STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Technology of production		**1011101341010246777**
Field of study	Profile of study (general academic, practical)	Year /Semester
Logistics - Full-time studies - First-cycle studies	**(brak)**	**2 / 4**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
-	**Polish**	**elective**
Cycle of study:	Form of study (full-time,part-time)	
First-cycle studies	**full-time**	
No. of hours		No. of credits
Lecture: **15** Classes: **-** Laboratory: **15** Project/seminars: **-**		**4**
Status of the course in the study program (Basic, major, other)	(university-wide, from another field)	
(brak)	**(brak)**	
Education areas and fields of science and art		ECTS distribution (number and %**)**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	has a basic knowledge of the fields of study associated with the studied field of study.
2	**Skills**	has a basic knowledge of the fields of study associated with the studied field of study.
3	**Social competencies**	understands the need for lifelong learning; can inspire and organize the learning process of other people and can interact and work in a group, taking on different roles.

Assumptions and objectives of the course:

Understanding the theoretical basis and the course of manufacturing processes of plastic products, shaped by plastic forming and casting.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Has basic knowledge of: engineering graphics; construction and technology as well as construction and operation of machines, necessary for the implementation of tasks in the field of manufacturing technology. - [[K1A_W05]]

Skills:

1. Is able to independently develop a given problem in the field of manufacturing technology. - [[K1A_U05]]
2. Is able to formulate and solve a design task in the field of manufacturing technology using analytical methods - [[K1A_U09]]
3. He can choose and apply the right method to solve a simple engineering task of a practical nature in the field of manufacturing technology. - [[K1A_U15]]

Social competencies:

1. Understands the need to learn throughout life; can inspire and organize the learning process of other people. - [[K1A_K01]]
2. He can interact and work in a group, taking on different roles. - [[K1A_K03]]

Assessment methods of study outcomes

Lectures: forming evaluation - activity cards, summary evaluation - written exam. And part of the selection test assessed 1 point. for a good answer from 15 questions asked and 4 problem questions evaluated after 5 points. for every good answer. Problem questions are rated on a scale (0-5 points). In total, you can get 35 points for an error-free test solution. A positive assessment is obtained after obtaining 21 points.

Laboratories: forming evaluation - presence on all classes; positive answers to the teacher's written or oral questions, summary assessment - the average of the marks obtained from oral or written answers and the adoption by the operator of the final report.

Course description

Lecture:

Fundamentals of metallurgical processes. Preservation of basic metals from ores. The process of smelting pig iron in a blast furnace. Smelting of steel and cast steel. Smelting of cast iron and non-ferrous alloys. Technological process of casting in the form. Typical casting equipment. Phenomena occurring during solidification of the cast in the casting mold. Casting into sand molds and methods of mechanical compaction of molds. Designing pouring and casting systems. Special casting methods: casting into ceramic molds (one-time use) and metal molds (permanent molds). The process of cleaning up castings and separating the fill and headgear systems. Casting defects.

Plastics. Division. Special additives for plastics. Plastic processing. Basic techniques of manufacturing plastic products: injection technology, laminating technology, extrusion technology, vacuum forming technology. Techniques for joining plastic products. Applying plastic coatings. Rotational casting. Methods of elastomer processing

Basic theoretical information about the plastic shaping of metals and their alloys (plasticity conditions, plastic deformation mechanism). Technological operations of shaping sheet metal products (cutting, bending, stamping) and rods

(forging, rolling, extrusion, drawing). Materials susceptible to plastic forming. Change of material properties during shaped products by plastic forming methods. General information about tool materials and technological lubricants. Examples of technological processes

Lab:

Research on selected properties of molding / core sand. Making casts using the manual forming method. Special casting methods: shell casting, die casting, casting into shell molds, casting using the model of melting. Computer simulation of technological processes, Classification of casting defects and analysis of their occurrence.

Acquainting with the basic technologies of plastics processing: injection, laminating, extrusion, vacuum forming. Connecting plastics. Applying plastic coatings.

Cutting of sheets using guillotine and roller shears. Bending with a bending machine and press brake. Punching cylindrical and rectangular pressings using a hydraulic press. Free upset with a drop hammer.

Drop forging using a screw press and extrusion using a hydraulic press. Longitudinal and transverse rolling with the help of laboratory mills

Teaching methods:

Lecture - informative and conversational lecture.

Laboratories - laboratory method.

Basic bibliography:

Additional bibliography:

Result of average student's workload

Activity	Time (working hours)
1. Lectures	15
2. Laboratory	15
3. Consultation	20
4. Exam	10
5. Students own study	20
6. Literature studying	20

Student's workload		
Source of workload	**hours**	**ECTS**
Total workload	100	4
Contact hours	60	2
Practical activities	15	1