

Study Programme: Production Engineering			
Course Unit Title: Polymer shaping technologies			
Course Unit Code: P3403			
Name of Lecturer(s): Milutinović Mladimir, Skakun Plavka, Vilotić Marko			
Type and Level of Studies: bachelor			
Course Status (compulsory/elective): compulsory			
Semester (winter/ summer): winter			
Language of instruction: english			
Mode of course unit delivery (face-to-face/distance learning): face-to-face			
Number of ECTS Allocated: 6			
Prerequisites: none			
Course Aims: The goal of this course is the detailed knowledge of particular technological method of forming polymers (extrusion, injection molding, blow molding, calendering, rolling, termoforming, welding plastics, rubber, etc..).			
Learning Outcomes: Knowledge gained from this course allows the design of the technological process of plastic forming, with a selection of workpiece material, determination of process parameters and the selection of equipment.			
Syllabus. Introduction to plastics processing technology, concepts, definitions, mechanical properties of polymers. Theoretical basis of polymers processing. Primary processing of plastics. Continuous methods of plastics processing, calendering, plastic extrusion (making pipes, profiles, plates, sheets, etc.). Plastic injection molding, direct plastic molding, transfer molding. Casting of plastics. Hot plastic forming. Blow molding. Cold forming of plastics. Foaming processes, extrusion and pressing. Composites based on polymers and their processing. Machining. Bonding and welding. Finishing (polishing, plating, painting, stamping ...). Basic characteristics of elastomers. Rubber molding technology. Extrusion and molding rubber. Crosslinking of elastomers. Recycling of rubber and plastics.			
Required Reading: Strong, B. A. Plastics: Materials and Processing New Jersey: Prentice Hall, New Jersey 2000 Crompton, T.R. Engineering Plastics Shrewsbury: Smithers Rapra 2014 Goodship Vanessa Practical Guide to Injection Moulding Shrewsbury: Smithers Rapra 2004 Schott Nick, rosato Marlene, Rosato Donald Plastics Technology Handbook Momentum Press 2012			
Weekly Contact Hours: 3	Lectures: 3	Practical work: 0	
Teaching Methods: Oral presentations with slides from a video projection. Usage of tables and handouts for practice, work in laboratory and visits to real contemporary business systems.			
Knowledge Assessment (maximum of 100 points):			
Pre-exam obligations	points	Final exam	points
Attendance			
Computer exercises			
Tests (4x)			

