

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- At the end of module through an interview about the student's product

B - Section - Micro Level

Working process				
n.	hours	Title	Teacher activity	Student activity
1	3	Basic single cut tool	<p>He/She describes briefly the function of chip removal operations in industrial and craft furniture production.</p> <p>He/She defines geometry and function of typical angles of a basic tool.</p> <p>He/She shows the chip production process.</p>	<p>He/She describes orally his/her personal direct and indirect experience about the use of one or a few machine tools.</p> <p>He /She describes the theory of chip production and gives some similar examples in other daily phenomena.</p>
2	3	Cut parameters	<p>He/She reminds the peripheral speed concept in a circular motion through examples, pointing out its dependence on distance from the rotation centre and on the rotation speed.</p> <p>He/She defines the related motion between tool and piece.</p> <p>He/She defines cut speed, advancing speed and passage depth.</p> <p>He/She points out the relationship between cut, volume and production quality parameters.</p>	<p>He/She describes the qualitatively the cut parameters for shearing, milling and planning operations.</p> <p>He/She selects the correct cut speed using tables of optimal readings for different kinds of materials (solid wood and by-product panels)</p> <p>He/She calculates the cut speed given the diameter and the rotation speed</p> <p>He/She calculates the rotation speed given the blade diameter and the cut speed</p>



				He/She calculates the necessary diameter to obtain a certain cut speed with a certain rotation speed.
3	4	Use of technical diagrams	He-She shows the fan-shaped diagram for the determination of the rotation speed given the cut speed and the blade size or vice versa. He-She asks students to practise the diagram use	He-She defines the correct rotation speed of a blade, given the size and the cut speed, using the diagrams. He-She defines the cut speed which comes from the use of a certain blade at a fixed rotation speed, using diagrams.
4	5	Typology and tool characteristics for sizing, cutting and boring.	He-She shows the different types and the main applications on different catalogues of tool producers.	He-She chooses the correct tool for a production pointed out by the teacher, using the technical catalogue.

Edited by

Eugenio Perego

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Suggestions to use the above model

To fill in the B section (micro level) it is necessary to divide the module into units .

A 30-hour module can be divided into 5 or 6 units of 5/6 hours.

In the "Student Activity" column actions have to be of practical type (what students make) , these actions must not be of mental type (define, think,...) and they have to be expressed by present simple tense.

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