



*Learning Unit Modules*  
*Focused in Integral Professional Competences*

**I. GENERAL LEARNING UNIT**

1. Identification	2. Code	3. Semester	4. Training área
<b>Cutting Elements Designing</b>	TOP44-TOP47	7TH-8TH	Terminal

5. Mode					
<b>Compulsory</b>	X	<b>Elective</b>			
<b>Classroom</b>	X	<b>Non-Attendance</b>		<b>Mixed</b>	
<b>Laboratory</b>	X	<b>Field practices</b>		<b>Guided tours</b>	

6. Class shedule (hours per week)				
Theory	Practice	Independent study	Total hours	Credits
2	2	1	5	5

7. Person responsible for the subject.
José Rodolfo Goche Télles

**II. DATA SPECIFIC LEARNING UNIT**

8. Objective
<ul style="list-style-type: none"> <li>Provide students with the principles and factors to consider in the design of cutting elements for the forest industry and the characteristics of the machines used for machining wood.</li> </ul>

9. Presentation.
For the design of cutting elements is due primarily to meet the physical and mechanical materials and considerations to take for modeling and / or analysis schemes, properties also, the material characteristics of the cutting used in their manufacture.

10. Professional competences to develop in students.			
Knowledge	Skills	Attitudes	Values



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Models for optimizing the transformation of raw material into forest products with a higher added value.	Managing models for optimizing the transformation of raw materials into finished forest products.	Collaboration and participation in team Works.  Interest in self learning and continuous learning.  Open to criticism and with availability to accept them.	Respect.  Honesty.  Responsibility.
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<b>11. Course topics</b>
UNIT 1: Cutting Theory. UNIT 2: Cutting tools for wood. UNIT 3: Maintenance of cutting tools UNIT 4: machining of wood

<b>12. Evaluation criteria</b>
Formative evaluation Summative evaluation Self assessment Co-evaluation Evaluation hetero

<b>13. Information sources</b>
<b>Basic</b>
Costes J. Ph. and Larricq P. 2002. Towards high cutting speed in wood milling. Ann. For. Sci. 59: 857–865.  Cristóvão, L. 2013. Machining Properties of Wood: Tool Wear, Cutting Force and Tensioning of Blades. Doctoral Thesis. Division of Wood Science and Technology. Department of Engineering Sciences and Mathematics. Luleå University of Technology. Skellefteå, Sweden. 144 p.  Flores, V. R. 1990. Características de maquinado de 4 especies maderables de encino del estado de Puebla. Tesis profesional. Universidad Autónoma Chapingo, México. 65p.  Gutiérrez, D. M. Y Gutiérrez D. G. 1982. La madera y su proceso de corte (primera y segunda parte). Chile Forestal. Chile. 16p.



Ramasamy G. and J. Ratnasingam. 2010. A review of cemented tungsten carbide tool wear during wood cutting processes. *Journal of Applied Sciences* 10 (22): 2799-2804

Sánchez, R. L. 1994. Manual de mantenimiento de sierras cinta o banda. Serie de Apoyo Académico No. 48. División de Ciencias Forestales. Universidad Autónoma Chapingo. México. 86p.

#### **Complementary**

Cristóvão, L., Broman, O., Ekevad, M., Grönlund, A., and Siteo, R. 2011. Main cutting force model for two species of tropical wood. *Wood Material Science and Engineering* 7(3), 143-149.

Goche T., J. R., A. Borja R. 1995. Estudio tecnológico de la madera de *Quercus sideroxylla* del estado de Durango. *Rev. Chapingo, Serie: Ciencias Forestales*. 1(1):17-22.

Martínez C., J. L. Y Martínez P., E. 1996. Características de maquinado de 32 especies de madera. *Madera y Bosques*. 2(1):45-61