

<b>Study Programme: Production engineering</b>			
<b>Course Unit Title: Design of tools for processing polymers</b>			
<b>Course Unit Code: P3501</b>			
<b>Name of Lecturer(s): Milutinović Mladimir</b>			
<b>Type and Level of Studies: master</b>			
<b>Course Status (compulsory/elective): elective</b>			
<b>Semester (winter/ summer): winter</b>			
<b>Language of instruction: english</b>			
<b>Mode of course unit delivery (face-to-face/distance learning): face-to-face</b>			
<b>Number of ECTS Allocated: 6</b>			
<b>Prerequisites: none</b>			
<b>Course Aims:</b> Gaining knowledge, competencies and academic skills on theoretical and practical aspects in the field of selection, calculation and exploitation of tool for shaping plastic components. Development of creative abilities and mastering specific practical skills regarding to mold design.			
<b>Learning Outcomes:</b> Ability to solve specific problems in domain of design and exploitation of tools (molds) for plastic shaping. Mastering of advanced methods and different techniques for calculation and engineering design of tools for plastic processing. Development of skills and competences for control of mold accuracy and reliability			
<b>Syllabus.</b> The term, place and role of tools for plastic processing. Functions of the tools. The tool concepts and their characteristics. Main tool elements. Axillary tool elements. The tool standardization. Application of advanced methods for the tool design. Materials for the tool elements. Compression and transfer molds - classification, structure. The structure, ejection system, guiding system and heating of molds for. Design of molds for injection molding. Classification of molds. The structure of the molds. Elements and types of runner systems. Design of cavity. Manufacturing of mold elements. Cooling system. Ejection systems. Guiding and centering systems. Injection molding errors. Mold price calculation. Design of the tools for plastic extrusion. Structure and types of extrusion tools. Tools for extrusion of foils and sheets. Tools for pipes and profiles extrusion. Tools for extrusion of granulates. Tools for threads and cables extrusion. Dimensioning of extrusion tools. Design of tools for cold plastic processing. Tools for elastomer and rubber processing. Blow molding tools. Tools for thermoforming. Exploitation and maintenance of plastic molding tools.			
<b>Required Reading:</b> <b>Nagdi, K. Rubber as an Engineering Material: Guideline for users Hanser Publ. New York 1993</b> <b>John P. Beaumont Runner and Gating Design Handbook- Tools for successful Injection Molding Hanser Publication 2004</b> <b>Dr. Chris Rauwendaal Polymer Extrusion Hanser Publisher, Munich 2001</b> <b>David O. Kazmer Injection mold design engineering HANSER 2016</b> <b>Jones, Peter The Mould Design Guide Shawbury, Shrewsbury, Shropshire, U.K.:Rapra Technology Ltd. 2008</b> <b>Jones, Peter Budgeting, Costing and Estimating for the Injection Moulding Industry Shrewsbury: Rapra Technology Ltd 2009</b>			
<b>Weekly Contact Hours: 3</b>	<b>Lectures: 3</b>	<b>Practical work: 0</b>	
<b>Teaching Methods:</b> Lectures are realized interactively through lectures, laboratory and computer practical classes. In lectures theoretical part is presented with characteristic examples for better understanding of subject content.			
<b>Knowledge Assessment (maximum of 100 points):</b>			
<b>Pre-exam obligations</b>	points	<b>Final exam</b>	points
Attendance			
Computer exercises			
Tests (4x)			

