

# COURSE GUIDE – short form

Academic year 2017-2018

Course name <sup>1</sup>	Metallic Coatings					Course code	3SM14DS			
Course type <sup>2</sup>	DS	Category <sup>3</sup>	DO	Year of study	III	Semester	6	Number of credit points	3	

Faculty	Materials Science and Engineering	Number of teaching and learning hours <sup>4</sup>					
Field	Materials Engineering (Mechanical Engineering; Industrial Engineering)	Total	L	T	LB	P	IS
Specialization	Materials Science	42	28	-	14	-	30

Pre-requisites from the curriculum <sup>5</sup>	Compulsory	-
	Recommended	Physics, Metallic Materials Science and Engineering

General objective <sup>6</sup>	Use of basic knowledge (concepts, theories, methods) at the evaluation and optimum solving of technical problems linked with the materials processed, by applying the concepts, theories and experimental methods.
Specific objectives <sup>7</sup>	Assimilation of knowledge regarding the obtaining of multifunctional thin layers by coating techniques.
Course description <sup>8</sup>	Basics of surface engineering; surface treating techniques; coating technologies based on wet methods: electrolytic metallisation; aluminium coating; nichel coating; cromium coating; metallisation by chemical reduction; metallization by immersion in metallic meltings; technologies of coating based on dry methods: CVD (Chemical Vapor Deposition); PVD (Physical vapor deposition); thermal spraying coating technologies: principle of thermal spraying procedure; technologie of thermal spraying; Basics of metallisation by thermal spraying: mechanism of layer formation; computer based methods of determination of optimum parameters at thermal spraying; investigation techniques and characterisation of layer-underlayer systems; chemical analysis of coatings; mechanical properties analysis; physical properties analysis; investigation techniques of layer-underlayer zone; investigation techniques of "single layer" metallic coatings; investigation techniques of "multi-layers" type metallic coatings.

Assessment		Schedule <sup>9</sup>	Percentage of the final grade (minimum grade) <sup>10</sup>
Continuous assessment	Class tests along the semester		%
	Activity during tutorials/laboratory works/projects/practical work	continuous	50%
	Assignments		%
Final assessment	Final assessment form <sup>11</sup>	colloquy	Week 13
	Examination procedures and conditions: 1. open and close questions; oral examination; 100%		50%

Course organizer	Gheorghe BĂDĂRĂU, Assoc. Prof. Ph.D. Eng.
Teaching assistants	Gheorghe BĂDĂRĂU, Assoc. Prof. Ph.D. Eng.

<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

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<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