

Course Unit Descriptor

Study Programme: Production engineering			
Course Unit Title: Materials in Mechanical Engineering			
Course Unit Code: H106			
Name of Lecturer(s): Dragan Rajnović			
Type and Level of Studies: bachelor			
Course Status (compulsory/elective): compulsory			
Semester (winter/ summer): winter+summer			
Language of instruction: english			
Mode of course unit delivery (face-to-face/distance learning): face-to-face			
Number of ECTS Allocated: 4			
Prerequisites: none			
Course Aims: To enable students for abstract thinking and acquiring basic knowledge in the field.			
Learning Outcomes: Acquired knowledge is used in the profession, in the individual work, and in further education.			
Syllabus. Introductory considerations on materials in general. Material structure (chemical bond, crystal and non-crystalline structure). Control of microstructure and mechanical properties of materials. Phase diagrams. Classification of engineering materials. Alloys of ferrous and non-ferrous metals, structures, properties and applications. Ceramics, structure, properties and applications. Polymers, characteristics and application. Composites, types, properties and applications. Intelligent materials. Selection of materials. Methods of mechanical and microstructural testing of materials.			
Required Reading: Callister, W.D.: Materials Science and Engineering: an Introduction, John Wiley & Sons, New York, 2007			
Weekly Contact Hours:	Lectures: 2	Practical work: 2	
Teaching Methods: Teaching is held interactively as lectures and laboratory practice. During lectures, the theoretical part of the teaching content is presented and supplemented by characteristic examples for better understanding. During laboratory practice, the obtained knowledge is practically applied on the available laboratory equipment. Apart from lectures and practice, consultations are held regularly.			
Knowledge Assessment (maximum of 100 points):			
Pre-exam obligations	points	Final exam	points
Attendance			
Computer exercises			
Tests (4x)			

