

## The list of academic disciplines of the university component

**7M07 - Engineering, Manufacturing and Civil engineering**  
(Code and classification of the field of education)

**7M071 - Engineering and engineering trades**  
(Code and classification of the direction of training)

**0710**  
(Code in the International Standard Classification of Education)

**M103 - Mechanics and metalworking**  
(Code and classification of the educational program group)

**7M07104 - Mechanical engineering**  
(Code and name of the educational program)

**Master**  
(Level of preparation)

**set of 2023**

**Developed**

By the Academic Committee of the EP  
The head of the AC Nurymkhan G.  
EP Manager Shayakhmetov Y

**Reviewed**

at the meeting of the Quality Assurance Commission of the Faculty of Engineering and Technology  
Recommended for approval by the Academic Council of the University  
Protocol № 4.6 "10" April 2023  
Chairman of the Commission on Quality Assurance Abdilova G.

Approved at the meeting of the Academic Council of the University Protocol No. 8 "25" April 2023.

**Approved**

at the meeting of the Academic Council of the University  
Protocol № 1 "01" of September 2023  
Chairman of the Academic Council of the University Orynbekov D.R.

## Qualimetry of machine engineering

Discipline cycle	Profiling discipline
Course	1
Credits count	5
Knowledge control form	Examination

### Short description of discipline

Formation of the concept of qualimetry as a discipline about the quantitative assessment of quality. Methods of qualimetry, means of qualimetry, quality indicators are described. Methods of qualimetric (quantitative) evaluation of products are described. Examples of calculation (qualimetric) details are shown; methods for calculating the overall quality assessment at individual stages and for the full life cycle of the product.

### Purpose of studying of the discipline

The purpose of the discipline: about the history and current state of qualimetry at home and abroad; about the basic methods of qualimetry, the basics of qualimetry technology in mechanical engineering; about the collection and processing of raw data to determine the quantitative values of quality indicators in mechanical engineering.

### Learning Outcomes

ON2 Show the learning skills necessary to independently continue further education in the field of study.

ON3 Show the ability to conduct experiments according to specified methods with processing and analysis of the results, apply standard test methods to determine the physical and mechanical properties and technological indicators of the materials used and finished products.

ON4 Analyze, think creatively and creatively approach new problems and situations. The ability to independently apply methods and means of cognition, learning and self-control.

ON6 Demonstrate the ability to conduct a preliminary feasibility study of design solutions.

### Learning outcomes by discipline

1. Have an idea about the current state and further development of mechanical engineering technology, general approaches and automation of technological processes for manufacturing parts and assembling machines;
2. Be able to analyze technical conditions and accuracy standards based on the service purpose of machines, develop technological processes for machining machine parts with quality control of processing;
3. Acquire practical skills: product quality analysis, organization of statistical control and quality management of technological processes of independent choice
4. Be competent in methods of assessing the quality level of mechanical engineering products, the specifics of the choice of product quality indicators; organization, methods and means of quality control in mechanical engineering.

### Prerequisites

Basic and profile disciplines of the EP

### Postrequisites

Final examination Engineering methods to ensure the reliability of the machines Engineering methods of calculation

## Research work of a master student, including internship and master s thesis I

Discipline cycle	Profiling discipline
Course	1
Credits count	11
Knowledge control form	Total mark on practice

### Short description of discipline

Formation of the presentation of scientific research (formulation of topics, goals, objectives); methodology of theoretical, experimental research. The course presents an analysis of theoretical and innovative research, conducting experiments and developing conclusions and recommendations. The course provides knowledge on innovations in scientific activity, their promotion and implementation, the main criteria for registration and protection of copyright and other rights.

### Purpose of studying of the discipline

The goal is to study the latest theoretical, methodological and technological achievements of domestic and foreign science, as well as to consolidate practical skills in applying modern methods of scientific research

### Learning Outcomes

ON2 Show the learning skills necessary to independently continue further education in the field of study.

ON5 Be able to critically assess their strengths and weaknesses. Apply the skills of scientific research on the formulated topic, obtaining new scientific and applied results, their analysis, systematization, generalization and presentation.

ON6 Demonstrate the ability to conduct a preliminary feasibility study of design solutions.

### Learning outcomes by discipline

1. Have basic and specialized knowledge in the field of mathematical, natural and professional sciences in complex engineering and scientific activities;
2. Be able to use methods of system analysis and mathematical modeling, on the main issues of scientific research (formulation of topics, goals, objectives of research);
3. Has skills in using application software packages in scientific and engineering activities, conducting experiments and developing conclusions and recommendations;
4. Demonstrate basic knowledge about the analysis of theoretical and innovative research;

### Prerequisites

Basic and profile disciplines of the EP

### Postrequisites

Methods of experimental design Research work of a master student, including internship and master s project II

## Foreign language (professional)

Discipline cycle	Basic disciplines
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Course	2
Credits count	3
Knowledge control form	Examination

### Short description of discipline

*Mastery of general cultural, professional and special competencies for the implementation of professional activities, involving teaching free reading of original literature of the relevant branch of knowledge in a foreign language; development of oral communication skills in monological and dialogical form in the specialty; development of written scientific communication skills on topics related to the scientific work of a graduate student, as well as familiarization with the forms and types of international cooperation in the scientific field.*

### Purpose of studying of the discipline

*The purpose of studying the discipline "Foreign language (professional)" in the master's degree program is the systematic deepening of communicative competence within the framework of international standards of foreign language education on the basis of further development of skills and abilities of active language proficiency in the professional activity of the future master.*

### Learning Outcomes

*ON1 Apply fundamental scientific, pedagogical, managerial, communicative knowledge and skills in professional activities.*

### Learning outcomes by discipline

- to know the specifics of oral and written speech in the fields of professional, scientific, socio-political relations;
  - to know the national and cultural peculiarities of the creation and organization of a text in a foreign language within the framework of professionally motivated conditions;
  - to know the stylistic features of the vocabulary of a foreign language in the field of professional communication;
- be able to perform:*
- implementation of professional activity in linguistic, sociolinguistic, information-analytical and communicative aspects;
  - creating your own verbal and non-verbal order in the fields of professional and scientific socio-political relations;
  - the use of a variety of language and speech means adequate to social factors, communication conditions, the status of the interlocutor and his communicative intentions;
  - be able to organize speech activity as a representative of another culture and the nature of communication in accordance with the tasks of communication, the speech situation, individual characteristics;
- the presence of skills:*
- to perceive by ear and understand the appropriate level of messages of a business, informational and vocational nature;
  - dialogical and monological communication within the framework of professional activity;
  - to get acquainted and study business and scientific and technical documentation, which provides for obtaining information from what has been read and using it in speech;
  - have the skills of systematic presentation of thoughts, thinking, information when writing letters of an official, professional nature;

### Prerequisites

*Bachelor*

### Postrequisites

*Final examination Research work of a master student, including internship and master s project II*

## History and philosophy of science

Discipline cycle	Basic disciplines
Course	2
Credits count	5
Knowledge control form	Examination

### Short description of discipline

*The discipline is aimed at studying the culture of scientific thinking, forms analytical capabilities and research skills, provides theoretical and practical knowledge necessary for a future scientist. Explores the historical evolution of the sciences and the philosophical perspectives they form. The origins of modern science, its social and institutional connections are described. General philosophical issues related to thought experiments, confirmation and refutation of theories, the origin and application of quantitative and high-quality research methods are considered.*

### Purpose of studying of the discipline

*the formation of an interdisciplinary worldview among undergraduates, based on a deep understanding of the history and philosophy (theory) of scientific thinking, as part of a universal culture.*

### Learning Outcomes

*ON1 Apply fundamental scientific, pedagogical, managerial, communicative knowledge and skills in professional activities.*

### Learning outcomes by discipline

*Be able to apply fundamental scientific, pedagogical, managerial, and communicative knowledge and skills in professional activities*

### Prerequisites

*Bachelor*

### Postrequisites

*Final examination*

## Tertiary education

Discipline cycle	Basic disciplines
Course	2
Credits count	3
Knowledge control form	Examination

### Short description of discipline

*The course is aimed at studying the main directions, principles and patterns of higher education. During the course of the course, the basic concepts of modern pedagogy, concepts and theories of teaching and upbringing, didactics of higher education will be considered. The master's student will master the skills of designing the organization of the educational process, techniques of individual and group reflection, will be able to correctly formulate pedagogical goals, apply educational technologies in the educational process. in the*

process, to design work programs of disciplines.

### **Purpose of studying of the discipline**

*The purpose of mastering the discipline is to master the system of knowledge about higher education, its content, structure, principles of educational process management and mastering modern technologies in the field of management and organization of the educational process*

### **Learning Outcomes**

*ON1 Apply fundamental scientific, pedagogical, managerial, communicative knowledge and skills in professional activities.*

### **Learning outcomes by discipline**

- *Be able to solve the problems of higher pedagogical education and the prospects for its further development;*
- *Have the skills to consider the application of effective university technologies;*
- *Solve topical and psychological and pedagogical problems,*

### **Prerequisites**

*Bachelor*

### **Postrequisites**

*Pedagogical practice*

## **Psychology of management**

Discipline cycle	Basic disciplines
Course	2
Credits count	3
Knowledge control form	Examination

### **Short description of discipline**

*The content of the course is aimed at mastering the approaches and directions of management psychology, psychological laws of management, features of planning and solving management problems. Students will get acquainted with the psychological methods of resolving conflict situations, master the ways of motivating work, the methods of using effective management styles. Skills will be formed to analyze the psychological causes underlying the decline in the effectiveness of the management process.*

### **Purpose of studying of the discipline**

*The purpose of the discipline "Psychology of Management" is the formation of scientifically based ideas about the system of mental phenomena, psychological variables of behavior and conscious human activity in modern conditions and allows undergraduates to form skills of applying the acquired psychological knowledge in educational activities*

### **Learning Outcomes**

*ON1 Apply fundamental scientific, pedagogical, managerial, communicative knowledge and skills in professional activities.*

### **Learning outcomes by discipline**

- *be able to determine the forms and methods of effective team management;*
- *develop plans for the development of organizations, provide psychological support for the activities of organizations;*
- *possess methods of solving managerial tasks.*

### **Prerequisites**

*Bachelor*

### **Postrequisites**

*Final examination Pedagogical practice*

## **Pedagogical practice**

Discipline cycle	Basic disciplines
Course	2
Credits count	6
Knowledge control form	Total mark on practice

### **Short description of discipline**

*Allows you to formulate an array of pedagogical knowledge and skills acquired during the master's course. Pedagogical practice organizes knowledge and reveals the possibilities of their application. Performs an analysis of pedagogical activity in working with a diary, methodological material, classes, in communication with students. Assesses readiness for actual pedagogical activity.*

### **Purpose of studying of the discipline**

*Pedagogical practician maqsaty undergraduate bilim alushylarmen pedagogical zhymys boyinsha fylm negizdelgen blimi men qyzyrettiligin kalyptastyru bolyp tabylady*

### **Learning Outcomes**

*ON1 Apply fundamental scientific, pedagogical, managerial, communicative knowledge and skills in professional activities.*

### **Learning outcomes by discipline**

- 1. Demonstrate basic and specialized knowledge in the field of pedagogical sciences;*
- 2. Be able to use pedagogical knowledge and reveals the possibilities of their application in practice;*
- 3. Have the skills to analyze and evaluate teaching activities, develop methodological materials, and conduct classes;*
- 4. Demonstrate basic knowledge about modern problems of pedagogy; the main directions of its development;*

### **Prerequisites**

*Tertiary education Psychology of management*

### **Postrequisites**

*Final examination*

## **Research work of a master student, including internship and master s project II**

Discipline cycle	Profiling discipline
Course	2
Credits count	4

Knowledge control form

Total mark on practice

### Short description of discipline

*Allows you to summarize the entire array of knowledge gained during the training period. The internship is an important part of the research work, it allows you to receive additional advice on the research topic. The result of all work is the implementation of a master's thesis in which all research materials, conclusions and processing of experimental data are collected.*

### Purpose of studying of the discipline

*The goal is to collect theoretical and experimental data, study the latest theoretical, methodological and technological achievements of domestic and foreign science.*

### Learning Outcomes

*ON5 Be able to critically assess their strengths and weaknesses. Apply the skills of scientific research on the formulated topic, obtaining new scientific and applied results, their analysis, systematization, generalization and presentation.*

### Learning outcomes by discipline

- 1. Have basic and specialized knowledge in the field of mathematical, natural and professional sciences in complex engineering and scientific activities;*
- 2. Be able to use methods of system analysis and mathematical modeling, on the main issues of scientific research (formulation of topics, goals, objectives of research);*
- 3. Have the skills to use application software packages in scientific and engineering activities, conduct experiments and develop conclusions and recommendations;*
- 4. Demonstrate knowledge about the analysis of theoretical and innovative research;*

### Prerequisites

*Introduction to experiment Organization and planning of research and innovation*

### Postrequisites

*Final examination Research practice Research work of a master student, including internship and master s project III*

## Research practice

Discipline cycle

Profiling discipline

Course

3

Credits count

13

Knowledge control form

Total mark on practice

### Short description of discipline

*Allows you to generalize and apply knowledge in special disciplines, to assess the ability to use the acquired knowledge in research practice. Shows the ability of the undergraduate to produce real research, the ability to set goals and objectives and achieve their implementation. Analyze and propose a methodology for experiments and correctly interpret the results of a scientific experiment.*

### Purpose of studying of the discipline

*Collection of the latest theoretical, methodological and technological achievements of domestic and foreign science*

### Learning Outcomes

*ON2 Show the learning skills necessary to independently continue further education in the field of study.*

### Learning outcomes by discipline

- 1. Have basic and specialized knowledge acquired in special disciplines, research and scientific activities;*
- 2. Be able to produce real research on the topic of the dissertation, theoretical and experimental research;*
- 3. Have the skills to use application software packages in scientific and engineering activities in order to use them in research activities;*
- 4. Demonstrate knowledge on the development of experimental methods and the correct interpretation of the results of a scientific experiment;*

### Prerequisites

*Organization and planning of research and innovation Engineering methods of calculation Dynamic calculation of design studies Research work of a master student, including internship and master s project II*

### Postrequisites

*Final examination*

## Research work of a master student, including internship and master s project III

Discipline cycle

Profiling discipline

Course

3

Credits count

9

Knowledge control form

Total mark on practice

### Short description of discipline

*Allows you to summarize the entire array of knowledge gained during the training period. The internship is an important part of the research work, it allows you to receive additional advice on the research topic. The result of all work is the implementation of a master's thesis in which all research materials, conclusions and processing of experimental data are collected.*

### Purpose of studying of the discipline

*The goal is to consolidate practical skills in applying modern methods of scientific research, processing experimental data using mathematical apparatus;*

### Learning Outcomes

*ON5 Be able to critically assess their strengths and weaknesses. Apply the skills of scientific research on the formulated topic, obtaining new scientific and applied results, their analysis, systematization, generalization and presentation.*

### Learning outcomes by discipline

- 1. Have basic and specialized knowledge in the field of basic and core disciplines of the course;*
- 2. Be able to use methods of system analysis and mathematical modeling to process the results of experimental research;*
- 3. Have the skills to use application software packages in scientific and engineering activities, to model experiments and write conclusions;*
- 4. Demonstrate basic knowledge about the issues of writing a master's thesis on the topic under study;*

**Prerequisites**

*Basic and profile disciplines of the EP Organization and planning of research and innovation Engineering methods of calculation  
Research work of a master student, including internship and master s project II*

**Postrequisites**

*Final examination*