

COURSE GUIDE – short form

Academic year 2024-2025

Course name ¹	Modeling and simulation in materials processing (1)					Course code	4IPM12DS-1		
Course type ²	DS	Category ³	DI	Year of study	IV	Semester	VII	Number of credit points	4

Faculty	Of Materials Science and Engineering	Number of teaching and learning hours ⁴						
Field	Materials Engineering	Total	L	T	LB	P	IS	
Specialization	Materials Processing Engineering	100	28	-	28	-	44	

Pre-requisites from the curriculum ⁵	Compulsory	
	Recommended	Computer programming and programming languages. Using of computer in statistical analysis. Mathematical analysis. Numerical analysis

General objective ⁶	The association of knowledge, principles and methods from technical sciences domain with the principles and methods used in the analysis, modeling and optimization of metallurgical processes
Specific objectives ⁷	<ul style="list-style-type: none"> • The concept of a model and modeling methods. • Modeling the processes by material balance and energy balance. • Knowledge of statistical and mathematical methods for the obtaining of mathematical models that describe the functional links between input and output variables of metallurgical processes.
Course description ⁸	Technological processes, general considerations regarding the modeling and optimization of technological processes, adaptive optimization, optimization of dynamic processes and optimization of technological processes by determining optimal conditions.

Assesment			Sche-dule ⁹	Percentage in the final grade (minimum grade) ¹⁰
A. Final assessment form ¹¹ :	Class tests along the semester	20%	Week 7	70 % (minimum 5)
	Home works	20%	Week 14	
	Other activities	%		
Exam	Examination procedures and conditions: Oral exam with 3 subjects	60% (minimum 5)	Sesion	
B. Seminar	Activity during seminar			% (minimum 5)
C. Laboratory	Activity during laboratory			30 % (minimum 5)
D. Project	Activity during project			% (minimum 5)

Course organizer	Prof. phd. eng. Nicanor CIMPOEȘU	
Teaching assistants	Lecturer phd. eng. Lucia Daniela CHICET	

¹Course name from the curriculum

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

³ DI – imposed, DO – optional, DL – facultative (from the curriculum)

⁴ 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)

⁵ According to 4.1 – Pre-requisites - from the Course guide – extended form

⁶ According to 7.1 from the Course guide – extended form

⁷ According to 7.2 from the Course guide – extended form

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

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

¹⁰ A minimum grade might be imposed for some assessment stages

¹¹ Exam or colloquium