

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



APPROVED

Director of the Institute E&ME

K. Yelemessov

"20" 01 2022



MAJOR ELECTIVE DISCIPLINES educational program for the 2022-2023 academic year admission  
Educational program 6B07105- "Industrial 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 | SIWT (including SIWT) in |
|---|------------------|--|---|---------|-------|---------|-------------|------------|--------------------------|
| <b>General technical training module</b>                  |                  |  |   |         |       |         |             |            |                          |
| 3   | 3201             | MSM149                                     | Hydraulics and hydraulic pneumatic drive                        | 5       | БД КВ | 5       | 150         | 1/0/2      | 105                      |
|   |                  | GEN119                                     | Fluid and gas mechanics   |         |       |         |             | 1/1/1      |                          |
|   | 3202             | MSM150                                     | Calculation and design of cutting tools                         | 6       | БД КВ | 5       | 150         | 1/0/2      | 105                      |
|   |                  | MSM190                                     | Production of cutting tools                                     |         |       |         |             |            |                          |
|   | 3203             | MSM422                                     | Drives of CNC machines  | 6       | БД КВ | 5       | 150         | 1/0/2      | 105                      |
|   |                  | MSM463                                     | Operation of machines with program control                      |         |       |         |             | 2/1/0      |                          |
|   | 3301             | MSM426                                     | Design of machining on CNC machines                             | 6       | ПД КВ | 5       | 150         | 1/0/2      | 105                      |
|   |                  | MSM428                                     | Development of control programs                                 |         |       |         |             | 1/2/0      |                          |
| 3302  | MSM425           | 3D modeling and 3D printing                | 6   | ПД КВ   | 4     | 120     | 1/2/0       | 75         |                          |
|   | MSM424           | Process modeling in mechanical engineering |   |         |       |         |             |            |                          |
| 4   | 3204             | ISO121                                     | Dynamics of mechanical processing of workpieces                 | 7       | БД КВ | 5       | 150         | 2/1/0      | 105                      |
|   |                  | ISO170                                     | Design of procurement production                                |         |       |         |             | 2/0/1      |                          |
| <b>Module of production and technological preparation</b> |                  |  |   |         |       |         |             |            |                          |
| 4   | 4303             | MSM429                                     | Automation of technological processes in mechanical engineering | 7       | ПД КВ | 6       | 180         | 2/1/1      | 120                      |
|   |                  | MSM430                                     | Robotization of machine-building production                     |         |       |         |             |            |                          |
|   | 4304             | MSM457                                     | Organization and planning of machine-building production        | 7       | ПД КВ | 6       | 180         | 2/0/2      | 120                      |
|   |                  | MSM421                                     | Production design   |         |       |         |             |            |                          |
|   | 4305             | MSM159                                     | Design and calculation of technological equipment               | 8       | ПД КВ | 5       | 150         | 1/0/2      | 105                      |
|   |                  | MSM431                                     | Progressive methods of surface treatment                        |         |       |         |             | 1/2/0      |                          |
|   | 4306             | MCH149                                     | CAM(Solidworks, Inventor)                                       | 8       | ПД КВ | 5       | 150         | 1/2/0      | 105                      |
|   |                  | MSM119                                     | Additive manufacturing  |         |       |         |             | 2/0/1      |                          |
| <b>Management training module</b>                         |                  |  |   |         |       |         |             |            |                          |
| 4   | 4307             | MNG481                                     | Theory and practice of project management                       | 8       | ПД КВ | 5       | 150         | 2/0/1      | 105                      |
|   |                  | MSM418                                     | Capstone Project  |         |       |         |             | 1/2/0      |                          |

| Credits numbers of elective disciplines over the entire period of study |         |
|---|---------|
| Cycle of disciplines  | Credits |
| Cycle of basic disciplines (B)  | 20      |
| Cycle of special disciplines (S)  | 36      |
| Overall:  | 56      |

Decision of the Academic Council of the Institute E&ME, Protocol № 5 от "20" 01 2022 y.

ME,SC&M Department Head

M. Issametova

Representative of the Council for EP from Employers

I. Dyusebaev