

**Ministry of Education and Science of the Republic of Kazakhstan  
Academician Y.A. Buketov Karaganda University**

**Curriculum  
of Modular Education Program**

|                       |  |
|-----------------------|--|
| Faculty               | <b>Physical-Technical</b>  |
| Education Program     | <b>6B07103-Heat power engineering</b>  |
| Education form        | <b>Full Time</b>   |
| Duration of education | <b>4</b>   |
| Academic degree       | <b>Bachelor of Engineering and Technology under the educational programme<br/>"6B07103-Heat power engineering"</b> |

| №                                 | Name of module   | Cycle and component | Discipline code  | Name of discipline   | Credits | Examination | Course work | Total | Amount of hours |          |          |      |      |     | Course/Term distribution |        |          |        |          |        |          |        |
|-----------------------------------|--|---------------------|--|--|---------|-------------|-------------|-------|-----------------|----------|----------|------|------|-----|--------------------------|--------|----------|--------|----------|--------|----------|--------|
|                                   |  |                     |  |  |         |             |             |       | MS              | Lectures | Seminars | Labs | IWST | IWS | 1 course                 |        | 2 course |        | 3 course |        | 4 course |        |
|                                   |  |                     |  |  |         |             |             |       |                 |          |          |      |      |     | 1 term                   | 2 term | 3 term   | 4 term | 5 term   | 6 term | 7 term   | 8 term |
|                                   |  |                     |  |  |         |             |             |       |                 |          |          |      |      |     | 15                       | 15     | 15       | 15     | 15       | 15     | 15       | 15     |
| <b>GENERAL MODULES</b>            |  |                     |  |  |         |             |             |       |                 |          |          |      |      |     |                          |        |          |        |          |        |          |        |
| GM-1                              | World Outlook bases of modernization of public consciousness | GED/CC              | MHK1101  | Modern History of Kazakhstan   | 5       | 2           |             | 150   | 5               | 30       | 30       | 0    | 15   | 70  |                          | 5      |          |        |          |        |          |        |
|                                   |  | GED/CC              | Phi2102  | Philosophy   | 5       | 3           |             | 150   | 5               | 30       | 30       | 0    | 15   | 70  |                          |        | 5        |        |          |        |          |        |
|                                   |  | GED/EC              | AB2103<br>BLACC2103<br>RZH2103<br>EBLS2103<br>SHKP2103 | Applied business<br>Basics of law and of Anti-Corruption Culture<br>Рухани жаңғыру<br>Ecology and basics of life safety<br>Spiritual heritage of the Kazakh people | 5       | 4           |             | 150   | 5               | 30       | 30       | 0    | 15   | 70  |                          |        |          | 5      |          |        |          |        |
|                                   |  |                     | Total for module                                       |  |         |             | 15          |       |                 |          |          |      |      |     |                          |        |          |        |          |        |          |        |
| GM-2                              | Socio-political knowledge                                    | GED/CC              | BS2104   | Basics, Sociology  | 4       | 4           |             | 120   | 6               | 30       | 15       | 0    | 15   | 54  |                          |        |          | 4      |          |        |          |        |
|                                   |  | GED/CC              | CP2105   | Cultural, psychology   | 4       | 3           |             | 120   | 6               | 30       | 15       | 0    | 15   | 54  |                          |        | 4        |        |          |        |          |        |
|                                   |  |                     | Total for module                                       |  |         | 8           |             |       |                 |          |          |      |      |     |                          |        |          |        |          |        |          |        |
| GM-3                              | Information and communicative                                | GED/CC              | ICT1106  | Information and communication technologies (in English)  | 5       | 2           |             | 150   | 5               | 30       | 15       | 15   | 15   | 70  |                          | 5      |          |        |          |        |          |        |
|                                   |  | GED/CC              | Kaz1107  | Kazakh (Russian) language  | 10      | 1,2         |             | 300   | 5               | 0        | 120      | 0    | 30   | 145 | 10                       | 10     |          |        |          |        |          |        |
|                                   |  | GED/CC              | FL1108   | Foreign language   | 10      | 1,2         |             | 300   | 5               | 0        | 120      | 0    | 30   | 145 | 10                       | 10     |          |        |          |        |          |        |
|                                   |  | GED/CC              | PE1109   | Physical education   | 8       | passed      |             | 240   | 5               | 0        | 90       | 0    | 30   | 115 | 8                        | 8      |          |        |          |        |          |        |
|                                   | Total for module   |                     |  |  | 33      |             |             |       |                 |          |          |      |      |     |                          |        |          |        |          |        |          |        |
| <b>SPECIALTY ORIENTED MODULES</b> |  |                     |  |  |         |             |             |       |                 |          |          |      |      |     |                          |        |          |        |          |        |          |        |
| SOM-4                             | Fundamental disciplines                                      | BD/UC               | Mat1210  | Mathematics  | 5       | 1           |             | 150   | 5               | 30       | 30       | 0    | 15   | 70  | 5                        |        |          |        |          |        |          |        |
|                                   |  | BD/UC               | Phy1211  | Physics  | 6       | 1           |             | 180   | 5               | 30       | 30       | 15   | 15   | 85  | 6                        |        |          |        |          |        |          |        |
|                                   |  | BD/UC               | Che1212  | Chemistry  | 5       | 1           |             | 150   | 5               | 30       | 15       | 15   | 15   | 70  | 5                        |        |          |        |          |        |          |        |
|                                   |  | Total for module    |  |  |         | 16          |             |       |                 |          |          |      |      |     |                          |        |          |        |          |        |          |        |
|                                   |  | BD/UC               | THE2213  | Theoretical heating engineering  | 5       | 3           |             | 150   | 5               | 30       | 15       | 15   | 15   | 70  |                          |        | 5        |        |          |        |          |        |

|       |  |       |             |  |    |        |   |      |   |    |    |    |    |     |  |   |      |   |   |  |  |  |  |
|-------|--|-------|-------------|--|----|--------|---|------|---|----|----|----|----|-----|--|---|------|---|---|--|--|--|--|
| SOM-5 | Fundamentals of heat engineering and energy saving | BD/UC | ESHPETT2214 | Energy-saving in heat and power engineering and thermal technology | 4  | 4      | 4 | 120  | 6 | 30 | 15 | 0  | 15 | 54  |  |   |      | 4 |   |  |  |  |  |
|       |  | BD/UC | IS1215      | Introduction to the specialty                                      | 5  | 2      |   | 150  | 5 | 30 | 30 | 0  | 15 | 70  |  | 5 |      |   |   |  |  |  |  |
|       |  | BD/UC | HMT2216     | Heat and Mass Transfer   | 6  | 3      |   | 180  | 5 | 30 | 30 | 15 | 15 | 85  |  |   | 6    |   |   |  |  |  |  |
|       |  | BD/PR | Edu1201     | Educational  | 1  | passed |   | 1 w. |   |    |    |    |    |     |  |   | 1 w. |   |   |  |  |  |  |
|       | Total for module                                   |       |             |  | 21 |        |   |      |   |    |    |    |    |     |  |   |      |   |   |  |  |  |  |
| SOM-6 | Engineering fluid dynamics                         | BD/UC | MLG2217     | Mechanics of liquid and gas  | 4  | 3      |   | 120  | 6 | 30 | 15 | 0  | 15 | 54  |  |   | 4    |   |   |  |  |  |  |
|       |  | BD/UC | FHGD2218    | Fundamentals of hydraulic gas dynamics                             | 4  | 4      |   | 120  | 6 | 15 | 15 | 15 | 15 | 54  |  |   |      | 4 |   |  |  |  |  |
|       |  | BD/UC | PCMWT3219   | Physical and chemical methods of water treatment                   | 6  | 5      |   | 180  | 5 | 30 | 15 | 15 | 15 | 100 |  |   |      |   | 6 |  |  |  |  |
|       | Total for module                                   |       |             |  | 14 |        |   |      |   |    |    |    |    |     |  |   |      |   |   |  |  |  |  |

**SPECIALTY ORIENTED ELECTIVE MODULES**

|        |   |       |                        |  |    |        |  |      |   |    |    |    |    |     |  |   |      |   |  |  |   |   |   |
|--------|---|-------|------------------------|--|----|--------|--|------|---|----|----|----|----|-----|--|---|------|---|--|--|---|---|---|
| SOEM-7 | Applied Thermal Physics and measurements          | BD/EC | TMAS2220<br>TIBM2220   | Technological measurement and automation system<br>Technology insulation and building materials            | 5  | 4      |  | 150  | 5 | 30 | 15 | 15 | 15 | 70  |  |   | 5    |   |  |  |   |   |   |
|        |   | BD/EC | ATP3221<br>LTP3221     | Applied thermal physics<br>Low temperature physics   | 6  | 5      |  | 180  | 5 | 45 | 15 | 0  | 15 | 100 |  |   |      | 6 |  |  |   |   |   |
|        |   | BD/PR | Pro2202                | Production   | 4  | passed |  | 4 w. |   |    |    |    |    |     |  |   | 4 w. |   |  |  |   |   |   |
|        | Total for module                                  |       |                        |  | 15 |        |  |      |   |    |    |    |    |     |  |   |      |   |  |  |   |   |   |
| SOEM-8 | Production planning and occupational safety       | BD/EC | HPSEU3222<br>OS3222    | Heat and power engineering systems and energy using<br>Occupational safety                                 | 5  | 5      |  | 150  | 5 | 30 | 15 | 0  | 15 | 85  |  |   |      | 5 |  |  |   |   |   |
|        |   | BD/EC | EPPS2223<br>NCEERS2223 | Ecological problems of power system<br>Non-conventional energy sources and resource saving                 | 6  | 3      |  | 180  | 5 | 30 | 30 | 15 | 15 | 85  |  | 6 |      |   |  |  |   |   |   |
|        |   | BD/EC | ESNE3224<br>MOSH3224   | Engineering systems, networks and equipment<br>Mode and operation of a system of heat carriers             | 5  | 6      |  | 150  | 5 | 30 | 15 | 0  | 15 | 85  |  |   |      |   |  |  | 5 |   |   |
|        |   | BD/EC | PPM3225<br>POVSHHW3225 | Planning and production management<br>Planning and operation of ventilation systems, heating and hot water | 5  | 6      |  | 150  | 5 | 30 | 15 | 0  | 15 | 85  |  |   |      |   |  |  |   | 5 |   |
|        |   | BD/EC | EE4226<br>REPS4226     | Engineering ecology<br>Reliability and emergencies in power system   | 6  | 7      |  | 180  | 5 | 45 | 15 | 0  | 15 | 100 |  |   |      |   |  |  |   |   | 6 |
|        | Total for module                                  |       |                        |  | 27 |        |  |      |   |    |    |    |    |     |  |   |      |   |  |  |   |   |   |
| SOEM-9 | Computer modeling and digital electronics (minor) | BD/EC | EEE2227<br>TEC2227     | Electrical engineer and electronics<br>Theory of electric chains   | 4  | 4      |  | 120  | 6 | 15 | 15 | 15 | 15 | 54  |  |   | 4    |   |  |  |   |   |   |
|        |   | BD/EC | ACT3228<br>DIHPS3228   | Automatic control theory<br>Design of industrial heat power systems  | 5  | 5      |  | 150  | 5 | 30 | 15 | 0  | 15 | 85  |  |   |      | 5 |  |  |   |   |   |
|        |   | BD/EC | DITS3229<br>BDE3229    | Digital information transmission systems<br>Basics of Digital Electronics                                  | 5  | 6      |  | 150  | 5 | 30 | 15 | 0  | 15 | 85  |  |   |      |   |  |  | 5 |   |   |
|        |   | BD/EC | CTHPEC3230<br>ISTP3230 | Computer technologies in heat and power engineering calculations<br>Information systems of thermal power   | 5  | 6      |  | 150  | 5 | 30 | 15 | 0  | 15 | 85  |  |   |      |   |  |  |   | 5 |   |
|        | Total for module                                  |       |                        |  | 19 |        |  |      |   |    |    |    |    |     |  |   |      |   |  |  |   |   |   |

**SPECIALTY ORIENTED MODULES**

|  |  |       |         |                              |   |   |  |     |   |    |    |   |    |    |  |  |  |   |  |  |  |  |
|--|--|-------|---------|------------------------------|---|---|--|-----|---|----|----|---|----|----|--|--|--|---|--|--|--|--|
|  |  | CD/UC | BSG3331 | Boilers and steam generators | 4 | 5 |  | 120 | 6 | 15 | 15 | 0 | 15 | 69 |  |  |  | 4 |  |  |  |  |
|--|--|-------|---------|------------------------------|---|---|--|-----|---|----|----|---|----|----|--|--|--|---|--|--|--|--|

