Institute: Institute of Mechanical Engineering, Material and Transport

Bachelor Program: Mechanical Engineering

Field of Studies: "Equipment and Technology of Welding Production”

Years of studies: 4

Language of instruction: Russian

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| **№** | **Subject** | **Hours** | **Credits** |
|  | **Compulsory courses Block1** |  |  |
|  | **Block 1 Disciplines (modules)** |  |  |
|  | **Basic part** |  |  |
| 1.1 | History | 108 | 3 |
| 1.2 | Philosophy | 108 | 3 |
| 1.3 | Foreign language | /288 | /8 |
| 1.4 | Economics and Management of Engineering Production\*\*\* | 108 | 16 |
| 1.5 | Mathematics | /468 | /13 |
| 1.6 | Physics | /468 | /13 |
| 1.7 | Chemistry | 144 | 4 |
| 1.8 | Ecology | 72 | 2 |
| 1.9 | Information Technologies | /288 | /8 |
| 1.10 | Theoretical mechanics | 4 | 144 |
| 1.11 | Physical basics of material joining processes intensification | 5 | 180 |
| 1.12 | Engineering Graphics (drafting) | 72 | 2 |
| 1.13 | Descriptive geometry and computer graphics | /216 | /6 |
| 1.14 | Technical Mechanics | 72 | 2 |
| 1.15 | Material Science | 144 | 4 |
| 1.16 | Electrical Engineering and Electronics | 180 | 5 |
| 1.17 | Metrology, Standardization and Certification | 144 | 4 |
| 1.18 | Technology of construction materials | /216 | /6 |
| 1.19 | Fluid and Gas Mechanics | 108 | 3 |
| 1.20 | Fundamentals of Design | /252 | /7 |
| 1.21 | Basics of Mechanical Engineering Technology | /252 | /7 |
| 1.22 | Life Safety | 108 | 3 |
| 1.23 | Physical Training | 72 | 2 |
|  | **TOTAL for the basic part** | 4212 | 117 |
| 2 | **Variative part** |  |  |
| 2.1 | Rule of Law: History and Modernity | 72 | 2 |
| 2.2 | Philosophy of science and technology | 72 | 2 |
| 2.3 | Physical and chemical principles of welding processes of metals with nonmetals | 180 | 5 |
| 2.4 | Mechanical properties of solids | 144 | 4 |
| 2.5 | Fundamentals of heat processes | 180 | 5 |
| 2.6 | Theory of welding processes | /252 | /7 |
| 2.7 | Welding Production | /324 | /9 |
| 2.8 | Design of welded structures | /288 | /8 |
| 2.9 | Designing of welded structures | /288 |  |
| 2.10 | Fusion welding technology | 108 | 3 |
| 2.11 | Design of assembly welding equipment | 108 | 3 |
| 2.12 | Power sources for welding | 144 | 4 |
| 2.13 | Special methods of joining materials | 216 | 6 |
| 2.14 | 3D modeling and CAD basics | 72 | 2 |
|  | **Elective disciplines** | 1732 | 39 |
| 3 | Psychology\*\*\*\* | 108 | 3 |
| 3.1 | Engineering Psychology | /108 | /3 |
| 3.2 | History of Russian Culture | 72 | 2 |
| 3.3 | History of Science and Technology | /72 | /2 |
| 3.4 | Mathematical and computer methods for modeling physical processes | 72 | 2 |
| 3.5 | Basics of material science | /72 | /2 |
| 3.6 | Functional nanomaterials | 72 | 2 |
| 3.7 | Physical and chemical basics of welding processes  CAD systems in welding | /72 | /2 |
| 3.8 | Fundamentals of automatic control theory | /144 | /4 |
| 3.9 | Technological environment in welding | 72 | 2 |
| 3.10 | Physical and chemical basics of pressure welding | /72 | /2 |
| 3.11 | Military training | /72 | /2 |
| 3.12 | Testing and certification in welding production | 72 | 2 |
| 3.13 | Design of assembly and welding shops | /72 | /2 |
| 3.14 | Military training | /72 | /2 |
| 3.15 | Foreign language for professional communication | /180 | /5 |
| 3.16 | Technical translation | /180 | /5 |
| 3.17 | Military training | /144 | /4 |
| 3.18 | Contact welding technology | 180 | 5 |
| 3.19 | Basics of pressure welding | /180 | /5 |
| 3.20 | Military training | /180 | /5 |
| 3.21 | Quality control of welded joints | 180 | 5 |
| 3.22 | Materials testing techniques | /180 | /5 |
| 3.23 | Military training | /180 | /5 |
| 3.24 | Welding of special steels and alloys | 72 | 2 |
| 3.25 | Technological preparation of welding production | /72 | /2 |
| 3.26 | Military training | /108 | /3 |
| 3.27 | Playing sports | /328 |  |
| 3.28 | Combat Sports | /328 |  |
| 3.29 | Recreational Sports | /328 |  |
|  | **Total for the variative part** | 3892 | 99 |
|  | **Total for Block B.1** | 8104 | 216 |
|  | **Block 2 Practices** |  |  |
|  | **Practices (variable part)** | 648 | 18 |
|  | 1st training practice\* 2nd training practice | 108 | 3 |
|  | 2nd internship\* 2nd pedagogical practice | 108 | 3 |
|  | Work practice\*\* | 108 | 3 |
|  | Work practice (Research) | 108 | 3 |
|  | Work Practice (Pre-diploma) | 216 | 6 |
|  | **Block 3 State Final Attestation** |  |  |
|  | State Final Assessment (basic part) | 216 | 6 |
|  | Preparation for defense and defense of Master's and PhD theses | 216 | 6 |
|  | **TOTAL on direction** | 8968 | 240 |
|  | **Elective courses** |  |  |
|  | Military training | 252 |  |
|  | Welding machining technology in welding production | 72 |  |
|  | Physical processes and phenomena at welding | 72 |  |
|  | Production processes of large welded structures | 72 |  |
|  | Military training 01 (final certification) | /843 |  |