

COURSE GUIDE – short form

Academic year 2024-2025

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|--------------------------|------------------------------------|-----------------------|----|---------------|---|-------------|---|-------------------------|----|
| Course name ¹ | Research / Practice (sem.4) | | | | | Course code | | MATAE PA 206 | |
| Course type ² | DS | Category ³ | DI | Year of study | 2 | Semester | 4 | Number of credit points | 10 |

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|----------------|---|--|--|--|--|---|---|-----|---|----|
| Faculty | Materials Science and Engineering | | | | Number of teaching and learning hours ⁴ | | | | | |
| Field | Materials Engineering | | | | Total | L | T | LB | P | IS |
| Specialization | Advanced Materials and Experimental Analysis Techniques | | | | 250 | - | - | 178 | - | 72 |

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| Pre-requisites from the curriculum ⁵ | Compulsory | |
| | Recommended | |

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| General objective ⁶ | Training human resource such as to be able to contribute to the development of scientific knowledge, by cultivating theoretical and practical capacities, necessary for the use of plastic deformation and mechanical testing techniques, available at laboratory level. |
| Specific objectives ⁷ | Acquiring the operation mode on the plastic deformation and mechanical testing equipment of the laboratory and afferent software: experimental rolling mill with annular silica bars furnace (T_{max} 1050°C); self-compression free forging hammer; HYDRAMOLD hydraulic press of 750 kN (software ESAM); INSTRON 3382 tensile testing machine (software BLUEHILL 4.13) equipped with thermal chamber and micro hardness tester with afferent software. |
| Course description ⁸ | <ul style="list-style-type: none"> • Acquiring the structure and functioning principle of experimental rolling mill • Hot rolling and calculation of section reduction degree • Acquiring the structure and functioning principle of free forging hammer • Free forging of some cylindrical samples • Acquiring the structure and the functioning principle of HYDRAMOLD hydraulic press of 750 kN and ESAM software • Pressing, recording and interpretation of displacement (specific deformation)-force (mechanical stress) curves • Obtaining some “fish bone” configuration specimens for tensile testing • Acquiring the structure and functioning principle of INSTRON 3382 tensile testing machine (software BLUEHILL 4.13) equipped with thermal chamber • Room temperature tensile tests to failure and with loading-unloading cycles • Recording and interpreting the tensile curves to failure and with loading-unloading cycles • Loading-unloading tensile tests at different temperatures and with constant strain-heating • Recording and interpreting the tensile loading-unloading curves at different temperatures and with constant strain-heating • Acquiring the structure and functioning principle of the micro hardness tester of the laboratory • Micro-hardness tests and data processing |

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| Assessment | Schedule ⁹ | Percentage in the final grade (minimum grade) ¹⁰ |
| Class tests along the semester | % | |
| Home works | % | |

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| A. Final assessment form ¹¹ : Exam | Other activities | % | | |
| | Final evaluation | % (minimum 5) | | |
| B. Seminar | Activity during seminar: evidence of answers, paper portfolio (reports, scientific reviews) | | | |
| C. Laboratory | Activity during laboratory • Written test • Laboratory register (experimental files, reviews) • Practical demonstration | | | 100 % |
| D. Project | Activity during project | | | |

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| Course organizer | | |
| Teaching assistants | Prof.dr.ing. Leandru-Gheorghe BUJOREANU | |

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