

## The list of academic disciplines of the university component

**7M07 - Engineering, manufacturing and construction industries**  
(Code and classification of the field of education)

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

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

**M098 - Heat Power Engineering**  
(Code and classification of the educational program group)

**7M07101 - Heat Power Engineering**  
(Code and name of the educational program)

**Master**  
(Level of preparation)

**set of 2024**

**Developed**

By the Academic Committee of the OP  
The head of the AK Kasymov Askar  
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**Reviewed**

At the meeting of the Commission on Academic Quality of the Faculty of Engineering and Technology  
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At a meeting of the Academic Quality Commission of the Research School of Physical and Chemical  
Sciences

Recommended for approval by the University Academic Council  
Protocol No. 1 June 06, 2024

**Approved**

at a meeting of the University Academic Council by protocol No. 6/1 of January 19, 2024.

at a meeting of the University Academic Council by protocol No. 11 of June 28, 2024.

## Foreign language (professional)

Discipline cycle	Basic disciplines
Course	1
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;
  - has the skills of systematic presentation of thoughts, thinking, information when writing letters of an official, professional nature;

### Prerequisites

Bachelor

### Postrequisites

Final examination

## History and philosophy of science

Discipline cycle	Basic disciplines
Course	1
Credits count	5
Knowledge control form	Examination

### Short description of discipline

Пән ғылыми ойлау мәдениетін зерттеуге бағытталған, аналитикалық мүмкіндіктер мен зерттеу дағдыларын қалыптастырады, болашақ ғалымға қажетті теориялық және практикалық білім береді. Ғылымның тарихи эволюциясын және олар қалыптастыратын философиялық перспективаларды зерттейді. Қазіргі ғылымның пайда болуы, оның әлеуметтік және институционалдық байланыстары сипатталған. Ойлау эксперименттеріне, теорияларды растау мен теріске шығаруға, сандық және жоғары сапалы зерттеу әдістерінің пайда болуы мен қолданылуына байланысты жалпы философиялық мәселелер қарастырылады.

### Purpose of studying of the discipline

магистранттарда жалпыадамзаттық мәдениеттің бір бөлігі ретінде ғылыми ойлаудың тарихы мен философиясын (теориясын) терең түсінуге негізделген пәнаралық дүниетанымды қалыптастыру.

### 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

## Higher Education Pedagogy

Discipline cycle	Basic disciplines
Course	1
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	1
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

## **The research work of a student, including an internship and the implementation of a master's thesis**

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

### **Short description of discipline**

Research work develops the ability to independently carry out activities in the field of education and science related to solving complex professional tasks in innovative conditions, ensuring the development of professional research thinking of undergraduates, forming a clear understanding of their main professional tasks, ways to solve them, conducting bibliographic work with the involvement of modern information technologies.

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

Preparation of a master's student for independent research work aimed at writing and defending a master's thesis.

### **Learning Outcomes**

ON2 To form the strategy and structure of the organization of scientific research and mathematical modeling of thermal power facilities.  
ON3 To operate with the necessary calculation methods of cogeneration and ventilation heat technology plants.

### **Learning outcomes by discipline**

- solve assigned tasks;
- analyze research results;
- participate in the organization of conferences and scientific seminars.

### **Prerequisites**

Bachelor Organization and planning of scientific research

## Postrequisites

*The research work of a student, including an internship and the implementation of a masters thesis II*

## Scientific and technical problems in heat power engineering and thermo technologies

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

### Short description of discipline

*This course is devoted to the analysis of trends and patterns of energy development in the modern world. Special issues of the theory of combustion and special questions of heat and mass transfer are considered. Modern and promising methods and methods of obtaining and converting thermal and electrical energy are discussed. The analysis and prospects of using industrial waste and secondary energy resources as energy fuel and renewable energy sources are given.*

### Purpose of studying of the discipline

*Training of a specialist to solve the problems of design, research and operation of thermal power and heat technology installations and systems, able to analyze the efficiency of energy conversion schemes, evaluate the prospects of new methods of energy production, put into practice innovative developments.*

### Learning Outcomes

*ON3 To operate with the necessary calculation methods of cogeneration and ventilation heat technology plants.*

### Learning outcomes by discipline

- describe existing and prospective technological schemes for the production of electric and thermal energy;
- calculate the energy and heat demand of various heat-technological processes;
- apply methods of modeling and optimization of thermal processes, installations and systems.

## Prerequisites

*Bachelor*

## Postrequisites

*Final examination*

## Pedagogical practice

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

### Short description of discipline

*The pedagogical practice of the undergraduate is an important practical component of the second stage of higher education. This type of practice is aimed at mastering the basics of pedagogical skills, leading a group of students and developing educational and methodological material. The passage of pedagogical practice involves the formation of concepts about modern educational technologies, forms and methods of conducting classes, monitoring the assimilation of the studied material. Pedagogical practice contributes to the development of undergraduates' self-analysis skills based on the results of the work done.*

### Purpose of studying of the discipline

*The purpose of teaching practice is to study the basics of educational and methodical work and the formation of practical skills and methods of teaching in higher education.*

### Learning Outcomes

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

### Learning outcomes by discipline

- to determine the forms and methods of control and assessment of students' knowledge;
- build a plan for the lesson;
- to demonstrate the writing of methodological developments.

## Prerequisites

*Higher Education Pedagogy*

## Postrequisites

*Final examination*

## The research work of a student, including an internship and the implementation of a masters thesis II

Discipline cycle	Profiling discipline
Course	2
Credits count	4
Knowledge control form	Total mark on practice

### Short description of discipline

*Research work develops the ability to independently carry out activities in the field of education and science related to solving complex professional tasks in innovative conditions, ensuring the development of professional research thinking of undergraduates, forming a clear understanding of their main professional tasks, ways to solve them, conducting bibliographic work with the involvement of modern information technologies.*

### Purpose of studying of the discipline

*Preparation of a master's student for independent research work aimed at writing and defending a master's thesis.*

### Learning Outcomes

*ON2 To form the strategy and structure of the organization of scientific research and mathematical modeling of thermal power facilities.*

### **Learning outcomes by discipline**

- solve assigned tasks;
- analyze research results;
- participate in the organization of conferences and scientific seminars.

### **Prerequisites**

*The research work of a student, including an internship and the implementation of a master s thesis I*

### **Postrequisites**

*The research work of a student, including an internship and the implementation of a masters thesis III*

### **Research practice**

Discipline cycle	Profiling discipline
Course	2
Credits count	13
Knowledge control form	Total mark on practice

### **Short description of discipline**

*The research practice of the undergraduate is conducted in order to familiarize with the latest theoretical, methodological and technological achievements of domestic and foreign science, modern methods of scientific research, processing and interpretation of experimental data and their application in further activities.*

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

*Formation of students` skills of conducting research work within the framework of a master`s thesis.*

### **Learning Outcomes**

*ON2 To form the strategy and structure of the organization of scientific research and mathematical modeling of thermal power facilities.*

### **Learning outcomes by discipline**

- to interpret the methodology for constructing the stages of scientific research;
- draw up a work plan when conducting research;
- prepare reports on the work done.

### **Prerequisites**

*Basic and profile disciplines of the EP*

### **Postrequisites**

*Final examination*

### **The research work of a student, including an internship and the implementation of a masters thesis III**

Discipline cycle	Profiling discipline
Course	2
Credits count	9
Knowledge control form	Total mark on practice

### **Short description of discipline**

*Research work develops the ability to independently carry out activities in the field of education and science related to solving complex professional tasks in innovative conditions, ensuring the development of professional research thinking of undergraduates, forming a clear understanding of their main professional tasks, ways to solve them, conducting bibliographic work with the involvement of modern information technologies.*

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

*Preparation of a master`s student for independent research work aimed at writing and defending a master`s thesis.*

### **Learning Outcomes**

*ON2 To form the strategy and structure of the organization of scientific research and mathematical modeling of thermal power facilities.*

### **Learning outcomes by discipline**

- solve assigned tasks;
- analyze research results;
- participate in the organization of conferences and scientific seminars.

### **Prerequisites**

*The research work of a student, including an internship and the implementation of a masters thesis II*

### **Postrequisites**

*Final examination*