No. 29

Course syllabus for First cycle studies						
1.	**Course title**	Technical drawing and CAD				
2.	**Code**	MDE1M4				
3.	**Study Program**	Metallurgical Digital Engineering				
4.	**Study program organizer (unit, institute, department, division)**	Faculty of Technology and Metallurgy Department of Chemical and Control Engineering				
5.	**Degree (first, second, third cycle)**	First degree				
6.	**Academic year / semester**	1/1	7.	**Number of ECTS**	4	
8.	**Instructors**	Beti Andonovikj, PhD, Full Professor				
9.	**Prerequisites for course enrollment**	/				
10.	**Objectives of the course syllabus (competencies):** The objective of the course is to equip students with comprehensive knowledge and skills in technical drawing, emphasizing the utilization of Computer-Aided Design (CAD) tools for the creation and interpretation of technical drawings. **Acquired skills (competencies):** A solid understanding of the basic concepts of projection and geometric principles. The ability to create accurate spatial representations of objects, ensuring proper interpretation and visualization of three-dimensional forms. Competence in preparing detailed technical drawings, including orthographic projections, while applying correct line types, dimensioning methods, and surface finish symbols to communicate design intent effectively. Proficiency in using Computer-Aided Design (CAD) software for creating, modifying, and interpreting technical drawings, including drawing tools, text creation, and layer management. The ability to create, modify, and visualize 3D models using CAD tools, including solid modeling techniques such as extrusion, and the application of advanced modification techniques to refine and visualize 3D objects.					
11.	**Content of the course:** Technical drawing. Descriptive geometry. Types of technical drawings. Drafting standards. Projections and Views. Orthographic projection of basic geometrical elements and solids. Types of lines in technical drawing and their applications. Lettering, scales, and sheet formats. Dimensioning and types of dimensioning. Surface finish symbols. Solid modeling. Intersections, sections, and breaks. Technical drawing using CAD. AutoCAD working environment. Orthographic drawing. Drawing and modifying tools. Dimensioning and creating text. Creating layers. Creating 2D drawings. Introduction to 3D coordinate systems. 3D modeling. Creating a solid by extruding. Modification of 3D solids. Visualization.					
12.	**Study methods:** Lectures, exercises, homework assignments, and independent study at home					
13.	**Total available time**		120 hours			
14.	**Allocation of available time**					
15.	**Teaching activities**	15.1.	Lectures		30 hours	
		15.2.	Exercises (auditory, laboratory)		45 hours	

16.	**Other types of activities**	16.1.	Independent tasks	10 hours
		16.2.	Work at home	35 hours
		16.3.		

17.	**Grading system**		
	17.1.	Tests	80 points
	17.2.	Seminar project, written and oral presentation	15 points
	17.3.	Engagement and Participation	5 points

18.	**Grading criteria (points/grade)**	Up to 50 points	5 (five) (F)
		From 51 to 60 points	6 (six) (E)
		From 61 to 70 points	7 (seven) (D)
		from 71 to 80 points	8 (eight) (S)
		From 81 to 90 points	9 (nine) (B)
		from 91 to 100 points	10 (ten) (A)

19.	**Prerequisites for taking the final exam**	Completed laboratory tasks
20.	**Language in which lectures are conducted**	Macedonian and English language
21.	**Method for monitoring the quality of lectures**	Internal evaluation and anonymous surveys

22. **LITERATURE**

22.1. Compulsory literature

No.	Author	Title	Publisher	Year
1.	K. V. Reddy	Textbook of Engineering Drawing 2nd Edition	BS Publication	2008
2.	K. Plantenberg	Engineering Graphics Essentials with AutoCAD 2025 Instruction	SDC Publications	2024
3.				

22.2. Additional literature

No.	Author	Title	Publisher	Year
1.				
2.				
3.				