

5.0 credits	30.0 h + 30.0 h	1q
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Teacher(s) :	Simar Aude ; Delannay Laurent ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	Methodology in the mechanical workshop and for quality assurance. Basic principles and machine-tools for machining by cutting, erosion and electrical discharge. Basic principles for manufacturing by forming, casting, sintering and welding.
Aims :	To give a good understanding of the issues and challenges in mechanical production: - How is manufactured a given part ? Through which process and with what type of machine-tool ? - What are the basic principles of machining by cutting, by erosion, and by the so-called "non conventional" methods ? - What are the basics principles of manufacturing by forming, casting, sintering and welding ? <i>The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".</i>
Content :	The importance of the industry of mechanical production. The challenges in manufacturing. Machining principles and machine-tool classification. - Machining by cutting : planning and turning, boring and drilling, milling, broaching and tapping. - Machining by erosion. Rectification. - Machining with the non-conventional processes. Electrical discharge machining. Forming. - Classification of the forming processes according the deformation temperature, the stresses in the matter and the deformation modes. - Forming of the flat products. Stretching, drawing and forming limit diagram. Deep drawing. - Computation of the forces required for forming. Rolling, drawing and extrusion. - Lubrication. - Presses characteristics. Casting : principles, casting sequences, mold design, main casting processes. Sintering : powder production, compaction, sintering, finishing. Welding and adhesive bonding : definition, welded and adhesive bonded joints, main welding processes. Cutting : classification of the processes.
Other infos :	- Prerequisite : MECA 2821 "Design and Machines". - Exercises are laboratories and practices on the main machine-tools by groups of 2 or 3 students. - A part of the examination deals with a discussion of the parts manufactured on the machine-tools by the students during the labs.
Cycle and year of study :	> Bachelor in Mathematics > Bachelor in Engineering > Master [120] in Electro-mechanical Engineering > Master [120] in Mechanical Engineering
Faculty or entity in charge:	MECA