

# COURSE GUIDE – short form

Academic year 2024 - 2025

Course name <sup>1</sup>	<b>SYSTEMS AND TECHNOLOGIES FOR NON-TRADITIONAL MACHINING OF METALLIC MATERIALS</b>					Course code	TAIPM IA 110		
Course type <sup>2</sup>	DA	Category <sup>3</sup>	DI	Year of study	1	Semester	2	Number of credit points	3

Faculty	Materials Science and Engineering	Number of teaching and learning hours <sup>4</sup>						
Field	Materials Engineering	Total	L	T	LB	P	IS	
Specialization	Advanced Techniques in Materials Processing Engineering	75	14	-	14	-	47	

Pre-requisites from the curriculum <sup>5</sup>	Compulsory	Not the case
	Recommended	Physics, Chemistry

General objective <sup>6</sup>	Developing skills in order to rationally choose systems and apply technologies of nontraditional machining of the metallic parts.
Specific objectives <sup>7</sup>	Students' assimilation of theoretical and applicative basic knowledge and developing skills/ competences regarding the systems and the technologies for nontraditional machining of metallic parts; Initiating and familiarizing the students with the possibilities to design systems or/and technologies for nontraditional machining of metallic parts; Assimilating basics regarding the CNC programming of systems for nontraditional machining and specific terms to nontraditional machining in English language.
Course description <sup>8</sup>	Principles of the nontraditional technologies processes. Occurring phenomena. Technological characteristics of the nontraditional machining processes. Electrical discharge machining- EDM. Electrochemical machining. Chemical Machining. Plasma and ion beam manufacturing processes. Ultrasonic manufacturing processes. Laser beam and Electron beam manufacturing processes. Water jet cutting. Manufacturing processes that use magnetic field. Hybrid manufacturing processes. Metal additive manufacturing.

Assesment		Sche-dule <sup>9</sup>	Percentage of the final grade (minimum grade) <sup>10</sup>
A. Final assessment form <sup>11</sup> :	Class tests along the semester	20%	4-13 week
	Home works	30%	10-14 week
	Other activities	%	
	Examination procedures and conditions: 1. Open-ended questions. Working conditions: oral; 50 % - Theoretical description of two nontraditional machining methods. 2. Problem-solving task. Working conditions: oral; 50 % - Application for manual numerical programming in G-code for a nontraditional machining on 2D of simple metallic part. Working conditions: paper, pen, calculator	50% (minimum grade 5)	Exam period
C. Laboratory	Acttivity during laboratory		30% (minimum 5)

Course organizer and applications	Assoc. Prof., Ph.D. Margareta Coteață
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<sup>1</sup>Course name from the curriculum

<sup>2</sup> DF – fundamental, DID – in the field, DS – specialty, DC – complementary (from the curriculum)

<sup>3</sup> DI – imposed, DO –optional, DL – facultative (from the curriculum)

<sup>4</sup> Points 3.8, 3.5, 3.6a,b,c, 3.7 from the Course guide – extended form (L-lecture, T-tutorial, LB-laboratory works, P-project, IS-individual study)

<sup>5</sup> According to 4.1 – Pre-requisites - from the Course guide – extended form

<sup>6</sup> According to 7.1 from the Course guide – extended form

<sup>7</sup> According to 7.2 from the Course guide – extended form

<sup>8</sup> Short description of the course, according to point 8 from the Course guide – extended form

<sup>9</sup> For continuous assessment: weeks 1 – 14, for final assessment – colloquium: week 14, for final assessment-exam: exam period

<sup>10</sup> A minimum grade might be imposed for some assessment stages

<sup>11</sup> Exam or colloquium