


Discipline	„MANUFACTURING TECHNOLOGIES PART 1” code: 38 6 semester – /summer/		
Specialty	COMPUTERIZED TECHNOLOGY IN MECHANICAL ENGINEERING; MANUFACTURING ENGINEERING AND TECHNOLOGIES		
ECTS credits: 6	Form of assessment: Exam (based on test)		
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Department	MANUFACTURING TECHNOLOGIES AND MACHINE TOOLS		
Faculty	FACULTY OF MANUFACTURING ENGINEERING AND TECHNOLOGIES		
<p>Learning objectives:</p> <p>The main aim of the discipline „MANUFACTURING TECHNOLOGIES PART 1” is within the academic year the students acquire knowledge on technological processes for the manufacturing of products with a predetermined quality, a fixed production program and a minimal technological costs.</p> <p>It examines the technological characteristics of the basic methods of preparation of blanks, machining, finishing processes, assembling of the devices used in mechanical engineering.</p> <p>Within the lectures are considered types of production and their classification, technology of blanks, technological operations in the metalworking industry, the performance and the processes for machining, unconventional treatment methods and technology of assembling products.</p> <p>The laboratory exercises address the determination of the types of production, the choice of blanks and the determination of the interoperative dimensions of the parts, the design of technological operations for machining and the design of technological processes for assembling.</p>			
CONTENTS:			
Training Area		Hours lectures	Hours laboratory exercises
Subject 1. Subject of the discipline „MANUFACTURING TECHNOLOGIES PART 1“. 1.1. Product and its elements. Classification of technological processes. 1.2. Production and technological processes in mechanical engineering.		2	-

1.3. Structure, elements and content of basic concepts – technological process, technological operation, transition, pass, position and layout.		
Subject 2. Types of mechanical engineering processes, classification and characteristics.	2	-
Subject 3. Technology of the blanks. 3.1. Casting of metals. Classification of casting methods. 3.2. Technology for making blanks by rolling. 3.3. Technological processes for forging and stamping. 3.4. Welding and soldering.	4	-
Subject 4. Technological operations in metalworking. 4.1. Types of technological operations. 4.2. Technology operations based on metal removal by chip removal. 4.3. Types of tool materials – characteristics and area of application.	4	-
Subject 5. Turning operations. Characteristics and capabilities of the process. Elements of the technological system. 5.1. Turning machines. 5.2. Devices and tools. 5.3. Processed details - types and characteristics.	2	-
Subject 6. Milling operations. Characteristics and capabilities of the process. Elements of the technological system. 6.1. Milling machines. 6.2. Devices and tools. 6.3. Processed details - types and characteristics.	2	-
Subject 7. Drilling, countersinking and reaming. Characteristics and capabilities of the process. Elements of the technological system. 7.1. Drilling machines. 7.2. Devices and tools. 7.3. Processed details - types and characteristics.	2	-
Subject 8. Technological operations based on metal removal using abrasive tools. 8.1. Process characteristics and quality parameters of the treated surface. 8.2. Types of abrasive materials and tools - characteristics and area of application.	4	-
Subject 9. Additives for processing the parts. 9.1. Formation of the additive. 9.2. Types of additives and their determination. 9.3. Inter-operational dimensions and dimensions of the workpiece.	2	-
Subject 10. Unconventional methods of processing. 10.1. Electro-erosion treatment. 10.2. Ultrasonic treatment. 10.3. Laser processing.	3	-
Subject 11. Assembly of the products. 11.1. General methodology and sequence in the design of technological processes for assembling of units and products. 11.2. Types of technological organization of assembly.	3	-
Subject 1. Instruction on labor safety. Methodology for designing technological processes for machining.	-	2
Subject 2. Basing of the workpieces for machining. Basic terms and definitions. Basing of the workpieces. Types of surfaces for basing. Basic schematics of basing.	-	2

Subject 3. Selecting a method for obtaining workpiece. Determination of the additives for machining. Determination of the interoperative dimensions.	-	4
Subject 4. Technological norming.	-	2
Subject 5. Determining the type of production and the relevant form of organization of work.	-	2
Subject 6. Design of turning technological operations. Selection of tools, instrumental materials and regime parameters.	-	2
Subject 7. Exploration of the relationship between the operation mode and the quality of the treated surface.	-	2
Subject 8. Design of milling technological operations for the processing of flat surfaces. Selection of tools, instrumental materials and regime parameters.	-	2
Subject 9. Design of technological operations for machining of holes by drilling, reaming, reaming. Selection of tools, instrumental materials and regime parameters.	-	4
Subject 10. Design of abrasive technological operations. Selection of tools, abrasive materials and regime parameters at grinding.	-	2
Subject 11. Exploration the relationship between the regime parameters and obtained roughness at grinding.	-	2
Subject 12. Design of assembling processes. Construction of the scheme of mounting elements. Design of route and operating technology.	-	4
TOTAL: 60 h	30	30