SYLLABUS

Basic data of the subject	
University	**University of Applied Sciences in Ferizaj**
Academic unit	**Faculty of Engineering and Informatics**
Program	**Industrial Engineering with Informatics**
Title of the subject	**Manufacturing Processes**
Level	**Bachelor**
Course Status	**CORE**
Year of studies	**II, Semester III**
Number of hours per week	**3**
Value of Credits - ECTS	**5**
Time / location	
Course lecturer	
Contact details	
Course Description	*This course will inform students about the proper way of processing and production processes; design of production systems; production methods and techniques; types of production technologies; production processes: casting, machining (drilling, turning, milling, ratifying, additive manufacturing (laser forming, sintering), polishing, coating processes, etc.* *Some specific goals of the "Manufacturing Processes" course may be:* 1. *Understanding Manufacturing Processes: The initial goal is to provide a detailed understanding of manufacturing processes, including the various stages of production, technologies used, work organization, resource management and performance monitoring techniques. * 2. *Improving efficiency: An important goal is to develop skills to identify and analyze aspects of production processes that can be improved to increase efficiency. This may include identifying delays, developing methods to reduce waste, improving the organization of production lines, and using advanced technologies to optimize the production process.* 3. *Quality Management: The course also aims to provide a deep understanding of quality management in manufacturing processes. Including quality control techniques, quality assurance systems, quality performance evaluation and raising quality awareness throughout the organization.* 4. *Production planning: Another aim of the course is to develop the ability to plan production processes*

	effectively. This includes production capacity planning, inventory management, high-volume production planning and production line organization. 5. *Resource optimization: The course aims to provide instruments and techniques to optimize the use of resources in production processes. This includes the use of resource planning methods, the identification of weak points and their disruption, the use of advanced technologies and the management of the supply of materials and other resources.*
Objectives of the course	*The purpose of the course "Manufacturing Processes" is to prepare students to understand, analyze and improve production processes in the industry of production of goods and services. This type of knowledge is important for industrial engineering professionals and production managers working in the manufacturing sector.*
Expected learning outcomes	*Upon successful completion of this course, student will be able to:* • *know the basic concepts of production processes.* • *describes the most important production processes in terms of application, economy, and environmental impact.* • *develop detailed projects starting from semi-finished products to the product's market launch.* • *understand the processes of work organization, production operations, tools, and equipment in these processes.* • *apply production process norms and control.*
Prerequisites	*There are no prerequisites to start learning the database. However, it is recommended that students have basic knowledge, at least good knowledge of Materials used today in Industry, mathematics, and programming.*

Contribution to the student load (which must correspond with learning outcomes)			
Activity	**Hour**	**Day/Week**	**In total**
Lectures with numerical exercises	3	15	45
Internship			
Contacts with teacher / consultations	2	5	10
Field exercises			
Midterm, seminars and projects.	2	2	4
Homework			
Self-learning time student (at the library or at home)	2	15	30
Final preparation for the exam	3	10	30

Time spent on evaluation (tests, quiz and final exam)	2	2	4
Projects and presentations.	1	1	1
Total			**125**

Teaching methodology	*Lectures and exercises combined with case studies and class discussions as well as active collaboration in student teams.* *The course lasts 15 weeks with 3 hours of lectures and/or weekly individual and group exercises. The exercises will be held in the form of individual and group work in which concrete examples will be discussed. Active participation is extremely important, so students are encouraged to regularly attend lectures and exercises and contribute to the discussions that take place in the lectures.*
Assessment methods	*The student can choose to be assessed one of the two forms of assessment, given below:* *1. Form 1: Evaluation with two tests and the Project* *2. Form 2: Evaluation of the final exam.* ***Form 1:*** *In the first form of assessment "Assessment with two tests and project" the student is assessed in four activities that are carried out during the lectures:* *1. Test 1 (35%), individual assessment* *2. Test 2 (35%), individual assessment* *3. Class activity (10%), individual assessment* *4. Project (20%), group assessment.* ***Additional clarification:*** *If the student in each activity above reaches the maximum points, then he will be evaluated with 100 points.* *Students who pass the exam according to Form 1 of the assessment, are released from the obligation to take the final exam. Only if the student is not satisfied with the grade achieved according to form 1, then he can undergo the final exam to obtain a higher grade.* ***Form 2:*** *In the second form of evaluation, "Evaluation with the final exam", the student will undergo the exam which will be held after the end of the course lectures and is organized in the exam deadlines, determined by the University Senate.*

	Through the final exam, the student can achieve a maximum of 70% of the points from the total of 100 points. *The rest of the 30% points must be completed through group work on the Project, an activity carried out during the lectures.* *In Test 1, Test 2, and the final exam, the evaluation of the students will be done through an evaluation form, which must be completed individually by the student. The evaluation form will contain objective and subjective questions through which the student's learning outcomes will be evaluated:* • *The objective questions will be of the following types: (1) Multiple choice questions, (2) True/False, (3) Completion, and (4) Composition/Matching; questions that will be used to assess the student's abilities to recall and recognize the concepts and material of the course.* • *The subjective questions will be of the Essay/written task type that will be used to assess the student's understanding and abilities to apply the knowledge gained in the analysis, synthesis, and evaluation of the problem, from the answers prepared by the student to the question of submitting.* *Activity in the class means the student's engagement in dealing with the issues discussed in the class, during the lectures* *Project (30%), group assessment: it is an activity in which students apply the acquired knowledge in a concrete project. It is carried out in groups of 2 or 3 students who are obliged to carry out the activity, document it, and present it to the subject professor.* *For the form of realism and documentation of the activity, all members of the group will be evaluated with the same point (20%), while the evaluation of the presentation skills of the activity is individual and includes 10%.* ***Rating:*** *91-100 points – graded 10 (ten)* *81-90 points – graded 9 (nine)* *71-80 points – grade 8 (eight)* *61-70 points – grade 7 (seven)* *51-60 points – grade 6 (six)* *0-50 points – The student repeats the exam.*
The ratio of theory and practice	60% theory with exercises and 40% laboratory work.
Literature	
Basic Literature	1. *"Introduction to Materials Management" by JR Tony Arnold, Stephen N. Chapman, and Lloyd M. Clive.*

	2. *Operations Management by Jay Heizer and Barry Render.* 3. *Prof. Dr. Hysni Osmani, Manufacturing Technology, Mechanical Materials I and II.* 4. *Prof. Assoc. Dr. Nexhat Qehaja, Designing Technological Processes.*
Additional Literature	5. *Thomas Connolly, Thomas M. Connolly, Carolyn E. Beg (2014.), Database Systems, Addison-Wesley.* 6. *"Manufacturing Engineering & Technology" by Syrup Kalpakjian and Steven R. Schmidt.* 7. *"Lean Production Simplified" by Pascal Dennis.* 8. *"Production and Operations Analysis" by Steven Nahmias.*
Designed learning plan	
Week:	**Lectures and exercises to be held**
Week one	*Introduction-Development, characteristics, and division of contemporary production technologies. Historical overview of technology development, technology development through different eras, technology as part of all human cultures, etc. Basic notions of production processes, technological processes. Technological operations. Technological parameters.*
Week two	*Metal production processes. Extraction of metals, raw materials, preparatory processing, pyrometallurgical processes, technology of production of cast iron and steel, profit of siderurgical products, smelting furnaces, steel casting*
Week three	*Study visits to companies that use: Metalworking processes in the foundry-foundry. Concepts, Casting materials, tools and equipment, Model, and core processing.*
Week four	*Casting processing processes: sand casting, shell casting, melt sample casting, gypsum sample casting, precision casting of several details at once, casting in metal molds - coils, die casting, centrifugal casting.*
Week five	*Machining procedures with volumetric deformation, free forge, forging (embossing), elongation, excessive drilling.*
Week six	*Study visits to a company that uses: Technologies with sheet metal deformation, cutting, bending, separating, stamping, drilling, etc. Propulsion technology, characteristics, separation, use, traction, cylinder.*
Week seven	*Test 1*
Week eight	***Practical work in the USHAF laboratory.*** *Cutting material processing technology. Terms, division, characteristics, use. Material processing technology turning, milling, wood processing, technological characteristics, drilling processing technology, penetration (traction).*
Week nine	***Practical work in the USHAF Laboratory.***

	Material processing technology with refining, technological characteristics, superfinishing, polishing, gear processing technology, Fellow's methods, etc.
Week ten	*Thermal processing of metals: Basics of heat treatment, heat treatment procedures, main methods of heat treatment. Baking, hardening, return, normalization, improvement.*
Week eleven	*Technology of processing polymer masses by pressing, rotation, pulsation. Machinery tools and equipment for plastics processing.*
Week twelve	*Conventional and modern welding methods, separation, technological characteristics, welding techniques.* *Unconventional processing methods, rubber, pressurized fluid, explosion. Laser processing methods and chemical and electrochemical processing.*
Week thirteen	*Test 2*
Week fourteen	*Presentation of seminar papers.*
Week fifteen	*Presentation of seminar papers.*
Academic policies and rules of conduct	
Regular attendance of lectures and exercises is necessary, as well as active participation with discussion and solution of tasks. Not impeding the progress required for learning using mobile phones turned off or in silent mode.	