**Disciplines of the curriculum of the educational plan**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Semester |  | | Blocks of disciplines (ECTS credits) | | | | |
| Natural sciences and mathematics | Special and general professional disciplines | | Humanities and socio-economic sciences | Other |
| Discipline code | Discipline | Engineering disciplines | Engineering design |
| 1 | LNG108 | English |  |  |  | 5 |  |
| 1 | LNG104 | Kazakh (Russian) language |  |  |  | 5 |  |
| 1 | HUM100 | Modern history of Kazakhstan (state exam) |  |  |  | 5 |  |
| 1 | PHY111 | Physics I | 5 |  |  |  |  |
| 1 | MAT101 | Mathematics I | 5 |  |  |  |  |
| 1 | ERG104 | Introduction to specialty |  | 5 |  |  |  |
| 1 | HUM128 | Political science |  |  |  | 2 |  |
| 1 | KFK101 | Physical education I |  |  |  |  | 2 |
| 2 | LNG108 | English |  |  |  | 5 |  |
| 2 | LNG104 | Kazakh (Russian) language |  |  |  | 5 |  |
| 2 | PHY112 | Physics II | 5 |  |  |  |  |
| 2 | MAT102 | Mathematics II | 5 |  |  |  |  |
| 2 | ERG158 | Reading electrical circuits |  | 5 |  |  |  |
| 2 | KFK102 | Physical education II |  |  |  |  | 2 |
| 2 | HUM129 | Culturology |  |  |  | 2 |  |
| 2 | ERG176 | Electrical and technical material science |  | 5 |  |  |  |
| 2 | AAP173 | Training Practice |  |  |  |  | 1 |
| 3 | CHE452 | Ecology and sustainable development | 2 |  |  |  |  |
| 3 | HUM127 | Sociology |  |  |  | 2 |  |
| 3 | CSE677 | Information and Communication technology (eng) | 5 |  |  |  |  |
| 3 | MAT103 | Mathematics III | 5 |  |  |  |  |
| 3 | ELC542 | Theoretical Foundations of Electrical Engineering I |  | 5 |  |  |  |
| 3 | ERG519 | Theoretical fundamentals of heat engineering |  | 5 |  |  |  |
| 3 | ERG528 | Electrotechnical and thermotechnical measurements |  | 5 |  |  |  |
| 3 | KFK103 | Physical education III |  |  |  |  | 2 |
| 4 | MNG487 | Fundamentals of Entrepreneurship, Leadership and Anti-corruption culture |  |  |  | 3 |  |
| 4 | HUM122 | Psychology |  |  |  | 2 |  |
| 4 | HUM132 | Philosophy |  |  |  | 5 |  |
| 4 | CHE451 | Life safety |  |  |  | 2 |  |
| 4 | ELC543 | Theoretical Foundations of Electrical Engineering II |  | 5 |  |  |  |
| 4 | ERG521 | Heat and mass transfer equipment in heat power engineering |  | 5 |  |  |  |
| 4 | ERG509 | Industrial electronics |  | 5 |  |  |  |
| 4 | KFK104 | Physical education IV |  |  |  |  | 2 |
| 4 | AAP185 | Industrial internship I |  |  |  |  | 1 |
| 5 | ERG504 | Laboratory workshop on modern industrial technologies in the electric power industry I |  | 5 |  |  |  |
| 5 | ERG153 | Engineering Thermodynamics |  | 5 |  |  |  |
| 5 | ERG529 | Power and electrotechnical equipment (Elective 1) |  | 5 |  |  |  |
| 5 | ERG112 | Boiler Plants and Steam Generators (Elective 1) |  | 5 |  |  |  |
| 5 | NSE143 | Industrial economics |  |  |  | 5 |  |
| 5 | ERG527 | Electrical machines |  |  | 5 |  |  |
| 6 | ERG532 | Electrical apparatus |  | 5 |  |  |  |
| 6 | ERG178 | Electric power networks and systems (Elective 2) |  | 5 |  |  |  |
| 6 | ERG525 | Electrical part of power stations (Elective 2) |  | 5 |  |  |  |
| 6 | ERG425 | Hydrogasodynamics of media in heat power plants (Elective 2) |  | 5 |  |  |  |
| 6 | ERG433 | Transition processes in energy systems (Elective 3) |  | 5 |  |  |  |
| 6 | ERG533 | Theoretical Foundations of Fuel Combustion and Furnace Plants (Elective 3) |  | 5 |  |  |  |
| 6 | ERG500 | Automated electric drive (Elective 4) |  |  | 5 |  |  |
| 6 | ERG507 | Blowers and Heat Engines (Elective 4) |  |  | 5 |  |  |
| 6 | ERG555 | Laboratory workshop on modern industrial technologies in the electric power industry II |  | 5 |  |  |  |
| 6 | ERG530 | Power supply of enterprises |  |  | 5 |  |  |
| 6 | AAP176 | Industrial internship II |  |  |  |  | 5 |
| 7 | ERG124 | Basics of electrical safety |  | 5 |  |  |  |
| 7 | ERG524 | Main Machinery Operation of Heat Power Plant (Elective 5) |  | 5 |  |  |  |
| 7 | ERG506 | Modeling in power systems (Elective 5) |  | 5 |  |  |  |
| 7 | ERG508 | Light technology and lighting (Elective 6) |  | 5 |  |  |  |
| 7 | ERG520 | Thermal machines and gas turbine installations (Elective 6) |  | 5 |  |  |  |
| 7 | ERG511 | Calculation and projecting of power supply systems  (Elective 7) |  |  | 5 |  |  |
| 7 | ERG517 | Calculation and projecting of electrical power networks and systems (Elective 7) |  |  | 5 |  |  |
| 7 | ERG516 | Calculation and Design of Heat Exchange Equipment  (Elective 7) |  |  | 5 |  |  | |
| 7 | ERG138 | Calculation and projecting of power stations and substations (Elective 7) |  |  | 5 |  |  | |
| 7 | ERG510 | Calculation and projecting of systems of automated electrical drive (Elective 7) |  |  | 5 |  |  | |
| 7 | ERG142 | Relay protection of power systems (Elective 8) |  | 5 |  |  |  | |
| 7 | ERG126 | Steam-Gas and Gas-Turbine Facilities for Heat and Nuclear Power Plants (Elective 8) |  | 5 |  |  |  | |
| 7 | ERG502 | Engineering design of electrical machines in the power industry (Elective 9) |  |  | 5 |  |  | |
| 7 | ERG111 | Sources and Systems of Heat Supply of Plant Facilities and Housing (Elective 9) |  |  | 5 |  |  | |
| 8 | ERG536 | Renewable energy |  | 5 |  |  |  |
| 8 | ERG180 | Industrial Energy Audit and Energy-Saving |  | 5 |  |  |  |
| 8 | ECA003 | Graduate thesis (project) preparation |  |  |  |  | 6 |
| 8 | ECA103 | Graduate thesis (project) defense |  |  |  |  | 6 |
| **Total for each block** | | | **32** | **110** | **25** | **48** | **27** |
| **The total amount of the program (the amount of credits for all blocks)** | | | **242** | | | | |