Master Program: Materials Science and Materials Technology

Field of Studies: Development and support of technological processes and production in the field of composite materials and coating

Years of Studies: 2

Language of Training: Russian

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| **№** | **Subject** | **Semester** | **Hours** | **Credits** |
| M.1.1.1 | Materials science and technology of modern and promising materials | 1 | 216 | 6 |
| M.1.1.2 | Mathematical modeling and modern problems of materials science and processes | 2 | 216 | 6 |
| M.1.1.3 | Modern methods for studying the structure of metals and alloys | 1 | 216 | 6 |
| M.1.1.4 | Methodology for the selection of materials and technologies in industry | 2 | 216 | 6 |
| M.1.1.5 | Computer and information technologies in science and production | 3 | 144 | 4 |
| M.1.1.6 | Foreign language for academic purposes | 2 | 72 | 2 |
| M.1.2.1 | Business Communication Language | 1 | 108 | 3 |
| M.1.2.2 | Fundamentals of Entrepreneurship | 3 | 72 | 2 |
| M.1.2.3 | Modern problems of science in the field of materials science and technology of materials and coatings | 2 | 108 | 3 |
| M.1.2.4 | The structure and properties of functional coatings and the technology of their application | 2 | 72 | 2 |
| M.1.2.5 | Methods for producing amorphous structures, nanocrystalline materials | 3 | 144 | 4 |
| M.1.2.6 | Mathematical foundations of processing observation results | 3 | 108 | 3 |
| M.1.2.7 | The study of the physical and mechanical properties of coatings for special purposes | 3 | 180 | 5 |
| M.1.2.8 | Modern coating technology with desired properties | 2 | 108 | 3 |
| M.1.2.9 | Research Methodology and Logic | 1 | 180 | 5 |
| M.1.2.10 | Fundamentals of organizing research | 3 | 144 | 4 |
| M.1.2.11 | Philosophical problems of science and technology | 1 | 108 | 3 |
| M.1.3.1.1 | Physics and technology basis for testing products with a coating for crack resistance and fatigue | 1 | 180 | 5 |
| M.1.3.1.2 | Physical basis of the strength of the connection of the coating with the base metal | 1 | 180 | 5 |
| M.1.3.2.1 | Intellectual property and the commercialization of high technology | 1 | 72 | 2 |
| M.1.3.2.2 | Possibilities and needs of modern materials science | 1 | 72 | 2 |
| M.1.3.3.1 | Physical and mathematical foundations of processing observation results | 3 | 144 | 4 |
| M.1.3.3.2 | Methods and tools for modeling technological processes | 3 | 144 | 4 |
| M.1.3.4.1 | History and methodology of science and technology in the field of materials science | 2 | 108 | 3 |
| M.1.3.4.2 | Physics and historical excursion into materials science | 2 | 108 | 3 |
| М.2.1.1 | Educational (fact-finding) practice training | 2 | 216 | 6 |
| М.2.1.2 |  [Education (R&D) practice](https://www.multitran.com/m.exe?s=in-service+education+program&l1=1&l2=2) training | 4 | 108 | 3 |
| М.2.1.3 | Industrial technological practice | 4 | 216 | 6 |
| М.2.1.4 | Industrial (R&D) practice training  | 4 | 432 | 12 |
| М.2.2.1 | Undergraduate practice | 4 | 216 | 6 |
| M.3 | State final certification | 4 | 216 | 6 |
| F.2 | Information technology in research | - | 108 | 3 |
| F.3 | Modern technologies for the modification of materials and coatings | - | 108 | 3 |
|  | **Total** |  | **4320** | **120** |