

MINISTRY OF EDUCATION AND SCIENCE OF THE REPUBLIC OF KAZAKHSTAN  
KAZAKH NATIONAL RESEARCH TECHNICAL UNIVERSITY after K. SATBAYEV



Director of the Institute E&ME  
K. Yeremessov  
2023

MAJOR ELECTIVE DISCIPLINES educational program for the 2023-2024 academic year admission  
Educational program 6B07131- "Design and technology in mechanical engineering"  
Group of Educational programs B 064 - "Mechanics and metalworking"

Full-time study

Study duration : 4 years

Academic degree: Bachelor of Engineering and Technology

| Year of study                                 | Code of elective         | Code of discipline | Name of discipline                                      | Semestr          | Cycle | Credits | Total hours | lec/lab/pr | SIW (including SIWT) in hours |     |
|---|--------------------------|--------------------|---|------------------|-------|---------|-------------|------------|-------------------------------|-----|
| <b>Engineering design module</b>              |                          |                    |   |                  |       |         |             |            |                               |     |
| 3   | 3201                     | MSM106             | Probabilistic models in industrial engineering          | 5                | БД КВ | 5       | 150         | 1/1/1      | 105                           |     |
|   |                          | MCH511             | Finite element method in engineering                    |                  |       |         |             |            |                               |     |
|   | 3202                     | MCH513             | Cutting tool life cycle                                 | 6                | БД КВ | 5       | 150         | 1/1/1      | 105                           |     |
|   |                          | MCH514             | Cutting tool manufacturing technologies                 |                  |       |         |             |            |                               |     |
|   | 3203                     | MCH515             | Reverse engineering                                     | 6                | БД КВ | 5       | 150         | 1/2/0      | 105                           |     |
|   |                          | MCH516             | 3D Scanning techniques and technologies                 |                  |       |         |             |            |                               |     |
| <b>Digital production organization module</b> |                          |                    |   |                  |       |         |             |            |                               |     |
| 4   | 4301                     | MCH523             | Digital twins in mechanical engineering                 | 7                | ПД КВ | 5       | 150         | 1/2/0      | 105                           |     |
|   |                          | MCH524             | Professional engineer ethics                            |                  |       |         |             | 2/0/1      |                               |     |
|   | 4302                     | MCH520             | Additive manufacturing design                           | 8                | ПД КВ | 5       | 150         | 1/2/0      | 105                           |     |
|   |                          | MCH521             | Additive manufacturing processes                        |                  |       |         |             |            |                               |     |
|   | 4303                     | MCH525             | Production organization, planning and management        | 7                | ПД КВ | 6       | 180         | 2/0/2      | 120                           |     |
|   |                          | MCH526             | Enterprise management information technology (CASE)     |                  |       |         |             | 1/1/2      |                               |     |
|   | 4304                     | MCH527             | Digitalization of machining processes                   | 7                | ПД КВ | 6       | 180         | 2/2/0      | 120                           |     |
|   |                          | MCH528             | Programming of processing on CNC machines               |                  |       |         |             |            |                               |     |
|   | 4305                     | SCM115             | Economics of quality, standardization and certification | 8                | ПД КВ | 5       | 150         | 1/0/2      | 105                           |     |
|   |                          | SCM116             | Sustainable development through standardization tools   |                  |       |         |             |            |                               |     |
|   | 4306                     | MCH529             | Advanced processing methods                             | 8                | ПД КВ | 5       | 150         | 1/1/1      | 105                           |     |
|   |                          | MCH530             | Precision processing methods                            |                  |       |         |             |            |                               |     |
|   | <b>Management module</b> |                    |   |                  |       |         |             |            |                               |     |
|   | 4                        | 4307               | MSM418  | Capstone Project | 8     | ПД КВ   | 5           | 150        | 1/2/0                         | 105 |
| MNG481  |                          |                    | Theory and practice of project management               | 2/0/1            |       |         |             |            |                               |     |

| Credits numbers of elective disciplines over the entire period of study |           |
|---|-----------|
| Cycle of disciplines  | Credits   |
| Cycle of basic disciplines (B)  | 15        |
| Cycle of special disciplines (S)  | 37        |
| <b>Overall:</b>   | <b>52</b> |

Decision of the Academic Council of the Institute E&ME, Protocol № 3 от "24" 11 2023г.

ME Department Head

E. Nugman

representative of the Council for EP from Employers

I. Dyusebaev