Course Unit Descriptor

Study Programme: Mechanical Engineering

Course Unit Title: Mechanical Engineering Technology

Course Unit Code: OAS098

Name of Lecturer(s): Professor Slavica Prvulović, PhD

Type and Level of Studies: Bachelor Academic Degree

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: 4

Prerequisites: None

Course Aims:

Introducing students to machining technology, various production processes and machines in different production systems especially with those who are in the environment. Acquiring basic knowledge of the essence importance and complexity of production technologies. A special accent is given to the engineering approach in the design combining, linking and developing parameters, which form the basis of many production technologies.

Learning Outcomes:

Acquired knowledge is used to formulate, development and implementation of all theoretical and practical endeavors from the area production technologies, with the emphasis on the application of acquired knowledge in production practice. Mastering the basic principles cutting and deformation technology in machining technology.

Syllabus:

Theory

Stresses, deformations and their relationships. Conditions for the formation of plastic deformation in a single-axis, two-axis and three-phase stresses state. Parametar of processing. Rolling; character of force and stresses; deformation parametars; thermomechanical rolling mode. Pressure; character of force and stresses; deformation parameters; thermomechanical regime pressing extruding. Cupping; character of force and stresses; deformation parameters; thermomechanical pulling mode. Forging; character of force and stresses; accuracy of forgings; thermomechanical forging regime. Deep pulling; character of force and stresses; factors of plastic anisotropy. Machines and tools for plastic deformation processing. Technology of strengthening metallic materials: XT, TM, MT processing. Separation processing: cutting, sifting and punching. Processing of bending.

Cutting processes: turning, drilling, milling. Wearing tools, Cutting speed, Cutting forces, Cutting temperatures, Processed surface technology, Basic movements of tools and materials, auxiliary movement and standard feed, Basic movements and processing time, Processing on a lathe, Lathes (Division, the technical characteristics and functional characteristics of the lathe), Drilling processes, Milling processes, Grinder processes, Processing on the machines for sawing, Processing on machines for proval, rending, Making coils with cutting process, Production of gear cutting, Processing of gears by peeling.

Practice

Creating tasks and examples for areas covered by the theoretical part of teaching. Professional practice: visits to factories

for getting, processing of metal and non-metallic materials.

Required Reading:

1. Stojadinovic, S., Desnica, E., Pekez, J., Basics of production technologies, Technical faculty "Mihajlo Pupin", Zrenjanin, 2012.
2. Prvulovic, S., Tolmac, D., Technology of processing products 1 and 2 part, Technical faculty "Mihajlo Pupin", Zrenjanin, 2011.
3. Kalajdžić, M., Manufacturing technology, Mechanical faculty, Beograd, 2008.
4. Stephenson, D.A., Agapiou, J.S., Metal Cutting Theory and Practice-Third edition, CRC Press, New York, 2016.

Weekly Contact Hours: 4	**Lectures:** 2	**Practical work:** 2

Teaching Methods:

Lectures and students group work.

Knowledge Assessment (maximum of 100 points): 100

Pre-exam obligations	points	**Final exam**	points
Active class participation	10	written exam	
Practical work		oral exam	50
Preliminary exam(s)	20		
Seminar(s)	20		