

Transilvania University of Braşov, Romania

Study program: Materials Science

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| Faculty: | Materials Science and Engineering |
| Study period: | 4 years |
| Academic year structure: | 2 semesters (14 weeks per semester) |
| Examination sessions (two): | winter session (January/February) summer session (June/July) |

Courses per years

1st Year

| No. crt. | Course | Code | Semester I | | | | | Semester II | | | | |
|----------|--|-------------------|------------|---|---|---|------|-------------|---|---|---|------|
| | | | C | S | L | P | Cred | C | S | L | P | Cred |
| 01 | Mathematical Analysis | SMAMA1 | 3 | 1 | | | 5 | | | | | |
| 02 | Descriptive Geometry | SMGDE1 | 2 | 1 | | | 4 | | | | | |
| 03 | Materials Engineering | SMINM1 | 2 | | 2 | | 5 | | | | | |
| 04 | Software and Computer Programming | SMPRG1 | 3 | | 2 | | 6 | | | | | |
| 05 | General Chemistry | SMCGB1 | 2 | 1 | 2 | | 5 | | | | | |
| 06 | Mechanics | SMMEC1 | 2 | 1 | | | 3 | | | | | |
| 07 | Physics | SMFIZ1 | | | | | | 2 | 1 | 1 | | 5 |
| 08 | Linear algebra, Analytical Geometry and Differential Equations | SMALG1 | | | | | | 2 | 1 | | | 4 |
| 09 | Algorithms and Data Structures | SMAST1 | | | | | | 2 | 1 | | | 4 |
| 10 | Technical Drawing | SMDEST | | | | | | 1 | | 2 | | 3 |
| 11 | Numerical Methods | SMMEN1 | | | | | | 2 | | 1 | | 4 |
| 12 | Economic Systems Analysis | SMASE1 | | | | | | 1 | 2 | | | 4 |
| 13 | Communication techniques and intellectual property [O1] | SMTCPI | | | | | | 2 | 1 | | | 4 |
| | History of technical sciences [O1] | SMIST1 | | | | | | | | | | |
| 14 | English language 1/2 | SMLE01/ SMLE02 | 1 | 1 | | | 2 | 1 | 1 | | | 2 |
| | French language 1/2 | SMLF01/ SMLF02 | | | | | | | | | | |
| | German language 1/2 | SMLG01/ SMLG02 | | | | | | | | | | |
| | Spanish language 1/2 | SMLS01/ SMLS02 | | | | | | | | | | |
| 15 | Physical Training 1/2 | SMEF01/ SMEF02 | | 1 | | | 1 | | 1 | | | 1 |

2nd Year

| No. crt. | Course | Code | Semester III | | | | | Semester IV | | | | |
|----------|---|-------------------|--------------|---|---|---|------|-------------|---|---|---|------|
| | | | C | S | L | P | Cred | C | S | L | P | Cred |
| 01 | Special Mathematics | SMMSP1 | 2 | 1 | | | 3 | | | | | |
| 02 | Strength of Materials | SMRM01 | 2 | 1 | 1 | | 4 | | | | | |
| 03 | Fluid Mechanics | SMMEFL | 2 | 1 | | | 3 | | | | | |
| 04 | Applied Informatics | SMINFA | 1 | 2 | | | 4 | | | | | |
| 05 | Physical Chemistry | SMCHFZ | 2 | 1 | 1 | | 5 | | | | | |
| 06 | Metallic Materials Science | SMSMM1 | 2 | 1 | 1 | | 5 | | | | | |
| 07 | Probability Theory and Mathematical Statistic | SMTPSM | 1 | 2 | | | 4 | | | | | |
| 08 | Electrotechnics | SMETH1 | | | | | | 2 | | 1 | | 4 |
| 09 | Thermotechnics | SMTERM | | | | | | 2 | 1 | | | 4 |
| 10 | Theory of Metallurgic Processes | SMT PME | | | | | | 2 | 1 | 2 | | 5 |
| 11 | Microscopy and Image Analysis | SMMAIM | | | | | | 2 | 1 | 1 | | 5 |
| 12 | Machine Components | SMOM01 | | | | | | 2 | | 1 | 1 | 4 |
| 13 | Value Analysis | SMAVAL | | | | | | 2 | 1 | | | 4 |
| 14 | Practical activity II (90h) | SMPRS2 | | | | | | | | | | 2 |
| 15 | English language 3/4 | SMLE03/ SMLE04 | 1 | 1 | | | 2 | 1 | 1 | | | 2 |
| | French language 3/4 | SMLF03/ SMLF04 | | | | | | | | | | |
| | German language 3/4 | SMLG03/ SMLG04 | | | | | | | | | | |
| | Spanish language 3/4 | SMLS03/ SMLS04 | | | | | | | | | | |
| 16 | Physical training 3/4 | SMEF03/ SMEF04 | | 1 | | | 1 | | 1 | | | 1 |

3rd Year

| No. crt. | Course | Code | Semester V | | | | | Semester VI | | | | |
|----------|--|--------|------------|---|---|---|------|-------------|---|---|---|------|
| | | | C | S | L | P | Cred | C | S | L | P | Cred |
| 01 | Structural Theory of Materials Properties | SMTSPM | 2 | 1 | 2 | | 6 | | | | | |
| 02 | Bases of Heating Processes | SMBPIN | 2 | 1 | | 1 | 5 | | | | | |
| 03 | Ferrous alloys Smelting Fundamentals | SMBEAF | 3 | | 2 | 1 | 6 | | | | | |
| 04 | Theoretical Bases of Casting | SMBTET | 2 | 1 | 1 | | 4 | | | | | |
| 05 | Computer Aided Design | SMPCAL | 2 | | 2 | | 4 | | | | | |
| 06 | Theoretical Fundamentals of Heat Treatment Processes | SMBPTT | 2 | 1 | 1 | | 5 | | | | | |
| 07 | Nonferrous Alloys Smelting. Fundamentals | SMBEAN | | | | | | 2 | | 1 | 1 | 5 |
| 08 | Plastic Deformation. Fundamentals | SMBTDP | | | | | | 2 | 2 | 1 | | 5 |
| 09 | Drives and Automation | SMACTA | | | | | | 2 | | 2 | | 4 |
| 10 | Industrial Process Equipment | SMEPPI | | | | | | 2 | | 1 | | 3 |
| 11 | Data acquisition systems [O2] | SMSAD1 | | | | | | 2 | 1 | | | 4 |
| | Computer Aided Engineering [O2] | SMIASC | | | | | | | | | | |

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| 12 | Manufacturing Systems Engineering(03) | SMISP1 | | | | | | 2 | | | 1 | 4 |
| | Identification and Control of Industrial Processes (03) | SMICPI | | | | | | | | | | |
| 13 | Project Management(04) | SMMPRO | | | | | | 2 | 1 | | | 3 |
| | Quality Management(04) | SMMGCL | | | | | | | | | | |
| 14 | Practical activity (90h) | SMPRS3 | | | | | | | | | | 2 |

4th Year

| No. crt. | Course | Code | Semester VII | | | | | Semester VIII | | | | |
|----------|---|--------|--------------|---|---|---|------|---------------|---|---|---|------|
| | | | C | S | L | P | Cred | C | S | L | P | Cred |
| 01 | Heat Treatment | SMTTER | 2 | | 1 | | 4 | | | | | |
| 02 | Processing of Materials in Liquid State | SMPMSL | 2 | | 1 | 2 | 6 | | | | | |
| 03 | Processing of Materials in Solid State | SMTDPI | 2 | | 1 | 2 | 6 | | | | | |
| 04 | Ceramic and Refractory Materials | SMMCRE | 2 | 1 | | | 3 | | | | | |
| 05 | Nanomaterials and Nanotechnologies | SMNANO | 2 | 1 | | | 3 | | | | | |
| 06 | Powders metallurgy [05] | SMMPP1 | 2 | | 2 | | 4 | | | | | |
| | Smart Materials (I) [05] | SMMIN1 | | | | | | | | | | |
| 07 | Clean Technologies in Materials Science [06] | SMECOL | 2 | 1 | | | 4 | | | | | |
| | Virtual Instrumentation [06] | SMINVR | | | | | | | | | | |
| 08 | Modeling and Optimization of Industrial Processes | SMMOPI | | | | | | 2 | 2 | | | 4 |
| 09 | Thermochemical Treatments | SMTTCH | | | | | | 2 | | 1 | 2 | 5 |
| 10 | Amorphous and Monocrystalline Materials | SMAMOM | | | | | | 2 | | 2 | | 4 |
| 11 | Corrosion and Materials Protection | SMCOPM | | | | | | 2 | 1 | 2 | | 4 |
| 12 | Biocompatible Materials [07] | SMMBIO | | | | | | 2 | 1 | 1 | | 3 |
| | Sensors and Actuators [07] | SMSENZ | | | | | | | | | | |
| 13 | Composite Materials [08] | SMMCOM | | | | | | 2 | | 2 | | 4 |
| | Smart Materials II [08] | SMMIN2 | | | | | | | | | | |
| 14 | Practical Activity (60h) | SMPRS4 | | | | | | | | | | 2 |
| 15 | Diploma Project Preparation (104h) | SMPPD4 | | | | | | | | | | 4 |