



## WORKING CURRICULUM

Academic year 2025-2026 (Spring, Autumn)  
Group of educational programs D103 - "Mechanics and metal working"  
Educational program 8D07111 - "Digitalization of engineering manufacturing"  
The awarded academic degree Doctor of Philosophy PhD  
Form and duration of study full time (scientific and pedagogical track) - 3 years

| Discipline code                              | Name of disciplines                                                                    | Block | Cycle   | Total ECTS credits | Total hours | lek/lab/pr Contact hours | in hours SIS (including TSIS) | Form of control | Allocation of face-to-face training based on courses and semesters |       |          |       |          |       | Prerequisites |  |
|----------------------------------------------|----------------------------------------------------------------------------------------|-------|---------|--------------------|-------------|--------------------------|-------------------------------|-----------------|--------------------------------------------------------------------|-------|----------|-------|----------|-------|---------------|--|
|                                              |                                                                                        |       |         |                    |             |                          |                               |                 | 1 course                                                           |       | 2 course |       | 3 course |       |               |  |
|                                              |                                                                                        |       |         |                    |             |                          |                               |                 | 1 sem                                                              | 2 sem | 3 sem    | 4 sem | 5 sem    | 6 sem |               |  |
| CYCLE OF GENERAL EDUCATION DISCIPLINES (GED) |                                                                                        |       |         |                    |             |                          |                               |                 |                                                                    |       |          |       |          |       |               |  |
| CYCLE OF BASIC DISCIPLINES (BD)              |                                                                                        |       |         |                    |             |                          |                               |                 |                                                                    |       |          |       |          |       |               |  |
| M1 Technical training module                 |                                                                                        |       |         |                    |             |                          |                               |                 |                                                                    |       |          |       |          |       |               |  |
| MET322                                       | Methods of scientific research                                                         |       | BD, UC  | 5                  | 150         | 30/0/15                  | 105                           | E               |                                                                    | 5     |          |       |          |       |               |  |
| LNG305                                       | Academic writing                                                                       |       | BD, UC  | 5                  | 150         | 0/0/45                   | 105                           | E               |                                                                    | 5     |          |       |          |       |               |  |
| MSM308                                       | Digital factory technologies                                                           | 1     | BD, CCH | 5                  | 150         | 30/0/15                  | 105                           | E               |                                                                    | 5     |          |       |          |       |               |  |
| MNG350                                       | Sustainability Science                                                                 | 1     | BD, CCH | 5                  | 150         | 30/0/15                  | 105                           | E               |                                                                    | 5     |          |       |          |       |               |  |
| MNG349                                       | Intellectual property and the global market                                            | 1     | BD, CCH | 5                  | 150         | 30/0/15                  | 105                           | E               |                                                                    | 5     |          |       |          |       |               |  |
| M3 Practice-oriented module                  |                                                                                        |       |         |                    |             |                          |                               |                 |                                                                    |       |          |       |          |       |               |  |
| AAP350                                       | Pedagogical practice                                                                   |       | BD, UC  | 10                 |             |                          |                               | R               | 10                                                                 |       |          |       |          |       |               |  |
| CYCLE OF PROFILE DISCIPLINES (PD)            |                                                                                        |       |         |                    |             |                          |                               |                 |                                                                    |       |          |       |          |       |               |  |
| M2 Digital Engineering Module                |                                                                                        |       |         |                    |             |                          |                               |                 |                                                                    |       |          |       |          |       |               |  |
| IND311                                       | Advanced Systems of Manufacturing                                                      | 1     | PD, CCH | 5                  | 150         | 30/0/15                  | 105                           | E               |                                                                    | 5     |          |       |          |       |               |  |
| IND308                                       | Advanced Digital Manufacturing Design                                                  | 1     | PD, CCH | 5                  | 150         | 30/0/15                  | 105                           | E               |                                                                    | 5     |          |       |          |       |               |  |
| IND317                                       | Advanced Design of Industrial Experiments                                              | 2     | PD, CCH | 5                  | 150         | 30/0/15                  | 105                           | E               |                                                                    | 5     |          |       |          |       |               |  |
| IND321                                       | Advanced Decision Analysis                                                             | 2     | PD, CCH | 5                  | 150         | 30/0/15                  | 105                           | E               |                                                                    | 5     |          |       |          |       |               |  |
| M3 Practice-oriented module                  |                                                                                        |       |         |                    |             |                          |                               |                 |                                                                    |       |          |       |          |       |               |  |
| AAP355                                       | Research practice                                                                      |       | PD, UC  | 10                 |             |                          |                               | R               |                                                                    |       | 10       |       |          |       |               |  |
| M4 Experimental research module              |                                                                                        |       |         |                    |             |                          |                               |                 |                                                                    |       |          |       |          |       |               |  |
| AAP347                                       | Research work of the doctoral student, including internships and doctoral dissertation |       | RWDS    | 20                 |             |                          |                               | R               | 20                                                                 |       |          |       |          |       |               |  |
| AAP336                                       | Research work of the doctoral student, including internships and doctoral dissertation |       | RWDS    | 5                  |             |                          |                               | R               |                                                                    | 5     |          |       |          |       |               |  |
| AAP347                                       | Research work of the doctoral student, including internships and doctoral dissertation |       | RWDS    | 20                 |             |                          |                               | R               |                                                                    |       | 20       |       |          |       |               |  |
| AAP356                                       | Research work of the doctoral student, including internships and doctoral dissertation |       | RWDS    | 30                 |             |                          |                               | R               |                                                                    |       |          | 30    |          |       |               |  |
| AAP356                                       | Research work of the doctoral student, including internships and doctoral dissertation |       | RWDS    | 30                 |             |                          |                               | R               |                                                                    |       |          |       | 30       |       |               |  |
| AAP348                                       | Research work of the doctoral student, including internships and doctoral dissertation |       | RWDS    | 18                 |             |                          |                               | R               |                                                                    |       |          |       |          | 18    |               |  |
| M5 Module of final attestation               |                                                                                        |       |         |                    |             |                          |                               |                 |                                                                    |       |          |       |          |       |               |  |
| ECA325                                       | Final examination (writing and defending a doctoral dissertation)                      |       | FA      | 12                 |             |                          |                               |                 |                                                                    |       |          |       |          | 12    |               |  |
| Total based on UNIVERSITY:                   |                                                                                        |       |         |                    |             |                          |                               |                 | 30                                                                 | 30    | 30       | 30    | 30       | 30    |               |  |

|  |    |    |    |  |
|--|----|----|----|--|
|  | 60 | 60 | 60 |  |
|--|----|----|----|--|

| Number of credits for the entire period of study |                                                |                         |                           |                           |       |
|--------------------------------------------------|------------------------------------------------|-------------------------|---------------------------|---------------------------|-------|
| Cycle code                                       | Cycles of disciplines                          | Credits                 |                           |                           |       |
|                                                  |                                                | Required component (RC) | University component (UC) | Component of choice (CCH) | Total |
| GED                                              | Cycle of general education disciplines         | 0                       | 0                         | 0                         | 0     |
| BD                                               | Cycle of basic disciplines                     | 0                       | 20                        | 5                         | 25    |
| PD                                               | Cycle of profile disciplines                   | 0                       | 10                        | 10                        | 20    |
| Total for theoretical training:                  |                                                | 0                       | 30                        | 15                        | 45    |
| RWDS                                             | Research Work of Doctoral Student              |                         |                           |                           | 123   |
| ERWDS                                            | Experimental Research Work of Doctoral Student |                         |                           |                           | 0     |
| FA                                               | Final attestation                              |                         |                           |                           | 12    |
| TOTAL:                                           |                                                |                         |                           |                           | 180   |

Decision of the Educational and Methodological Council of KazNRTU named after K.Satpayev. Minutes № 3 dated 20.12.2024

Decision of the Academic Council of the Institute. Minutes № 3 dated 19.12.2024

Signed:

Governing Board member - Vice-Rector for Academic Affairs

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Approved:

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\_\_\_\_Acknowledged\_\_\_\_

