

5.0 credits	30.0 h + 22.5 h	2q
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Teacher(s) :	Delannay Laurent ; Pardoen Thomas (coordinator) ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	<p>The course is divided in three parts. The first part consists in an introduction to the phenomenological theory of plasticity (J2 déformation theory, J2 flow theory, Hill anisotropic theory), cristal polycrystal theory of plasticity.</p> <p>The second part concerns the other important phenomena taking place during a forming operation : textures, residual stresses, microstructural evolution, contacts and wear, forming limit diagrams.</p> <p>The third part introduces to the most technologically important forming processes : rolling, extrusion, drawing, deep drawing, forging.</p>
Aims :	<p>The course gives a theoretical knowledge of the various concepts or theory related to the forming of metals: macroscopic theory of plasticity, mechanisms of microstructure evolution, cristallographic textures, residual stresses, tribology, forming limits. It offers the the possibility to use a finite element code for simulating forming operations. It also introduces to the key technological issues involved in the most common metal forming processes.</p> <p><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></p>
Content :	<p>Part I. Plasticity theory</p> <p>Part II. Other phenomena taking place during forming operations</p> <p>Part III. Introduction aux principaux procédés de mise en forme</p> <p>Projects by groups about specific important forming operations</p>
Other infos :	<p>MAPR 1805 Continuum mechanics and solids mechanics basics</p> <p>Complete textbook about plasticity theory Recommend reading : W.F. Hosford, R.M. Caddell, 1993, Metal Forming - Mechanics and Metallurgy, 2nd edition, Prentice Hall.</p>
Cycle and year of study :	<p>> Master [120] in Civil Engineering > Master [120] in Chemical and Materials Engineering > Master [120] in Mechanical Engineering</p>
Faculty or entity in charge:	FYKI