

Study program / course: Mechanical engineering			
Type and level of study: Bachelor academic studies			
Course: Manufacturing technologies 2			
Teachers: Bogdan Nedić, Srblav Aleksandrović, Vukić Lazić			
Status of course: Elective for module M ₁ , VI semester			
Number of ECTS: 5			
Precondition: Manufacturing technologies exam passed			
The objective of course Gaining of theoretical and practical knowledge from chosen areas of manufacturing technologies, welding technology, deformation manufacturing technology, cutting manufacturing technology etc., as the upgrade of previously gained knowledge from course Manufacturing technologies			
The outcome of course After predicted number of lectures, student is becoming capable to individually chose process and technology depending on material kind and width, knows about physics of analyzed technological processes, knows the ways of determination (choice and calculations) of the most important technological parameters, individually define necessary elements of the working system and parameters for multi-operational processes; individually design elements of serial production technological processes.			
Syllabus Theoretical study Introduction in welding. Determination of weldability. Heat calculations during welding. Metalurgy of welding. Deformational stress in welded joints. Calculations and control of welded joints. Welding by melting technology. Other welding technologies. Electroresistance welding. Thermal metal cutting. Soldering and gluing. Casting in sand and other important casting processes. Processes of penetration and cutting through (tensions, forces, surface, gap). Process of angular bending (tensions, moments and forces). Deep extrusion (process, tension Introduction to manufacturing technologies. Basic terms in welding technology. Physical bases of welding and division of methods. Choice of welding method and marking of welded joints. Term weldability of steel. Heat sources for welding. Welding methods. Bases of soldering and gluing. Bases of casting. Montage technology. Technology of surface protection. Theory bases of deformation manufacturing methods, tensions, deformations, speeds, strengthening curves, conditions of plastic behaviour, diagrams of boundary deformability. Manufacture of metal sheets by separation. Manufacture of metal sheets by bending. Deep drawing. Volume shaping. New technologies and new approaches in area of deformation manufacturing. Bases of RP, RT, RM, and RE technologies. Working system. Tribomechanical systems in cutting manufacture. Bases of cutting manufacture theory. Cutting methods (scrapping, milling, grinding, sawing, wiring, thread making etc). Unconventional manufacturing methods: ECM, EDM, laser, ultrasonic, water jet etc. Technological method of manufacture and control, technological documentation. Practical classes: Practice, other forms of lectures, research projects During laboratory practice students are becoming capable to define technologies and methods is product manufacture, choose tools, machines, manufacture regime and preparation of technological documentation.			
Recommended reading [1] A. Majstorović, M. Jovanović: <i>Osnovi zavarivanja, lemljenja i lepljenja</i> , Naučna knjiga, Beograd, 1986, 1988, 1991, 1995. [2] S. Aleksandrović: <i>Proizvodne tehnologije (Tehnologija obrade deformisanjem)</i> , skripta, Mašinski fakultet, Kragujevac, 2007. [3] B. Nedić, M., Lazić: <i>Proizvodne tehnologije (Obrada metala rezanjem)</i> , skripta, Mašinski fakultet, Kragujevac, 2007.			
The number of hours of active teaching:			Other classes: 1
Theory: 3	Practical classes: 1.6	Other forms of teaching: 0.4	
		Research study: 0	
Methods of teaching			
Evaluation of knowledge			
Pre-final exam obligations	points	Final exam	points
Activities during the classes:	3+3+3=9		
Practical classes:	8+8+9=25	Oral exam	30
Colloquiums(s) :	12+12+12=36		
Seminar(s) :			