NJSC SHAKARIM UNIVERSITY OF SEMEY

EDUCATIONAL PROGRAM

6B07 - Engineering, Manufacturing and Civil engineering
(Code and classifcation of the feld of education)

6B071 - Engineering and engineering trades
(Code and classifcation of the direction of training)

0710
(Code in the International Standard Classifcation of Education)

B064 - Mechanics and metal working
(Code and classifcation of the educational program group)

6B07106 - Mechanical Engineering
(Code and name of the educational program)

Bachelor
(Level of preparation)

Semey

Educational program

6B07 - Engineering, Manufacturing and Civil engineering
(Code and classification of the field of education)

6B071 - Engineering and engineering trades
(Code and classification of the direction of training)

0710
(Code in the International Standard Classification of Education)

B064 - Mechanics and metal working
(Code and classification of the educational program group)

6B07106 - Mechanical Engineering
(Code and name of the educational program)

bachelor
(Level of preparation)

Semey 2023

PREFACE

Developed

The educational program 6B07106 - Mechanical Engineering in the direction of preparation 6B071 - Engineering and engineering trades on the basis of the State Compulsory Standards of Higher and Postgraduate Education approved by the Order of the Ministry of Science and Higher Education of the Republic of Kazakhstan dated July 20, 2022 No 2 (as amended by the order) was developed by the Academic Committee dated 20.02.2023 No 66).

Members of the Academic Committee	Full name	Academic degree, academic title, position	Signature
Head of the Academic Committee	Nurymkhan Gulnur	Dean of the Faculty of Engineering and Technology, cand.tech.sc	
Educational program manager	Dukenbayev Damir	Lecturer of the Department of Technological Equipment and Mechanical Engineering	
Member of the AC	Abilmazhinov Yermek	Professor of the Department of Technological Equipment and Mechanical Engineering, Doctor of Technical Sciences	
Member of the AC	Zhumadilova Gulmira	Head of the Department of Technological Equipment and Mechanical Engineering, PhD	
Member of the AC	Kuzbayev Kanat	Head of Technical Control Department, Semey Engineering JSC	
Member of the AC	Toktarbekov Daulet	Head of the workshop of PKFSemeyStalsErvice LLP	
Member of the AC	Kurmantayeva Nazerke	Student of the MSH-001 group, OP 6b07106-mechanical engineering	
Member of the AC	Bilyalov Altair	Student of the MSH-101 group, OP 6b07106-mechanical engineering	

Reviewing

Full name of the reviewer	Position, place of work	Signature
Kuzbayev Kanat	Head of Technical Control Department, Semey Engineering JSC	

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.

Content

1.Introduction

1.1.General data

Training according to the educational program 6B07106 "Mechanical Engineering", is carried out by the Faculty of Engineering and Technology, Department of "Technological Equipment and Mechanical Engineering". The educational program implemented by Shakarim University has been developed taking into account the needs of the regional labor market.

The Abai region is one of the industrial regions of Kazakhstan, which contains all branches of machine- building production, including the military- industrial industry, transport and communications, agriculture and utilities. In the region there are such enterprises as Joint Stock Company "Semipalatinsk Machine- Building Plant", Joint Stock Company "Semey Engineering", Limited Liability Partnership "SemAZ", Limited Liability Partnership "KazNII PPP", Limited Liability Partnership "PKF Semey Steel Service", Limited Liability Partnership "SEYVUR LTD", Partnership with Limited Liability Company "Kazelectromash", Limited Liability Partnership "Daewoo Bus Kazakhstan", Limited Liability Partnership "PC "Semey Cement Plant" Joint Stock Company "ASIA AUTO", Limited Liability Partnership "Kazzinkmash".

These enterprises need specialists with professional competencies in the field of science and technology, including a set of means, methods and methods of human activity related to the research, development, creation and operation of new materials, technologies, devices and devices

The educational program provides for the training of a student with special educational needs in a higher educational institution, as well as his socialization and integration into society.

1.2.Completion criteria

The main criterion for the completion of the educational process for the preparation of bachelors is the mastering by students of at least 205 credits of theoretical training, as well as at least 27 credits of practical training, 8 credits of final certification. A total of 240 credits.

1.3.Typical study duration: 4 years.

2.PASSPORT OF THE EDUCATIONAL PROGRAM

2.1.EP purpose	Training of specialists for the implementation of design and calculation and technological support of production and the formation of design and technological documentation of machine-building production, able to quickly adapt to rapidly changing socio-economic conditions, as well as meeting the needs of the individual in a comprehensive professional and intellectual development.
2.2.Map of the training profile within the educational program	
Code and classification of the field of education	6B07 - Engineering, Manufacturing and Civil engineering
Code and classification of the direction of training	6B071 - Engineering and engineering trades
Code in the International Standard Classification of Education	0710
Code and classification of the educational program group	B064 - Mechanics and metal working
Code and name of the educational program	6B07106 - Mechanical Engineering
2.3.Qualification characteristics of the graduate	
Degree awarded / qualification	Bachelor of Engineering and Technology in the educational program 6B07106
Name of the profession / list of positions of a specialist	a) Positions of managers: Production manager; Shop Manager (Site); Site Wizard; Head of Production Department; Shift Supervisor; Manufacturer of works. b) Specialist positions: Dispatcher, Engineer, Design Engineer (designer), Laboratory Engineer, Tool Engineer, Production Preparation Engineer, Process Engineer (technologist), Laboratory Assistant, Professional Consultant. c) Positions of other employees (technical executors): Codifier. d) Positions of leading, scientific and technical workers common to research, design, technological, design and survey organizations: Engineer, Laboratory Assistant. e) Positions of the leading and technical employees of the design, design, technological and prospecting organizations: Design engineer.
OQF qualification level (industry qualification framework)	Level 6
Area of professional activity	engineering production, all industries, including military-industrial, industry, transport and communications, agriculture and utilities, enterprises with mechanical repair services, enterprises engaged in the design, production or marketing of products requiring technical education education and consumption
Object of professional activity	government bodies, enterprises, organizations of state and non-state form of ownership, including industry, agriculture and communal services, military-industrial complex, production and consumption areas. government bodies, enterprises, organizations of state and non-state form of ownership, including industry, agriculture and communal services, military-industrial

	complex, production and consumption areas.
Types of professional activity	organizational and management - organization at various levels of machine-building production management, preparation of the necessary documentation; production and technological - implementation of the technological activity of the enterprise, i.e. ensuring the production of products in accordance with the technological process; design and design - design of structures of machine-building production and means of their technological equipment; scientific research - the implementation of scientific research related to machine-building production, implemented through organization and direct execution, as well as the development of the necessary design documentation for scientific research activities of a non-machine-building enterprise; operational - development of the necessary design Documentation for proper operation of machinery. In accordance with the requests of interested employers, the bachelor`s degree in the Mashinostroyenie training profile is prepared for quite diverse types of activities, but the production, technological and operational activities are still the predominant guideline for it.
Graduate Model	- Collection and preliminary analysis of the initial data for the design; - calculation and design of parts and assemblies in accordance with the terms of reference using standard design automation tools taking into account manufacturing technology; - preparation of initial data for the selection and justification of technical solutions; - the use of design documentation in the development of technological processes for the manufacture of parts; - study of scientific and technical information, domestic and foreign experience on the subject of research; - carrying out calculations and numerical experiments according to the developed methods using standard software; - participation in conducting experimental studies according to the approved methodology, preparation of a description of the research, analysis and generalization of the results.

3.Modules and content of the educational program

Module 1. Fundamentals of social and humanitarian knowledge

Foreign language

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	31969 (3024016)
Course	1
Term	1
Credits count	5
Practical and seminar classes	45hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The content of the discipline «Foreign language» assumes the formation of students` intercultural and communicative competencies at B1 level. The discipline is aimed at mastering the knowledge, skills and abilities that allow using a foreign language in interpersonal communication and professional activity. All types of speech activity are taught, such as reading, writing, listening and production of texts of level complexity with a certain degree of grammatical and lexical correctness.

Purpose of studying of the discipline

Formation of intercultural and communicative competence of students in the process of foreign language education at a sufficient level (A2, pan-European competence) and the level of basic sufficiency (B1, pan-European competence). Depending on the level of training, the student at the time of completion of the course reaches the B1 level of the pan-European competence if the language level of the student at the start is higher than the A2 level of the pan-European competence.

Learning Outcomes

ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites

School course

Postrequisites

Foreign language

Kazakh language

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	31973 (3024020)
Course	1
Term	1
Credits count	5
Practical and seminar classes	45hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at deepening the acquired knowledge of students in the framework of the school curriculum, as well as the use of language and speech means based on a full understanding of vocabulary and grammatical system of knowledge; the formation of socio-humanitarian worldview of students within the framework of the national idea of spiritual revival; free expression of mobile thought as a means of speech communication and in the process of communication; awareness of the national culture of the people, the ability to distinguish features of national cognition.

Purpose of studying of the discipline

Forms through phraseological units the recognition of national culture, its meaning as a linguistic unit related to spiritual culture; skills of identifying facts of national and cultural significance in the formation of Kazakh phraseology.

Learning Outcomes

ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites

School course

Postrequisites

Kazakh language

Bases of economics, law and ecological knowledge

Discipline cycle	General educational disciplines

Discipline component	University component
SubjectID	31974 (3024105)
Course	1
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The integrated discipline includes the main issues and principles in the field of fundamentals of law and anti- corruption culture, economics, entrepreneurship and leadership, ecology and life safety. Features of the use of regulatory legal acts, the ability to use the business, ethical, social, economic, entrepreneurial and environmental standards of society. Specifics of environmental-legal, economic, entrepreneurial relations, leadership qualities and principles of combating corruption.

Purpose of studying of the discipline

It consists in studying the basic patterns of the functioning of living organisms, the biosphere as a whole and the mechanisms of their sustainable development under the conditions of anthropogenic impact and emergency situations; in understanding the concept of corruption, the legitimacy of the fight against it, the content of the state penal policy; in the formation of students` basic fundamental stable knowledge on the basics of economic theory, in instilling the skills and abilities of economic thinking; in introducing students to the theory and practice of entrepreneurship, to the basics of creating their own business; in the formation of theoretical knowledge and practical skills for the development and improvement of leadership qualities.

Learning Outcomes

ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites

School course

Postrequisites

Basic and profile disciplines of the EP

Russian language

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	31972 (3024019)
Course	1
Term	1
Credits count	5
Practical and seminar classes	45hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline is intended for the development of the language personality of the student, who is able to carry out cognitive and communicative activities in Russian in the areas of interpersonal, social, professional, intercultural communication; for teaching students practical mastery of the Russian language in various areas of communication and various situations, mastering the specifics of functional semantic types and genres of functional styles of speech, enriching the vocabulary with special vocabulary, forming and improving the skills of monologue and dialogic speech.

Purpose of studying of the discipline

The purpose of the program is to form the socio-humanitarian worldview of students in the context of the national idea of spiritual modernization, involving the development on the basis of national consciousness and cultural code of the qualities of internationalism, tolerant attitude to world cultures and languages as translators of world-class knowledge, advanced modern technologies, the use and transfer of which can ensure the modernization of the country and personal career growth of future specialists.

Learning Outcomes

ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites

School course

Postrequisites

Russian language

Physical Culture

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	31968 (3024012)

Course	1
Term	1
Credits count	2
Practical and seminar classes	60hours
Total	60hours
Knowledge control form	Differentiated attestation

Short description of discipline
It provides for the joint cooperation of a teacher and a student in the process of physical education throughout the training in the context of the requirements for the level of mastering the discipline, preparing students for participation in mass sports competitions; forms motivational and value attitudes towards physical culture and the need for systematic physical exercises and sports; gives basic knowledge about the use of physical culture and sports in the development of vital physical qualities.

Purpose of studying of the discipline
The purpose of the program is the formation of social and personal competencies of students and the ability to purposefully use the means and methods of physical culture, ensuring the preservation, strengthening of health to prepare for professional activities; to the persistent transfer of physical exertion, neuropsychic stress and adverse factors in future work.

Learning Outcomes
ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites
School course

Postrequisites
Physical Culture

Kazakh language

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	31980 (3024021)
Course	1
Term	2
Credits count	5
Practical and seminar classes	45hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at expanding language literacy, free communication with the environment and mental and ideological skills of the student, understanding the role of language in the process of mastering world- class knowledge through the formation of a future specialist`s worldview based on national consciousness and cultural code, improving the knowledge of the state language by future specialists, increasing the scope of use of the Kazakh language by specialists.

Purpose of studying of the discipline
Ensuring high- quality mastery of the Kazakh language as a means of social, intercultural, professional communication through the formation of communicative competencies at all levels of language use.

Learning Outcomes
ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites
Kazakh language

Postrequisites
Basic and profile disciplines of the EP

Foreign language

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	31978 (3024017)
Course	1
Term	2
Credits count	5
Practical and seminar classes	45hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The content of the discipline «Foreign language» assumes the formation of students`linguo- cultural, socio- cultural, cognitive and

communicative competencies at B2 level. The discipline is aimed at deep and extended study of productive and receptive language material. As a result, the student must be able to understand all types of speech activity in accordance with the requirements of B2 level and master the subject content of the discipline and speech.

Purpose of studying of the discipline

Formation of linguo- culturological, socio- cultural, cognitive and communicative competence of students in the process of foreign language education at the B2 level, pan-European competence. Depending on the level of training, the student at the time of completing the course reaches the level B2 of the pan-European competence, if the language level of the student at the start is higher than the level B1 of the pan-European competence.

Learning Outcomes

ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites

Foreign language

Postrequisites

Basic and profile disciplines of the EP

History of Kazakhstan

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	31981 (3024101)
Course	1
Term	2
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Qualification examination

Short description of discipline

The main stages of the history of Kazakhstan are studied with: nomadic statehood, Turkic civilization, the era of colonialism, the Soviet period, independence. The driving forces, trends, patterns of historical development are analyzed; problems: ethnogenesis of the Kazakh people, the formation of statehood, national liberation movements, demographic development. The skills of analyzing historical events and facts, working with historical literature are being formed.

Purpose of studying of the discipline

The purpose of the discipline is to provide objective knowledge about the main stages of the development of the history of Kazakhstan from ancient times to the present.

Learning Outcomes

ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites

School course

Postrequisites

Philosophy

The module of socio-political knowledge (sociology, political science, cultural studies, psychology)

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	31982 (3024103)
Course	1
Term	2
Credits count	8
Lections	30hours
Practical and seminar classes	45hours
Independent work of a student under the guidance of a teacher	55hours
Independent work of the student	110hours
Total	240hours
Knowledge control form	Examination

Short description of discipline

The module of socio-political knowledge involves the study of four scientific disciplines – sociology, political science, cultural studies, psychology, each of which has its own subject, terminology and research methods. Interactions between these scientific disciplines are carried out on the basis of the principles of information complementarity; integrativity; methodological integrity of research approaches of these disciplines; generality of the methodology of learning, result-oriented; unified system representation of the typology of learning

outcomes as formed abilities.

Purpose of studying of the discipline

Formation of social and humanitarian worldview of students in the context of solving the problems of modernization of public consciousness, defined by the state program "Looking into the Future: Modernization of Public Consciousness".

Learning Outcomes

ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites

School course

Postrequisites

Philosophy

Russian language

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	31979 (3024018)
Course	1
Term	2
Credits count	5
Practical and seminar classes	45hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline is intended for the development of the language personality of the student, who is able to carry out cognitive and communicative activities in Russian in the areas of interpersonal, social, professional, intercultural communication; to teach the scientific style of speech as a language of specialty, the creation of secondary texts, the formation of skills for the production of oral and written speech in accordance with the communicative goal and the professional sphere of communication, instilling the skills of speech etiquette, business rhetoric.

Purpose of studying of the discipline

The purpose of the program is to form the socio-humanitarian worldview of students in the context of the national idea of spiritual modernization, involving the development on the basis of national consciousness and cultural code of the qualities of internationalism, tolerant attitude to world cultures and languages as translators of world-class knowledge, advanced modern technologies, the use and transfer of which can ensure the modernization of the country and personal career growth of future specialists.

Learning Outcomes

ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites

Russian language

Postrequisites

Basic and profile disciplines of the EP

Physical Culture

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	31977 (3024013)
Course	1
Term	2
Credits count	2
Practical and seminar classes	60hours
Total	60hours
Knowledge control form	Differentiated attestation

Short description of discipline

It provides for the joint cooperation of a teacher and a student in the process of physical education throughout the training in the context of the requirements for the level of mastering the discipline, the ability to exercise control and self-control in the process of classes, gaining knowledge on health promotion, hardening and increasing the body`s resistance to the effects of adverse factors of labor activity, mastering methods of selection of physical exercises and sports.

Purpose of studying of the discipline

The purpose of the program is the formation of social and personal competencies of students and the ability to purposefully use the means and methods of physical culture, ensuring the preservation, strengthening of health to prepare for professional activities; to the persistent transfer of physical exertion, neuropsychic stress and adverse factors in future work.

Learning Outcomes

ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites

Physical Culture

Postrequisites
Physical Culture

Physical Culture

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	31987 (3024015)
Course	2
Term	1
Credits count	2
Practical and seminar classes	60hours
Total	60hours
Knowledge control form	Differentiated attestation

Short description of discipline
Provides for the joint cooperation of the teacher and the student in the process of physical education throughout the training in the context of the requirements for the level of mastering the discipline; increasing the level of physical fitness and developing physical qualities; mastering the technique of sports; education of discipline, collectivism, comradely mutual assistance; education of mental stability, development and improvement of basic motor qualities - endurance, strength, speed, dexterity, flexibility.

Purpose of studying of the discipline
The purpose of the program is the formation of social and personal competencies of students and the ability to purposefully use the means and methods of physical culture, ensuring the preservation, strengthening of health to prepare for professional activities; to the persistent transfer of physical exertion, neuropsychic stress and adverse factors in future work.

Learning Outcomes
ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites
Physical Culture

Postrequisites
Physical Culture

World of Abai

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	32004 (3024098)
Course	2
Term	1
Credits count	3
Lections	15hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	20hours
Independent work of the student	40hours
Total	90hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying historical facts, the philosophical and artistic foundations of the works of Abay Kunanbaev, Shakarim Kudaiberdiev, which form worldview and aesthetic values, the student`s ability to express his opinion, practical skills and perception of such human qualities as morality, honesty, artistic character. The genius of the writers of Kazakh literature and the role of M. Auezov in the study and popularization of Abai`s heritage, the significance of his works for history, literature and science are determined.

Purpose of studying of the discipline
Formation of the meaning of philosophical and ideological being, understanding of the problems raised in the works of Abai Kunanbayuly, Shakarim Kudaiberdiuly, Mukhtar Auezov and application of the acquired knowledge in the practice of everyday life.

Learning Outcomes
ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites
Kazakh language The module of socio-political knowledge (sociology, political science, cultural studies, psychology)

Postrequisites
Basic and profile disciplines of the EP

Information and communication technology

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	32006 (3024104)
Course	2
Term	2
Credits count	5

Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at mastering the conceptual foundations of the architecture of computer systems, operating systems and networks by students; formation of the ability to critically understand the role and signifcance of modern information and communication technologies in the era of digital globalization, new "digital" thinking, knowledge about the concepts of developing network and web applications, skills in using modern information and communication technologies in various felds of professional activity, scientifc and practical work, for self-educational and other purposes.

Purpose of studying of the discipline
Formation of the ability to critically evaluate and analyze processes, methods of searching, storing and processing information, methods of collecting and transmitting information through digital technologies

Learning Outcomes
ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites
School course Foreign language

Postrequisites
Basic and profile disciplines of the EP

Physical Culture

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	32005 (3024014)
Course	2
Term	2
Credits count	2
Practical and seminar classes	60hours
Total	60hours
Knowledge control form	Differentiated attestation

Short description of discipline
Provides for the joint cooperation of the teacher and the student in the process of physical education throughout the training in the context of the requirements for the level of mastering the discipline; acquisition of versatile abilities and skills for the development of physical abilities, socio-cultural experience and socio-cultural values of physical culture and sports; development of communication skills, thinking, self-development, the formation of experience in the implementation of sports and recreational and training programs.

Purpose of studying of the discipline
The purpose of the program is the formation of social and personal competencies of students and the ability to purposefully use the means and methods of physical culture, ensuring the preservation, strengthening of health to prepare for professional activities; to the persistent transfer of physical exertion, neuropsychic stress and adverse factors in future work.

Learning Outcomes
ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites
Physical Culture

Postrequisites
Basic and profile disciplines of the EP

Philosophy

Discipline cycle	General educational disciplines
Discipline component	Compulsory component
SubjectID	32106 (3024069)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at developing students` openness of consciousness, understanding their own national code and self-consciousness, spiritual modernization, competitiveness, realism and pragmatism, independent critical thinking, the cult of knowledge and education, a holistic view of philosophy as a special form of understanding the world, mastering key worldview concepts, as well as the development and strengthening of the values of tolerance, intercultural dialogue and a culture of peace.

Purpose of studying of the discipline

Formation in students of a holistic view of philosophy as a special form of knowledge of the world, its main sections, problems and methods of studying them in the context of future professional activities.

Learning Outcomes

ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technologies taking into account current trends in the development of society.

Prerequisites

History of Kazakhstan The module of socio-political knowledge (sociology, political science, cultural studies, psychology)

Postrequisites

Basic and profile disciplines of the EP

Module 2. Physical and mathematical foundations

Mathematics

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	31975 (3024022)
Course	1
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The purpose of this course is to provide students with fundamental training in mathematics. The course is aimed at forming a sufficiently high culture of mathematical thinking among students and developing the ability to creatively approach problem solving. In addition to studying the fundamental foundations of higher mathematics (elements of analytical geometry, linear algebra, mathematical analysis, differential equations), the course assumes consideration of various applications of mathematics to solving production problems from the field of professional specialization.

Purpose of studying of the discipline

creation of the basis for the development of logical thinking and mathematical culture. Formation of basic knowledge and acquisition of basic skills of using mathematical apparatus for solving theoretical and applied problems, as well as the necessary level of mathematical training for mastering other applied disciplines studied within a specific profile; skills of working with special mathematical literature

Learning Outcomes

ON2 Own the skills of applying physical and mathematical knowledge, basic laws of natural science

Prerequisites

School course

Postrequisites

Interchangeability bases Theoretical mechanics Theoretical Foundations of Mechanics Theoretical mechanics

Physics

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	31976 (3024023)
Course	1
Term	1
Credits count	3
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	0hours
Independent work of a student under the guidance of a teacher	20hours
Independent work of the student	40hours
Total	90hours
Knowledge control form	Examination

Short description of discipline

In process of studying this discipline, students get acquainted with the basic laws, concepts of all sections of physics. Physics is an area of experimental science, performing laboratory work and tasks, students are convinced of unity of the theory and practice of experiments. Students have the opportunity to gain knowledge on the subject in any area of their specialty.

Purpose of studying of the discipline

Formation of ideas about the role of experimental and theoretical methods of cognition of the surrounding world, development of skills for independent solving of physical problems, motivation to study modern scientific literature.

Learning Outcomes

ON2 Own the skills of applying physical and mathematical knowledge, basic laws of natural science

Prerequisites

School course

Postrequisites

Interchangeability bases Theoretical mechanics Theoretical Foundations of Mechanics Theoretical mechanics

Module 3. General technical training

Introduction to the profession

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	31970 (3024099)
Course	1
Term	1
Credits count	3
Lections	15hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	20hours
Independent work of the student	40hours
Total	90hours
Knowledge control form	Examination

Short description of discipline

This course covers the basics of creating machines, technical preparation of production. mechanical engineering technology is the science of machine manufacturing; machine tools and ways of its development. instrumental production; the tasks of modern industrial production, types of industrial enterprises, the place and role of mechanical engineering in modern production, the history of the development of mechanical engineering, the contribution of scientists to the formation of the mechanical engineering industry, the prospects for the development of mechanical engineering the role of an engineer at the current stage of the development of mechanical engineering.

Purpose of studying of the discipline

to ensure the orientation of students in the condi-tions corresponding to the specifics of the university, as well as general fami-liarity with the fundamentals of engineering and specialty

Learning Outcomes

ON3 Use GOSTs, ESKDs when making working drawings of parts, using modern automated programs.

Prerequisites

School course

Postrequisites

Basic and profile disciplines of the EP

Training practice

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	31983 (3024009)
Course	1
Term	2
Credits count	2
Study practics	60hours
Total	60hours
Knowledge control form	Total mark on practice

Short description of discipline

Familiarization with the production; modern equipment of engineering enterprises; the deepening and consolidation of theoretical knowledge obtained at the university with the tool and tooling used; familiarization with the structure of procurement, assembly, mechanical processing and maintenance workshops at the enterprise; transport devices: rail network, track devices, garage for road transport, suspended tracks, lifting and transport devices. Practice is a form of cognitive and practical activity of the student aimed at consolidating and testing the knowledge of the student

Purpose of studying of the discipline

The purpose of educational practice is ac¬quaintance with production; modern equipment of machine-building enter-prises; deepening and fixing of the theoretical knowledge gained at the university; acquaintance with structure of the machining enterprises; I.e. prac-tice is a form of cognitive and practical activities of the student directed to fixing and an examination of the stu-dent

Learning Outcomes

ON3 Use GOSTs, ESKDs when making working drawings of parts, using modern automated programs.

Prerequisites

Introduction to the profession

Postrequisites

Production practice I

Engineering Graphics

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	31986 (3024100)
Course	1
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

In this discipline, the rules of execution and design of graphic works are studied; the problems of geometric and projection drawing are solved; the rules for the use of conditional graphic designations when performing drawings and diagrams are studied. Students, studying this discipline, acquire the skills of making images of parts using views, sections and sections, making sketches and working drawings, assembly drawings; drawing sizes and position numbers, drawing up specifications.

Purpose of studying of the discipline

the basic rules of execution and registration of design documentation are studied. Full mastery of the drawing as a means of expressing technical thought and
production documents, as well as the acquisition of stable drawing skills are achieved as a result of mastering the entire complex of technical disciplines of the relevant profile, supported by the practice of course and diploma design

Learning Outcomes

ON3 Use GOSTs, ESKDs when making working drawings of parts, using modern automated programs.

Prerequisites

School course

Postrequisites

Final examination Prediploma practice

Engineering drawing

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	31984 (3024086)
Course	1
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

Part of technical drawing, which studies the methods and conventions of drawing machines, their components, parts, fixtures, metal structures, etc.
Studying the course of mechanical engineering drawing aims to teach you to understand and execute any engineering drawings and independently understand all the technical documentation related to the drawings; the main requirements of the standards for the implementation of drawings: general view, assembly units, working drawings of parts.

Purpose of studying of the discipline

the knowledge required to perform and read drawings of geometric objects based on an orthogonal projection, making drawings of engineering skills profile in accordance with the standards ESKD.

Learning Outcomes

ON3 Use GOSTs, ESKDs when making working drawings of parts, using modern automated programs.

Prerequisites

School course

Postrequisites

Computer graphics Bases of computer modeling Computer programs and equipment

Descriptive geometry

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	31985 (3024085)
Course	1

Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This course considers the methods of depicting spatial figures and the properties of figures from their images, in which the object is depicted almost as we see it, and moreover, from the drawn lines it is possible to accurately determine the dimensions and true appearance of the depicted object;
execution of technical drawings in accordance with the standard of the unified design documentation system; various solutions and applications for practical tasks

Purpose of studying of the discipline

development of knowledge and skills necessary for students to perform and read technical drawings, perform sketches of parts, draw up design and technical documentation for production.

Learning Outcomes

ON3 Use GOSTs, ESKDs when making working drawings of parts, using modern automated programs.

Prerequisites

School course

Postrequisites

Computer graphics Bases of computer modeling Computer programs and equipment

Computer graphics

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	31988 (3024025)
Course	2
Term	1
Credits count	5
Practical and seminar classes	30hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This course covers general information about COMPASS - SCHEDULE. Use the command to build, create drawings of various objects; dimensioning the drawing; editing a drawing; execution of the working drawing. Use of application libraries; assembly, detail, slices; BOM creation, parametric drawings. commands for creating text, a new text style, 3D modeling, coordinate systems in 3D models, 3d models. 3d assemblies.

Purpose of studying of the discipline

The purpose of studying the discipline "Computer graphics" is to master the students of the universal environment of automation of engineering and graphic works; machine graphics to obtain design documentation, both on the quality of execution of documents that meet the ESKD standards, and on compliance with the requirements of the standards; possibilities of solid spatial modeling. Study of modern methods and means of creating and processing images using software and hardware computing systems.

Learning Outcomes

ON3 Use GOSTs, ESKDs when making working drawings of parts, using modern automated programs.

Prerequisites

School course

Postrequisites

Machine graphics Engineering graphics in AutoCAD environment *Machine graphics basics*

Computer programs and equipment

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	31990 (3024027)
Course	2
Term	1
Credits count	5
Practical and seminar classes	30hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours

Total	150hours
Knowledge control form	Examination

Short description of discipline

This course discusses computer technologies, their role and importance of computer technology in modern society, application of the possibility of packages of application programs for solving problems of engineering technology, systems for supporting the life cycle of products, project management systems, program 1C Production enterprise management, Compass-3D program, paperless document flow in machine building, aspects of application of electronic-digital signature in corporate document flow.

Purpose of studying of the discipline

Development of terminology, applied during the work on the personal computer; the purposes and problems of bases of computer technologies, a role and value of computer facilities in modern society, application of a possibility of packages of application programs for the solution of problems of technology of mechanical engineering

Learning Outcomes

ON3 Use GOSTs, ESKDs when making working drawings of parts, using modern automated programs.

Prerequisites

School course

Postrequisites

Machine graphics Engineering graphics in AutoCAD environment *Machine graphics basics*

Bases of computer modeling

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	31989 (3024026)
Course	2
Term	1
Credits count	5
Practical and seminar classes	30hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This course discusses graphic editors, menu types; execution of computer models of parts, preparation of design and technical documentation, formation of techniques and construction skills, drawing design; selection and methods of hatching, editing of the hatching performed; geometrical forms of simple parts by their images and execution of these images, both from nature and from the drawing of the assembly unit; sketches, detail drawings, assembly drawings and general view.

Purpose of studying of the discipline

development of Knowing and skills necessary for students for performance is computer models of details, drawing up design and technical documentation of production, formation of receptions and skills of construction.

Learning Outcomes

ON3 Use GOSTs, ESKDs when making working drawings of parts, using modern automated programs.

Prerequisites

School course

Postrequisites

Machine graphics Engineering graphics in AutoCAD environment *Machine graphics basics*

Machine graphics basics

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32136 (3024030)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This course contains basic theoretical information, concepts, basic functions; mathematical and algorithmic foundations of machine graphics, features of raster and vector graphics, basic raster algorithms, computer geometry, algorithms for removing hidden lines and surfaces, methods for painting surfaces, working with graphic standards and libraries, machine graphics hardware; graphic primitives, creating an isometric image of a part, drawing, three-dimensional modeling.

Purpose of studying of the discipline
The mastering by students of the universal automation environment of engineering and graphic works; computer graphics for obtaining design documentation, both in terms of the quality of the execution of documents, satisfying ESKD standards, and compliance with the standards; solid-state spatial modeling capabilities.
Learning Outcomes
ON3 Use GOSTs, ESKDs when making working drawings of parts, using modern automated programs.
Prerequisites
Computer graphics Bases of computer modeling Computer programs and equipment
Postrequisites
Basic and profile disciplines of the EP

Engineering graphics in AutoCAD environment

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32135 (3024029)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
This course covers the AutoCAD graphics program, techniques for creating 2D objects and 3D models in AutoCAD, parameterization, annotation and visualization processes, and cloud-based teamwork; describes the scheme of transition from flat elements to volume representation, describes the tools for creating views, sections and detail elements according to the solid model, the execution of drawings according to the standards of the unified design documentation system.
Purpose of studying of the discipline
studying modern methods and means of creating and processing images using software and hardware computing systems.
Learning Outcomes
ON3 Use GOSTs, ESKDs when making working drawings of parts, using modern automated programs.
Prerequisites
Computer graphics Bases of computer modeling Computer programs and equipment
Postrequisites
Basic and profile disciplines of the EP

Machine graphics

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	31971 (3024028)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at familiarizing yourself with the Auto CAD program, existing computer- aided design systems; graphical primitives and working with them, blocks and external references; user coordinate system; working with drawing design, drawing editing commands; working with layers. types of products and design documents, creation solid models and their editing, dimension styles and tolerances, part isometric image, three-dimensional modeling
Purpose of studying of the discipline
The mastering by students of the universal automation environment of engineering and graphic works; computer graphics for obtaining design documentation, both in terms of the quality of the execution of documents, satisfying ESKD standards, and compliance with the standards; solid-state spatial modeling capabilities.
Learning Outcomes
ON3 Use GOSTs, ESKDs when making working drawings of parts, using modern automated programs.
Prerequisites
Computer graphics Bases of computer modeling Computer programs and equipment

Postrequisites
Basic and profile disciplines of the EP

Fundamentals of scientific activity

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	32190 (3024107)
Course	4
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The course studies the basic principles, methodology, features of organization and conduct, provisions, content of scientific research. Allows to master the skills of conducting scientific research, applying special research methods, processing, analyzing and interpreting the data obtained as a result of scientific work, testing and implementing the results in practice. Promotes the study of the main standards and regulatory documents for the design of the results obtained during scientific research.

Purpose of studying of the discipline
The purpose of the discipline is to ensure the formation of students` theoretical knowledge in the field of systemic vision of the role and place of science in modern society and understanding of the directions for the development of scientific research in the field of their profile orientation.

Learning Outcomes
ON8 Perform the necessary calculations during the design of engineering enterprises of their technical equipment, arrangement of equipment, automation means, control, control in modern conditions of the market economy

Prerequisites
Manufacturing engineering Fundamentals of design of machine manufacturing engineering processes Manufacturing technology and machining methods of standard parts in mechanical engineering industry

Postrequisites
Final examination

Module 4. Basic engineering training

Bases of cutting of metals

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32000 (3024042)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
This course examines the history of the development of materials processing by cutting, basic concepts, terms and definitions of cutting theory; Cutting types physical foundations of the cutting process. operability and failure of blade tools. features of various cutting methods; lubricating and cooling process media. machining of different materials; abrasion theory; physicochemical processing methods; groups and brands of tools and lubricating and cooling fluids

Purpose of studying of the discipline
Acquisition by students of data on the modern technology equipment and instruments, practical skills of operation with equipment iinstrument.

Learning Outcomes
ON4 Make a reasonable choice for the specified conditions and ensure the quality indicators of the products.

Prerequisites
Introduction to the profession

Postrequisites
The cutting tool Planning of instrument Planning and calculation of metal-cutting instrument

Theory of cutting

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32001 (3024043)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
This course examines cutting kinematics, geometry of the tool cutting part, cutting modes; resistance, force, operation and cutting power; cutting temperature and methods of its determination; stress in the tool; types of destruction of the tool, roughness of the treated by the top. residual deformations and stresses in the surface layer, requirements for tool materials; areas of tool materials application, purpose of tool geometry and optimal cutting modes during turning, drilling, milling; grinding process

Purpose of studying of the discipline
Acquisition by students of data on the modern progressive methods of production of metals, new constructional materials.

Learning Outcomes
ON4 Make a reasonable choice for the specified conditions and ensure the quality indicators of the products.

Prerequisites
Introduction to the profession

Postrequisites
The cutting tool Planning of instrument Planning and calculation of metal-cutting instrument

Constructional materials and heat treatment

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	32003 (3024075)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
In this course, the theoretical foundations of materials science, metal corrosion, the main methods of heat treatment of materials are examined. metal structural materials are described: steels, cast iron, aluminum, copper and other alloys, as well as corrosion-resistant heat-resistant steels and alloys, tool steels and alloys, steels and alloys with special physical properties, non-metallic materials (rubber, composite materials, plastics, ceramic metal materials). characteristics of the main equipment for heat treatment of materials are given

Purpose of studying of the discipline
To teach the student, modern progressive methods of metal production, new construction materials. To provide knowledge about the structure, physical, mechanical and technological properties of metals and non-metallic materials, as well as about the possibility of controlling the properties of materials using heat treatment

Learning Outcomes
ON5 Own the basis of strength calculations, selection of structural materials of billets
ON6 Own the basis of design and design of parts and assemblies of engineering structures in accordance with the terms of reference

Prerequisites
Mathematics Physics

Postrequisites
Technological processes of machine-building production

Interchangeability bases

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	31991 (3024031)
Course	2
Term	1

Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination and term work/Project

Short description of discipline

This course examines the methods of ensuring interchangeability and its methodological foundations in relation to modern products of mechanical engineering and instrument making. Discipline gives the minimum of knowledge, on the basis of which the future specialist will be able to independently and fruitfully solve new problems in the course of further development of science and technology, expands his scientific horizons, contributes to the development of thinking, increases the general culture and competence

Purpose of studying of the discipline

familiarization of students with methods of ensuring interchangeability and its methodological foundations in relation to modern products of mechanical engineering and instrument making. The study of the discipline will allow future bachelors to provide the necessary level of machine design

Learning Outcomes

ON4 Make a reasonable choice for the specified conditions and ensure the quality indicators of the products.

Prerequisites

Mathematics Physics

Postrequisites

Fundamentals of design and machine parts

Theoretical mechanics

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	31992 (3024033)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

In this discipline are studied static, basic concepts and definitions, axioms of statics, bonds and bond reactions, axioms of bonds; кinematics, vector, coordinate, and natural ways to define point motion, determine the velocity path, and accelerate the point;. translational and rotational motion of a solid, subject and tasks of dynamics, point dynamics; differential equations of point motion; mechanical system dynamics; the law of preserving the movement of the center of mass and the amount of movement of the mechanical system.

Purpose of studying of the discipline

The purpose of studying the discipline "Theoretical Mechanics" is to study the general laws that govern the movement and equilibrium of material bodies and the resulting interactions between bodies.

Learning Outcomes

ON4 Make a reasonable choice for the specified conditions and ensure the quality indicators of the products.

Prerequisites

Mathematics Physics

Postrequisites

Strength of materials Mechanics of Materials Analytical dynamics and vibration theory Fundamentals of design and machine parts

Theoretical Foundations of Mechanics

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	31999 (3024034)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours

Total	150hours
Knowledge control form	Examination

Short description of discipline
The theoretical foundations of mechanics are one of the most important physics and mathematics disciplines, which makes it possible to establish kinematic and dynamic characteristics for various links of mechanisms, the stability of elastic rod systems, the determination of support reactions, equilibrium with friction, the determination of velocities and accelerations to- check, angular velocities and accelerations of links, the use of dynamics methods to determine kinematic characteristics of links; kinetic energy law, concepts: work, power

Purpose of studying of the discipline
the theoretical foundations of Knowing of the mechanics allows to calculate the support reactions to determine the velocity and acceleration of points, to conduct dynamic calculations.

Learning Outcomes
ON4 Make a reasonable choice for the specified conditions and ensure the quality indicators of the products.

Prerequisites
Mathematics Physics

Postrequisites
Strength of materials Mechanics of Materials Analytical dynamics and vibration theory Fundamentals of design and machine parts

The theory of cutting with thermophysics elements

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32002 (3024044)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
This course covers the basics of metal cutting, thermal processes in the process machine system; aging of the process machine system; heat balance of the cutting process, temperature measurement in the cutting zone. temperature in the cutting zone, ways of reducing the temperature on the cutter blade; tool, assigning cutting modes; the process of barbing; tool, assignment of cutting modes, assignment of cutting modes; metal abrasion; methods of increasing metal workability by cutting.

Purpose of studying of the discipline
formation of scientific and professional Knowing and skills in the field of processing of metals cutting.

Learning Outcomes
ON4 Make a reasonable choice for the specified conditions and ensure the quality indicators of the products.

Prerequisites
Introduction to the profession

Postrequisites
The cutting tool Planning of instrument Planning and calculation of metal-cutting instrument

Theoretical mechanics

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	31998 (3024035)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
In this discipline, calculation schemes, hypotheses are studied; section method; tension- compression; laboratory tests of materials, calculations for tensile and compression strength and stiffness, shear; geometric characteristics of flat shapes, simple types of loading of the beam (bending, torsion), strength calculations at dynamic loading. mechanical vibrations, stress and strain theory. stability of elastic rod systems; methods of determining: loads in engineering structures.

Purpose of studying of the discipline
The acquisition of theoretical Knowing and develop practical skills in the preparation of design models of simple mechanisms and structures; mastering the methods for calculating the strength and stiffness of typical structural elements and joints under static and dynamic loading.
Learning Outcomes
ON4 Make a reasonable choice for the specified conditions and ensure the quality indicators of the products.
Prerequisites
Mathematics Physics
Postrequisites
Strength of materials Mechanics of Materials Analytical dynamics and vibration theory Fundamentals of design and machine parts

The analysis and synthesis of mechanisms

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32132 (3024040)
Course	2
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination and term work/Project

Short description of discipline
This discipline covers the tasks of position analysis and linkage movement analysis; analytical kinematics; classification of flat levers according to Assur; analytical kinetostatics and dynamics of flat and spatial lever mechanisms; assembly of positions and movements; approximation synthesis of mechanisms, problem of "branch defect"; modular synthesis and automation of draft design of transfer, guide and moving mechanisms
Purpose of studying of the discipline
acquisition by students of initial knowledge in the field of calculations and main stages of designing machines, optimal calculation methods that contribute to a combination of reliable operation of mechanisms and machines.
Learning Outcomes
ON4 Make a reasonable choice for the specified conditions and ensure the quality indicators of the products.
Prerequisites
Theoretical mechanics Theoretical Foundations of Mechanics Theoretical mechanics
Postrequisites
Fundamentals of design and machine parts

Mechanics of Materials

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32010 (3024037)
Course	2
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
This course covers the resistance of materials; geometric characteristics of cross sections of rods; external and internal loads; section method; stresses, strains, concepts of strength, stiffness and stability; mechanical characteristics of materials under tension and compression, bending, shear (shear) and collapse; torsion, complex resistance, stability of centrally compressed rods. inertial and impact action of loads; strength at voltages cyclically varying over time; strength, stiffness and stability calculation
Purpose of studying of the discipline
the desire for a combination of the reliability of the entire structure with its sufficient rigidity, stability and low cost, while achieving maximum capacity with the least material consumption
Learning Outcomes
ON4 Make a reasonable choice for the specified conditions and ensure the quality indicators of the products.
Prerequisites
Theoretical mechanics Theoretical Foundations of Mechanics Theoretical mechanics

Postrequisites
Fundamentals of design and machine parts

Strength of materials

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32009 (3024036)
Course	2
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
This course covers the stretching and compression of a straight rod, the construction of normal force curves, the mechanical properties of materials during expansion- compression, calculations for strength and rigidity under stretching- compression, under torsion and bending; the theory of stressed and deformed states of statistically indeterminate systems; calculation of thin-walled rods and shells; calculation of thick- walled pipes; equilibrium stability of deformable systems, fatigue strength calculations at alternating stresses; dynamic load.

Purpose of studying of the discipline
students with basic Knowing in the field of calculations on strength, stiffness and stability, and optimal methods of calculation, promoting the combination of reliable performance with its low cost of construction and minimal weight

Learning Outcomes
ON4 Make a reasonable choice for the specified conditions and ensure the quality indicators of the products.

Prerequisites
Theoretical mechanics Theoretical Foundations of Mechanics Theoretical mechanics

Postrequisites
Fundamentals of design and machine parts

Theory of mechanisms and machines

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32131 (3024039)
Course	2
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination and term work/Project

Short description of discipline
This course discusses kinematic pairs and their classification, kinematic chain and their types; number of degrees of freedom and generalized coordinates; structural analysis and synthesis of mechanisms; analytical and graphical methods of force analysis; synthesis of lever mechanisms, general methods of their synthesis, condition of crank existence, synthesis of gear mechanisms, types and fields of their application; Complex motion of the point and solid the theorem of adding velocities and accelerations in complex motion.

Purpose of studying of the discipline
students with basic Knowing in the field of payments and the basic stages of designing cars, optimal calculation methods to facilitate the combination of reliable operation of mechanisms and machines.

Learning Outcomes
ON4 Make a reasonable choice for the specified conditions and ensure the quality indicators of the products.

Prerequisites
Theoretical mechanics Theoretical Foundations of Mechanics Theoretical mechanics

Postrequisites
Fundamentals of design and machine parts

Stability of Mechanical Systems

Discipline cycle	Basic disciplines
Discipline component	Electives

SubjectID	32133 (3024041)
Course	2
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination and term work/Project

Short description of discipline

This discipline considers the forms of equilibrium and movement of mechanical systems, signs of stability of elastic systems, methods for solving elastic stability problems, basic concepts of the theory of stability of movement; kinematic pairs and their classification; kinematic chain and their views; number of degrees of freedom and generalized coordinates; structural analysis and mechanism synthesis, kinematic analysis; ordinary and stepped mechanisms; planetary mechanisms; differential mechanisms.

Purpose of studying of the discipline

obtaining by students of initial knowledge in the field of calculations and main stages of designing machines, shape of equilibrium and movement of mechanical systems, signs of stability of elastic systems, methods of solving elastic stability problems, stability of straight rods which contribute to combination of reliable operation of mechanisms and machines.

Learning Outcomes

ON4 Make a reasonable choice for the specified conditions and ensure the quality indicators of the products.

Prerequisites

Theoretical mechanics Theoretical Foundations of Mechanics Theoretical mechanics

Postrequisites

Fundamentals of design and machine parts

Analytical dynamics and vibration theory

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32130 (3024038)
Course	2
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The theory of oscillations of various linear and nonlinear systems with one, two and a finite number of degrees of freedom is considered; natural and forced vibrations of rods, plates; parametric oscillations; geometric characteristics of planar sections; shear and torsion, construction of epures of torques, stress and deformation; bending; construction of transverse forces and bending moments; normal and tangential bending stresses; strength and bending stiffness calculations.

Purpose of studying of the discipline

students with basic Knowing in a variety of analytical methods for the integration and differential equations of motion of mechanical systems. Lagrange, Hamilton, Jacobi, Routh, variational principles

Learning Outcomes

ON4 Make a reasonable choice for the specified conditions and ensure the quality indicators of the products.

Prerequisites

Theoretical mechanics Theoretical Foundations of Mechanics Theoretical mechanics

Postrequisites

Fundamentals of design and machine parts

Innovative materials

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	32134 (3024106)
Course	2
Term	2
Credits count	3
Lections	15hours

Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	20hours
Independent work of the student	40hours
Total	90hours
Knowledge control form	Examination

Short description of discipline
The course studies the main aspects of replacing traditional materials in mechanical engineering with innovative polymer, composite, nanostructured materials; features of the choice of components for polymer composite materials; Methods for predicting the properties of new materials. to navigate a wide range of materials, to study the choice in order to ensure a range of quality and accuracy of products; to use digital technologies in the design, manufacture and testing of polymer composite materials in mechanical engineering and related fields.

Purpose of studying of the discipline
Formation of professional competencies in the field of knowledge of new materials and technologies for their production, as well as the formation of ideas about nanomaterials and composite materials, methods of their research and application.

Learning Outcomes
ON5 Own the basis of strength calculations, selection of structural materials of billets
ON6 Own the basis of design and design of parts and assemblies of engineering structures in accordance with the terms of reference

Prerequisites
Constructional materials and heat treatment

Postrequisites
Bases of technology of mechanical engineering Key elements of manufacturing preparation in mechanical engineering Bases of production of machines

Production practice I

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	32007 (3024010)
Course	2
Term	2
Credits count	5
Working practice	150hours
Total	150hours
Knowledge control form	Total mark on practice

Short description of discipline
Production practice is aimed at consolidating the theoretical knowledge gained at the university; to solve production problems directly in workshops and departments of engineering enterprises, as well as practical study of the forms and methods of organization of production, technological and labor processes adopted at the enterprise in terms of their efficiency; identification of advanced technological methods of machining parts; acquisition of work skills directly at the workplaces of process engineers.

Purpose of studying of the discipline
identification of progressive technolo-gical ways of machining of details, as-semblies of knots, units, machines; ac-quisition of labor skills of performance of work directly in workplaces of process engineers. Acquaintance with all complex of technological process of production of cars, economies, organi-zation and planning of production, mastering skills of the independent so-lution of engineering, economic and administrative problems

Learning Outcomes
ON4 Make a reasonable choice for the specified conditions and ensure the quality indicators of the products.

Prerequisites
Training practice

Postrequisites
Manufacturing practice II

Technological processes of machine-building production

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	32008 (3024032)
Course	2
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
This course discusses the basics of metallurgical production of ferrous and non-ferrous metals; main methods of materials processing

(pressure treatment, cutting treatment, welding, soldering), main equipment for materials processing by pressure, welding, soldering, cutting; foundry bases casting equipment and methods of metal forming, welding, casting and cutting; technology of production of blanks and machine parts from non-metallic materials

Purpose of studying of the discipline

Teach the student, future engineer to choose technological methods for obtaining and processing workpieces and parts of machines that ensure high quality of products, saving material, high labor productivity. He must know the main methods of processing materials (by pressure, casting, cutting, welding, soldering)

Learning Outcomes

ON4 Make a reasonable choice for the specified conditions and ensure the quality indicators of the products.

Prerequisites

Constructional materials and heat treatment

Postrequisites

Bases of technology of mechanical engineering Key elements of manufacturing preparation in mechanical engineering Bases of production of machines

Module 5. Designing bases

Fundamentals of design and machine parts

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	32129 (3024045)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination and term work/Project

Short description of discipline

This course covers mechanical gears (gear, worm, chain, belt, friction, planetary, wave); couplings, rolling and sliding bearings; theoretical basis of design, calculation and design of parts and assemblies of all technological machines, ensures the quality of manufactured products by selecting structural materials of blanks, designs parts and assemblies of machine building structures in accordance with the technical assignment used in various branches of the national economy

Purpose of studying of the discipline

The purpose of this course is to form the bachelor`s knowledge and ability to independently solve the calculation and design of general-purpose parts with the implementation of the necessary drawings.

Learning Outcomes

ON5 Own the basis of strength calculations, selection of structural materials of billets
ON6 Own the basis of design and design of parts and assemblies of engineering structures in accordance with the terms of reference

Prerequisites

Theoretical mechanics Theoretical Foundations of Mechanics Theoretical mechanics Strength of materials Mechanics of Materials Analytical dynamics and vibration theory Information and communication technology

Postrequisites

Metal-cutting machine tools Principles of machine desiqn Machine equipment of tool production

Bases of technology of mechanical engineering

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32152 (3024049)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This course discusses the main provisions and concepts of mechanical engineering technology; basing theory and dimensional chain theory as a means of achieving product quality; a method of developing a technological process for manufacturing a machine, ensuring achievement of its quality, required productivity and economic efficiency; allowances for machining. procedure for designing the process

of manufacturing a part (single process); execution (documentation) of machining processes

Purpose of studying of the discipline

formation of scientific and professional Knowing and skills in the field of processing of metals cutting.

Learning Outcomes

ON5 Own the basis of strength calculations, selection of structural materials of billets
ON6 Own the basis of design and design of parts and assemblies of engineering structures in accordance with the terms of reference

Prerequisites

Technological processes of machine-building production

Postrequisites

Manufacturing engineering Fundamentals of design of machine manufacturing engineering processes Manufacturing technology and machining methods of standard parts in mechanical engineering industry

Design and manufacture of preparations

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32137 (3024046)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This course discusses the main production processes of billets; cast preforms, features of use and design of cast preforms; types of production of blanks by pressure; blanks from long and special rolled products, free forging, volume hot stamping, peculiarities of stamping and stamping design; production of blanks from powder materials, powder materials, forming methods, equipment, tooling, field of application; welded workpieces, prospects for low-waste new technologies for production of workpieces

Purpose of studying of the discipline

Mastering of Knowing of new, most economic methods of receiving preparations of details of machines.

Learning Outcomes

ON5 Own the basis of strength calculations, selection of structural materials of billets
ON6 Own the basis of design and design of parts and assemblies of engineering structures in accordance with the terms of reference

Prerequisites

Technological processes of machine- building production Bases of cutting of metals Theory of cutting The theory of cutting with thermophysics elements

Postrequisites

Manufacturing technology of standard parts Technology of production of machines Design of technological processes of machine manufacturing

Choice of workpiece in mechanical engineering industry

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32138 (3024047)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This discipline gives the basic concept of procurement; Designing and manufacturing workpieces in various ways their advantages and disadvantages; selection of initial rolled metal and production of blanks from it by various methods; process tooling and the basic principles of selecting equipment used in the production of blanks in various types of production. designing blanks using computers, mechanization and automation of blanks production, low-waste and resource-saving technology

Purpose of studying of the discipline

To acquaint students with variety of methods and methods of the modern production of preparations for manufacture of details the subsequent machining.

Learning Outcomes

ON5 Own the basis of strength calculations, selection of structural materials of billets
ON6 Own the basis of design and design of parts and assemblies of engineering structures in accordance with the terms of reference

Prerequisites

Technological processes of machine- building production Bases of cutting of metals Theory of cutting The theory of cutting with thermophysics elements

Postrequisites

Manufacturing technology of standard parts Technology of production of machines Design of technological processes of machine manufacturing

Engineering creativity in mechanical engineering

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32153 (3024087)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This course describes the general principles and methods of engineering creativity, ways to form the effectiveness of creative methods for solving design and technical problems, the conditions necessary for engineering creativity, the development of abilities for engineering creativity; development work, features of structural optimization, selection of the type of workpiece and methods of its manufacture, structural analysis of the choice of a typical route for processing parts, the number and sequence of transitions in the operation, a rational system of machine tools; design and technological support of wear resistance of parts

Purpose of studying of the discipline

Getting students of the basics of knowledge in the field of engineering creativity and using the information received in engineering work

Learning Outcomes

ON5 Own the basis of strength calculations, selection of structural materials of billets
ON6 Own the basis of design and design of parts and assemblies of engineering structures in accordance with the terms of reference

Prerequisites

Introduction to the profession

Postrequisites

Metal-cutting machine tools Principles of machine desiqn Machine equipment of tool production

Key elements of manufacturing preparation in mechanical engineering

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32869 (3024050)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This course covers the main types of production, characteristics and calculations of machine tools, allowable design loads, tools, machining modes, design, calculation and technology for the manufacture of blanks and parts, layout of the mechanical assembly area for production; principles of calculation and ways of ensuring accuracy in the development of technological processes, as well as ways of ensuring the quality of machines, methods of increasing labor productivity and ways of reducing the cost of products.

Purpose of studying of the discipline

The acquisition by students of knowledge of the basics of mechanical engineering technology, about modern progressive methods of production, about the creation of technological processes of mechanical processing and assembly

Learning Outcomes

ON5 Own the basis of strength calculations, selection of structural materials of billets
ON6 Own the basis of design and design of parts and assemblies of engineering structures in accordance with the terms of reference

Prerequisites

Technological processes of machine-building production

Postrequisites

Manufacturing engineering Fundamentals of design of machine manufacturing engineering processes Manufacturing technology and machining methods of standard parts in mechanical engineering industry

Bases of scientific and technical creativity

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32154 (3024088)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

In this course, a general description of constructive - technological creative activity and the process of inventions is presented. common ways of creating the effectiveness of creative methods for solving structural and technical problems; scientific and research work of students: development of standard organizational and technical projects;
Selecting options for optimized processing processes setting the task of calculating the optimal modes of material processing; objective functions to optimize machining modes, machining modes for discrete and continuous parameter values

Purpose of studying of the discipline

Learning Outcomes

ON5 Own the basis of strength calculations, selection of structural materials of billets
ON6 Own the basis of design and design of parts and assemblies of engineering structures in accordance with the terms of reference

Prerequisites

Introduction to the profession

Postrequisites

Metal-cutting machine tools Principles of machine design Machine equipment of tool production

Bases of production of machines

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32871 (3024051)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This course covers the product, its quality, types of production, preparation of the product production, the effect of machining on the surface condition of parts and their operational properties; allowances for machining, standardization of material consumption; bases and basing of parts during machining; norms of machining operations time, labour intensity of the product, ways to reduce labour intensity; manufacturability of parts and products; rules for development of technological processes

Purpose of studying of the discipline

Endow students with knowledge on physical and mechanical phenomena that arise during the manufacture of parts and assembly units of products and are the basis for the development of technical processes in any engineering industry.

Learning Outcomes

ON5 Own the basis of strength calculations, selection of structural materials of billets
ON6 Own the basis of design and design of parts and assemblies of engineering structures in accordance with the terms of reference

Prerequisites

Technological processes of machine-building production

Postrequisites

Manufacturing engineering Fundamentals of design of machine manufacturing engineering processes Manufacturing technology and machining methods of standard parts in mechanical engineering industry

Design and production of preparations in mechanical engineering

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32139 (3024048)

Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
This course discusses the concept of procurement; designing and manufacturing cast billets in various ways; their advantages and disadvantages, the equipment used; design and production of billets by plastic deformation, their advantages and disadvantages, equipment used. selection of initial rolled metal and production of blanks from it by various methods; selection of the method and method of production of workpieces for machining depending on the technical requirements of the part drawing, on the type of production, on the conditions of a particular enterprise

Purpose of studying of the discipline
To acquaint students with variety of methods and methods of the modern production of preparations for manufacture of details the subsequent machining.

Learning Outcomes
ON5 Own the basis of strength calculations, selection of structural materials of billets
ON6 Own the basis of design and design of parts and assemblies of engineering structures in accordance with the terms of reference

Prerequisites
Technological processes of machine- building production Bases of cutting of metals Theory of cutting The theory of cutting with thermophysics elements

Postrequisites
Manufacturing technology of standard parts Technology of production of machines Design of technological processes of machine manufacturing

Theory of inventive problem solving

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32155 (3024089)
Course	3
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
This course describes the general characteristics of constructive and technological creative activity and the process of inventions; general principles and methods of engineering creativity; common ways of creating the effectiveness of creative methods for solving structural and technical problems; the conditions required for engineering creativity; development of abilities for engineering creativity; research work of students. development work; method of branches and boundaries for solving the traveling salesman problem, optimization of operations for multi-operation CNC machines.

Purpose of studying of the discipline
Studentterdin engineer shygarmashylyk salasyndagy bilim negizdern aluy zhune alynkan akparatty engineer zhumysta paidalanu.

Learning Outcomes
ON5 Own the basis of strength calculations, selection of structural materials of billets
ON6 Own the basis of design and design of parts and assemblies of engineering structures in accordance with the terms of reference

Prerequisites
Introduction to the profession

Postrequisites
Metal-cutting machine tools Principles of machine design Machine equipment of tool production

Hydraulics and the hydropneumatic drive

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32161 (3024091)
Course	3
Term	2
Credits count	5

Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
This discipline describes hydraulic drives and operating fluids; principle of operation of hydraulic drives; operating fluid characteristics: pumps, volume hydraulic motors, hydraulic cylinders, rotary hydraulic motors, hydraulic motors; valve and slide valves, check valves; pressure valves, throttles, flow controllers; auxiliary devices, pipelines; control, stabilization and synchronization of the speed of movement of the working elements of the equipment; tracking systems; hydraulic diagrams; basics of calculation and operation of equipment hydraulic drives

Purpose of studying of the discipline
Obtaining by students the basics of knowledge in the field of hydraulics, hydraulic machines and other devices for processing, supplying and moving gaseous liquids, necessary for further study of special disciplines and practical activities in the specialty.

Learning Outcomes
ON5 Own the basis of strength calculations, selection of structural materials of billets
ON6 Own the basis of design and design of parts and assemblies of engineering structures in accordance with the terms of reference

Prerequisites
Fundamentals of design and machine parts

Postrequisites
Final examination

Optimization of calculations at design

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32160 (3024090)
Course	3
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
This course covers programs for calculating, executing drawings, using modern computer equipment capabilities; theory of construction of technical drawings; basic methods of constructing and reading drawings and sketches of technical objects of various levels of complexity and purpose; rules for drawing dimensions of elements, parts and assemblies; characterization of criteria for optimality of machining processes.

Purpose of studying of the discipline
Studying of modes of designing of various geometrical spatial objects, modes of obtaining their drawings at the level of graphic models and ability to solve these problems, using various modes of optimization of calculations at design.

Learning Outcomes
ON5 Own the basis of strength calculations, selection of structural materials of billets
ON6 Own the basis of design and design of parts and assemblies of engineering structures in accordance with the terms of reference

Prerequisites
Fundamentals of design and machine parts

Postrequisites
Final examination

Manufacturing practice II

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	32156 (3024011)
Course	3
Term	2
Credits count	5
Working practice II	150hours
Total	150hours
Knowledge control form	Total mark on practice

Short description of discipline
Production practice 2 is aimed at studying the tasks, functions and structure of the service of the chief designer and design bureau; Department of the Chief Technologist and with the work of the Process Engineer; study of the system of design preparation of production; with organization of metrological control of design documentation; with the tasks, functions and structure of the

standardization service, with the system of the Unified Design Documentation System, with the occupational health and safety system

Purpose of studying of the discipline

The purpose of practice is similar acquaintance with tasks and content of work of the design engineer. Mastering skills of the independent solution of engineering, economic and administrative problems, deepening and fixing of the theoretical knowledge gained at the university to the solution of production tasks directly in shops and departments of machine-building enterprises and also practical studying of the forms taken at the enterprise and methods of the organization of production, technological and labor processes in terms of their efficiency; identification of progressive technological ways of machining of details, assemblies of knots, units, machines; acquisition of labor skills

Learning Outcomes

ON5 Own the basis of strength calculations, selection of structural materials of billets
ON6 Own the basis of design and design of parts and assemblies of engineering structures in accordance with the terms of reference

Prerequisites

Production practice I

Postrequisites

Manufacturing practice II

Ergonomics

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32162 (3024092)
Course	3
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This course discusses ergonomics and its place in the system of other sciences; brief history, principles and methods of ergonomics development; classification of working professions and consideration of ergonomics requirements when designing equipment; ergonomics of the working space; ergonomic requirements for the design of workplaces. Optimization of information display tools and systems; preparation of employees for types of labor activity; standardization of ergonomic standards and requirements and ergonomic assessment of the quality of industrial products

Purpose of studying of the discipline

Formation of future specialists: ideas about the essence of the human dimension of technology, technology, software products; understanding of a human-centered ergonomic approach to the design of such working conditions that are able to reveal the creative resources of a person in unity with the technical resources of a machine, ensuring their effective working interaction; conviction that a safe connection of a person with the modern world of technology can be carried out only with the support of a high culture of thinking and responsibility; practical skills in designing ergonomic solutions in the workplace

Learning Outcomes

ON5 Own the basis of strength calculations, selection of structural materials of billets
ON6 Own the basis of design and design of parts and assemblies of engineering structures in accordance with the terms of reference

Prerequisites

Fundamentals of design and machine parts

Postrequisites

Final examination

Planning of the technological rigging

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32166 (3024070)
Course	3
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This course covers the classification of devices by their purpose; universal and special devices; installation of blanks and installation elements of accessories; requirements for installation devices; calculation of screw, eccentric, wedge, electromagnetic, vacuum devices;

devices for guiding and monitoring the position of the tool, types and design features of bodies and auxiliary devices of devices, a technique for designing special machine tools, control devices and their main types, devices for fixing the attachment of cutting tools.

Purpose of studying of the discipline

to Teach a student to planning of rigging for the technological processes of tooling and assembling.

Learning Outcomes

ON5 Own the basis of strength calculations, selection of structural materials of billets
ON6 Own the basis of design and design of parts and assemblies of engineering structures in accordance with the terms of reference

Prerequisites

Technological processes of machine-building production

Postrequisites

Final examination

Calculation and design of machine accessories in mechanical engineering industry

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32168 (3024072)
Course	3
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This course covers the technological equipment, its role in modern production, the classification and scope of use of machine tools, their classification and requirements for the design of control and measuring devices, their classification and requirements for the design; general procedures for designing devices; procedure for designing machine tools; procedure of instrumentation design; general requirements for assembly drawings of machine tools and control devices

Purpose of studying of the discipline

To teach students to choose equipment for technological processes of machining and Assembly

Learning Outcomes

ON5 Own the basis of strength calculations, selection of structural materials of billets
ON6 Own the basis of design and design of parts and assemblies of engineering structures in accordance with the terms of reference

Prerequisites

Technological processes of machine-building production

Postrequisites

Final examination

Planning of the technological rigging

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32167 (3024071)
Course	3
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This course covers universal and special devices; installation of blanks and installation elements of accessories. requirements for installation devices; classification of devices by their purpose; calculation of required fastening force; selection and calculation of clamping devices and power drives. calculation of the machine tool for accuracy; error of installation on the machine and its determination; procedures for performing precision calculations of devices. development of the design of the body of the accessory calculation of the parts of the accessory for strength

Purpose of studying of the discipline

To teach the student to choose equipment for technological processes of machining and assembly.

Learning Outcomes

ON5 Own the basis of strength calculations, selection of structural materials of billets
ON6 Own the basis of design and design of parts and assemblies of engineering structures in accordance with the terms of reference

Prerequisites
Technological processes of machine-building production
Postrequisites
Final examination

Module 6. Machine equipment of machine-building production

Planning and calculation of metal-cutting instrument

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32159 (3024057)
Course	3
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination and term work/Project

Short description of discipline
This course discusses the general structural elements of cutting tools; instrumental materials; design of metal cutting tools according to specified operating conditions, cutters, broakers, cutters, tools for hole machining, drill, tools for hole machining, countersinks, reamers, abrasive tools, tools for thread formation, tappers, tools for thread formation, dies, threaded cutters. gear machining tools, modular shaped cutters.
Purpose of studying of the discipline
Knowledge and skills in calculating various types of metal-cutting tools.
Learning Outcomes
ON7 Calculate the main machine tools, metal cutting machines, tooling, tools, drives of machine tools and hydraulic systems
Prerequisites
Bases of cutting of metals Theory of cutting The theory of cutting with thermophysics elements
Postrequisites
Manufacturing technology of standard parts Technology of production of machines Fundamentals of design of machine manufacturing engineering processes

Planning of instrument

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32158 (3024056)
Course	3
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination and term work/Project

Short description of discipline
This course covers the purpose and classification of cutting tools, general- purpose cutting tools, basic provisions for their design, information on the design methodology of cutting and deforming tools for hot and cold stamping processes, on the selection of materials for die parts, the purpose of thermal treatment, the role of the deforming tool in the implementation of designed forging and stamping processes, ensuring high-performance operation of forging and stamping equipment
Purpose of studying of the discipline
To instill in students the amount of necessary knowledge, skills and abilities on the theory and methods of designing and operating a deforming tool for the implementation of technological processes of metal processing by pressure of cutting tools, to choose competently
Learning Outcomes
ON7 Calculate the main machine tools, metal cutting machines, tooling, tools, drives of machine tools and hydraulic systems
Prerequisites
Bases of cutting of metals Theory of cutting The theory of cutting with thermophysics elements
Postrequisites
Manufacturing technology of standard parts Technology of production of machines Design of technological processes of machine

manufacturing

The cutting tool

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	32157 (3024055)
Course	3
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination and term work/Project

Short description of discipline

This course examines the purpose and classification of cutting tools; development and current state of the tool industry; requirements for cutting tools; quality indicators of the cutting tool and technical requirements established by the standards; common structural elements of cutting tools; instrumental materials; purpose and classification of cutting tools; general purpose cutting tool; basic provisions for their design; special-purpose cutting tool; instrumental materials; Automated Manufacturing Cutting Tool

Purpose of studying of the discipline

Acquisition of the required level of professional training, practical skills and abilities by students in the field of operation, mechanization and automation of production processes using modern cutting tools, as well as instilling skills in the field of their design. In addition, students must understand the relationship between various branches of science and their impact on the current state, teach students to correctly design and rationally operate modern metal-cutting tools.

Learning Outcomes

ON7 Calculate the main machine tools, metal cutting machines, tooling, tools, drives of machine tools and hydraulic systems

Prerequisites

Bases of cutting of metals Theory of cutting The theory of cutting with thermophysics elements

Postrequisites

Manufacturing technology of standard parts Technology of production of machines Design of technological processes of machine manufacturing

Machine equipment of tool production

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32188 (3024054)
Course	4
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination and term work/Project

Short description of discipline

This course discusses general information about machines; technical and economic display of machine tools; Designing and investigating machines layout of machines. main motion drive; spindle assemblies of machines; electromechanical transmission drives; Base parts and guides manipulating devices; dynamics of machines, testing and examination of machines, operation and repair of machines; machine tool control system, hardware numerical control systems, design features of rational structures of metal cutting machines

Purpose of studying of the discipline

To acquaint future mechanical engineers with the most important types of processing equipment of the automated machine-assembling production.

Learning Outcomes

ON7 Calculate the main machine tools, metal cutting machines, tooling, tools, drives of machine tools and hydraulic systems

Prerequisites

The cutting tool Planning of instrument Planning and calculation of metal-cutting instrument

Postrequisites

Final examination

Metal-cutting machine tools

Discipline cycle	Profiling discipline

Discipline component	Electives
SubjectID	32181 (3024052)
Course	4
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination and term work/Project

Short description of discipline

This course covers technical and economic indicators and performance criteria; forming the surface on the machines; kinematic structure of machines; arrangement of machine tools, main components and mechanisms of machine tools; the concept of machine control. lathe group machines; milling and multipurpose machines for processing body parts; drilling, boring, drawing machines; machines with electrochemical and electrophysical processing methods; abrasive machines; toothworking machines; capillary, grinding machines.

Purpose of studying of the discipline

to Acquaint future engineers- mechanics with the major types of technological equipment of the automated механосборочного production, to instil skills in area of their planning and realization of research works in an enginee

Learning Outcomes

ON7 Calculate the main machine tools, metal cutting machines, tooling, tools, drives of machine tools and hydraulic systems

Prerequisites

The cutting tool Planning of instrument Planning and calculation of metal-cutting instrument

Postrequisites

Final examination

Principles of machine desiqn

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32189 (3024053)
Course	4
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination and term work/Project

Short description of discipline

This course covers the classification of movements of the working, target mechanisms of machines and automatic machines, the degree of automation; requirements for machine tools. method of calculation of machine kinematic diagram; calculation of kinematic diagram of speed gearbox and gearbox; machine assembly, calculation and design of machine assembly spindles, design of drive, machine feed, machine bearing systems; provide selection of modern standard solutions of mechanisms and assemblies, machine tool layouts.

Purpose of studying of the discipline

To impart to stu-dents the practical skills necessary at calculation and designing of mecha-nisms, knots of machines on the basis of technical and economic requirements. To provide choice of modern standard solutions of mechanisms and knots, configurations of machines.

Learning Outcomes

ON7 Calculate the main machine tools, metal cutting machines, tooling, tools, drives of machine tools and hydraulic systems

Prerequisites

The cutting tool Planning of instrument Planning and calculation of metal-cutting instrument

Postrequisites

Final examination

Production practice III

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32192 (3024102)
Course	4
Term	2
Credits count	15

Working practice	450hours
Total	450hours
Knowledge control form	Total mark on practice

Short description of discipline
The practice allows students to gain a clearer and more complete understanding of mechanical engineering; on the structure of the modern machine- building enterprise; economy, organization and management of production. They study modern technology and equipment, instrumentation, measures to improve labor productivity, safety and health at work. Formation of practical skills of design, technology of production of machine-building products and in mastering the functional duties of officials on the profile of future work

Purpose of studying of the discipline
The purpose of the practice is to study and analyze the production, technological, design and research activities of the enterprise in accordance with the topic of the diploma project

Learning Outcomes
ON9 To use the main laws of engineering technology, which are effective in the process of manufacturing engineering products, the choice of a rational technology for obtaining products, technological equipment with software control.

Prerequisites
Manufacturing practice II

Postrequisites
Final examination

Module 7. Design of machine-building enterprises

Automation and mechanization of technological processes in mechanical engineering

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32174 (3024094)
Course	4
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
This course describes the main provisions of automation and mechanization in mechanical engineering; cost-effectiveness of production automation; automated production process; features of tools and devices used in automated production; automatic control systems; elements and devices of automatic control systems; automation of equipment loading and workpiece processing; optimal control of processing accuracy automate the assembly process comprehensive automation of serial production

Purpose of studying of the discipline
Providing of complex organizational, methodical and rich in content help to the students in mastering of necessary volume and quality of knowledge on automation of technological processes in an engineer, as one of constituents of machine-building production.

Learning Outcomes
ON9 To use the main laws of engineering technology, which are effective in the process of manufacturing engineering products, the choice of a rational technology for obtaining products, technological equipment with software control.

Prerequisites
Manufacturing engineering Fundamentals of design of machine manufacturing engineering processes Manufacturing technology and machining methods of standard parts in mechanical engineering industry

Postrequisites
Final examination

Bases of planning of toolrooms

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32179 (3024077)
Course	4
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Laboratory works	0hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
This course covers general information on the design of tool shops; procedure for designing tool shops; composition and quantity of the main equipment; principle and structure of construction of the main production processes; design of the system of repair and maintenance of tool production, quality control of products, labor protection of personnel; design of the production process preparation and control system; determination of the composition and number of personnel, layout planning solutions of workshops, business justification of the project
Purpose of studying of the discipline
to Teach a student to bases of planning, planning of workshops of instrumental production.
Learning Outcomes
ON8 Perform the necessary calculations during the design of engineering enterprises of their technical equipment, arrangement of equipment, automation means, control, control in modern conditions of the market economy
Prerequisites
Technological processes of machine-building production
Postrequisites
Final examination

Bases of planning of smith workshops

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32187 (3024058)
Course	4
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Laboratory works	0hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
This course covers the preparation of initial data and the procedure for designing mechanical assembly plants; composition and quantity of the main process equipment; principles and structure of construction of the main production processes; warehouse, transport system, tool support system, system of repair and maintenance of mechanical assembly production, quality control of products; occupational health and safety system; Mechanical Assembly Design, Business Case
Purpose of studying of the discipline
Teach a student, future engineer, that must for a decision in the future of many practical questions related to НТП in the different areas of technique, to the modern progressive methods of production of metals, new construction materials.
Learning Outcomes
ON7 Calculate the main machine tools, metal cutting machines, tooling, tools, drives of machine tools and hydraulic systems
Prerequisites
Technological processes of machine-building production
Postrequisites
Final examination

Fundamentals of design of sites

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32186 (3024059)
Course	4
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Laboratory works	0hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
This course discusses the main methods and sequence of design of structural divisions of modern machine- building production: mechanical assembly, instrumental, repair and mechanical workshops and small enterprises, production areas, auxiliary services, sanitary and sanitary and administrative premises; composition and quantity of the main process equipment, principles and structure of construction of the main production processes; warehouse, transport systems; system of instrumental support, repair and maintenance of areas, quality control of products; business case for the project.
Purpose of studying of the discipline

to teach students the methodology and practice of designing machine shops, sites for different types of production, planning of production and service areas through the implementation of the site planning

Learning Outcomes

ON7 Calculate the main machine tools, metal cutting machines, tooling, tools, drives of machine tools and hydraulic systems

Prerequisites

Technological processes of machine-building production

Postrequisites

Final examination

Preparation of machine-building production

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32175 (3024093)
Course	4
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This course describes the basics of preparing production to solve the problems of designing and manufacturing machine parts and units, mastering the methods of calculation and critical assessment of the results obtained; main types of production, characteristics and calculations of machine tools, allowable design loads, tools, processing modes, design and technology of workpieces and parts manufacturing, layout of mechanical assembly section for production; organization of maintenance and repair

Purpose of studying of the discipline

the basis of preparation of production to solve the problems of designing and manufacturing machine parts and units, mastering the methods of calculation and critical assessment of the obtained results.

Learning Outcomes

ON9 To use the main laws of engineering technology, which are effective in the process of manufacturing engineering products, the choice of a rational technology for obtaining products, technological equipment with software control.

Prerequisites

Manufacturing engineering Fundamentals of design of machine manufacturing engineering processes Manufacturing technology and machining methods of standard parts in mechanical engineering industry

Postrequisites

Final examination

Mechanical engineering enterprise's economics

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32173 (3024095)
Course	4
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This course covers the law of the Republic of Kazakhstan on the enterprise; development and placement of enterprises in industries; Enterprise resources and results fixed assets at the enterprise; working capital, production program and production capacity; personnel, labor productivity and wages, production costs, cost of production, accounting, maintenance and calculation of calculation items; peculiarity of cost accounting in market conditions; profit and profitability, calculation of technical and economic efficiency of machine-building production.

Purpose of studying of the discipline

Explore ways to create various estimates and business plans, taking into account the efficiency and profitability of the technological processes being developed. The formation of primary skills in the pectoring of technical and cost-effective projects among students.

Learning Outcomes

ON9 To use the main laws of engineering technology, which are effective in the process of manufacturing engineering products, the choice of a rational technology for obtaining products, technological equipment with software control.

Prerequisites

Manufacturing engineering Fundamentals of design of machine manufacturing engineering processes Manufacturing technology and

machining methods of standard parts in mechanical engineering industry

Postrequisites

Final examination

Module 8. Manufacturing engineering

Fundamentals of design of machine manufacturing engineering processes

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32164 (3024067)
Course	3
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This course describes the basics of designing machining processes by cutting machine parts based on the general principles and regularities of the engineering technology, the accepted requirements for the manufacture of high-quality products in the context of creating modern production processes and innovative technologies, with an established production program at the lowest cost of materials, minimum cost and high labor productivity.

Purpose of studying of the discipline

studying of bases of design of technological processes, production of cars of the required quality at the minimum expenses of human and energy resources; training of methodology of development of technological processes in the conditions of modern production

Learning Outcomes

ON9 To use the main laws of engineering technology, which are effective in the process of manufacturing engineering products, the choice of a rational technology for obtaining products, technological equipment with software control.

Prerequisites

Bases of technology of mechanical engineering Key elements of manufacturing preparation in mechanical engineering Bases of production of machines

Postrequisites

Manufacturing technology of standard parts Technology of production of machines Design of technological processes of machine manufacturing

The basics of repairing armored weapons and equipment

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32169 (3024078)
Course	3
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

In this course, the basics of repair of armored weapons and equipment are set forth in the performance of a set of works in order to bring failed combat vehicles into working condition by replacing (repairing) their damaged or worn-out assembly units and studying the basic principles of organization and repair of armored weapons and equipment using the technological capabilities of enterprises of the military-industrial complex

Purpose of studying of the discipline

studying the basics of repairing armored weapons and equipment

Learning Outcomes

ON9 To use the main laws of engineering technology, which are effective in the process of manufacturing engineering products, the choice of a rational technology for obtaining products, technological equipment with software control.

Prerequisites

Fundamentals of design and machine parts

Postrequisites

Final examination

Conveyor mechanisms in mechanical engineering

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32171 (3024080)
Course	3
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The course describes the classification and scope of application of the main types of drives of crane mechanisms, load gripping devices, polyspasts, blocks and drums; crane mechanisms, classification of devices and purpose of main parts of crane mechanisms; conveyors with a flexible traction element, features of their device; conveyors without flexible traction element, features of their device; auxiliary devices for continuous vehicles, design; robots and manipulators

Purpose of studying of the discipline

Acquisition of skills of development of design, technological documentation for creation, repair of lifting and transport machines (PTM); selection and effective use of CAT, development of designs and testing of CAT and equipment.

Learning Outcomes

ON9 To use the main laws of engineering technology, which are effective in the process of manufacturing engineering products, the choice of a rational technology for obtaining products, technological equipment with software control.

Prerequisites

Fundamentals of design and machine parts

Postrequisites

Final examination

Technology of overhaul of armored weapons and equipment

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32170 (3024079)
Course	3
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This course describes the methods of restoration of serviceability and full restoration of the machine life with restoration of any of their components, including basic ones, in which the machine is completely dismantled and defective, as well as replacement and repair of all faulty units, units, devices and parts, assembly and testing in accordance with the technical specifications; planning, accounting and reporting for the repair of armored vehicles

Purpose of studying of the discipline

Study of the technology of overhaul of armored weapons and equipment

Learning Outcomes

ON9 To use the main laws of engineering technology, which are effective in the process of manufacturing engineering products, the choice of a rational technology for obtaining products, technological equipment with software control.

Prerequisites

Fundamentals of design and machine parts

Postrequisites

Final examination

Manufacturing engineering

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32163 (3024066)
Course	3

Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This course describes the basic concepts and provisions of mechanical engineering technology, the principles of designing high-performance technological processes for mechanical processing of machine parts; issues of basing and installation of parts during machining, selection of workpieces, manufacturability of parts and machines, quality assurance in manufacturing of parts, accuracy of machining; development of machining processes for typical parts: shafts, gears, body parts, connecting rods, pistons.

Purpose of studying of the discipline

Acquaintance of trainees with the theoretical foundations of production technology, training of students to the conscious application of methods for developing technological processes for assembling machines and technological processes for manufacturing parts of any type in conditions of single, mass and mass production

Learning Outcomes

ON9 To use the main laws of engineering technology, which are effective in the process of manufacturing engineering products, the choice of a rational technology for obtaining products, technological equipment with software control.

Prerequisites

Bases of technology of mechanical engineering Key elements of manufacturing preparation in mechanical engineering Bases of production of machines

Postrequisites

Manufacturing technology of standard parts Technology of production of machines Design of technological processes of machine manufacturing

Manufacturing technology and machining methods of standard parts in mechanical engineering industry

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32165 (3024068)
Course	3
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This course provides general information on the machining of materials by cutting on metal cutting machines: equipment, accessories, tools and methods for machining the main types of surfaces; machining on turning, drilling, milling and grinding metal cutting machines; tasks and main directions of production automation; issues of designing modern technological processes of machine building parts manufacturing; typical processes for parts of the main classes are given

Purpose of studying of the discipline

studying of bases of design of technological processes, production of cars of the required quality at the minimum expenses of human and energy resources; training of methodology of development of technological processes in the conditions of modern production

Learning Outcomes

ON9 To use the main laws of engineering technology, which are effective in the process of manufacturing engineering products, the choice of a rational technology for obtaining products, technological equipment with software control.

Prerequisites

Bases of technology of mechanical engineering Key elements of manufacturing preparation in mechanical engineering Bases of production of machines

Postrequisites

Manufacturing technology of standard parts Technology of production of machines Design of technological processes of machine manufacturing

SAPR in mechanical engineering

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32176 (3024083)
Course	4

Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This course describes the prerequisites for creating a computer-aided design system; requirements for the design process, principles for building a computer- aided design system, formalization of the CAD process, CAD composition, mathematical, methodological and technical support of CAD. Technological preparation of production in modern conditions. Basics of computer- aided design of technological processes. Composition and structure, types of support, tasks and organization of CAD implementation of technological processes, development directions.

Purpose of studying of the discipline

consists in expanding the worldview of students and mastering the general principles and means necessary to automate design and research work using ICT

Learning Outcomes

ON8 Perform the necessary calculations during the design of engineering enterprises of their technical equipment, arrangement of equipment, automation means, control, control in modern conditions of the market economy

Prerequisites

The basics of repairing armored weapons and equipment Technology of overhaul of armored weapons and equipment Conveyor mechanisms in mechanical engineering

Postrequisites

Final examination

Manufacturing technology of parts on CNC machines

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32185 (3024060)
Course	4
Term	1
Credits count	6
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	30hours
Independent work of a student under the guidance of a teacher	40hours
Independent work of the student	80hours
Total	180hours
Knowledge control form	Examination and term work/Project

Short description of discipline

This course describes the basics of the technological processes for processing materials by cutting; general programming issues and computer simulation programs compatible with numerical control machines; structure of metal cutting machines with numerical program control (turning, milling, engraving); preparation of control programs for machine tools of turning and milling groups;. route technological processes and cutting of parts on machine tools with numerical program control.

Purpose of studying of the discipline

To acquaint students with the types of technological equipment of automated machine-assembly production. With the basics of the production technology of parts on CNC machines in mechanical engineering.

Learning Outcomes

ON9 To use the main laws of engineering technology, which are effective in the process of manufacturing engineering products, the choice of a rational technology for obtaining products, technological equipment with software control.

Prerequisites

Technological processes of machine-building production

Postrequisites

Final examination

Fundamentals of repair of electrical equipment and instrumentation and equipment of armored weapons and equipment

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32178 (3024081)
Course	4
Term	1
Credits count	5

Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
This course covers a wide range of theoretical and practical issues on checking the technical condition and repair of electrical equipment of armored weapons and equipment, describes the main provisions and methods of fault detection, as well as the basic information necessary for the preparation and implementation of practical work on the repair of electrical equipment of armored vehicles; maintenance and inspection of instrumentation, requirements for them, operability check of night vision devices

Purpose of studying of the discipline
Studying the basics of repairing electrical equipment for armored weapons and equipment

Learning Outcomes
ON8 Perform the necessary calculations during the design of engineering enterprises of their technical equipment, arrangement of equipment, automation means, control, control in modern conditions of the market economy

Prerequisites
The basics of repairing armored weapons and equipment Technology of overhaul of armored weapons and equipment Conveyor mechanisms in mechanical engineering

Postrequisites
Final examination

Design of technological processes of machine manufacturing

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32180 (3024065)
Course	4
Term	1
Credits count	6
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	30hours
Independent work of a student under the guidance of a teacher	40hours
Independent work of the student	80hours
Total	180hours
Knowledge control form	Examination and term work/Project

Short description of discipline
This course presents the technologies of machine parts machining, technological quality assurance of parts, methodology of technological processes development; methods of processing parts are given: cutting, abrasive, electric erosion, electrochemical, laser and electron beam, ultrasonic, combined methods, hardening methods, etc.; described are means of technological equipment for machining parts: machines, accessories, cutting and measuring tools and other accessories; the basics of typing of technological processes and group processing are described.

Purpose of studying of the discipline
Introduce students into the circle of knowledge that forms the basis of professional engineering training in the field of machine production technology.

Learning Outcomes
ON9 To use the main laws of engineering technology, which are effective in the process of manufacturing engineering products, the choice of a rational technology for obtaining products, technological equipment with software control.

Prerequisites
Manufacturing engineering Fundamentals of design of machine manufacturing engineering processes Manufacturing technology and machining methods of standard parts in mechanical engineering industry

Postrequisites
Final examination

Preproduction planning of machining processes on computer controlled machines

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32183 (3024062)
Course	4
Term	1
Credits count	6
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	30hours

Independent work of a student under the guidance of a teacher	40hours
Independent work of the student	80hours
Total	180hours
Knowledge control form	Examination and term work/Project

Short description of discipline

This course discusses the range of parts processed on various types of numerically controlled machines; features of design of operational technological processes on machines with numerical program control; recommendations on selection of cutting modes on machines with numerical program control structure and stages of technological preparation of production or use of machines with numerical program control.

Purpose of studying of the discipline

To acquaint students with the types of technological equipment of automated mechanical assembly production. With the basics of technology for the production of parts on CNC machines in mechanical engineering.

Learning Outcomes

ON9 To use the main laws of engineering technology, which are effective in the process of manufacturing engineering products, the choice of a rational technology for obtaining products, technological equipment with software control.

Prerequisites

Technological processes of machine-building production

Postrequisites

Final examination

Technological processes of treatment on machine-tools with CNC

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32184 (3024061)
Course	4
Term	1
Credits count	6
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	30hours
Independent work of a student under the guidance of a teacher	40hours
Independent work of the student	80hours
Total	180hours
Knowledge control form	Examination and term work/Project

Short description of discipline

This course covers the software management systems of machines; classification and designation of machines with numerical program control according to the control system; nomenclature of parts processed on various types of numerically controlled machines; a requirement for drawings of parts processed on numerically controlled machines; features of design of operational technological processes on machines with numerical program control.

Purpose of studying of the discipline

The purpose of the discipline "Technological processes of processing on CNC machines" is to familiarize future mechanical engineers with the most important types of technological equipment of automated mechanical assembly production. And instilling skills in the field of their design and research work in mechanical engineering.

Learning Outcomes

ON9 To use the main laws of engineering technology, which are effective in the process of manufacturing engineering products, the choice of a rational technology for obtaining products, technological equipment with software control.

Prerequisites

Technological processes of machine-building production

Postrequisites

Final examination

Manufacturing technology of standard parts

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32182 (3024063)
Course	4
Term	1
Credits count	6
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	30hours
Independent work of a student under the guidance of a teacher	40hours
Independent work of the student	80hours
Total	180hours
Knowledge control form	Examination and term work/Project

Short description of discipline
This course describes the design of modern technological processes for the manufacture of machine building parts; typical technological processes for parts of the main classes, information on machining by cutting structural materials are given; machining on metal cutting machines: turning, drilling, milling, grinding, drawing, cutting, etc., accessories, tools and methods of processing the main types of surfaces; tasks and main directions of production automation.
Purpose of studying of the discipline
Formation of professional knowledge, skills and skills in the field of the basics of engineering technology, technology of processing typical parts and assembly
Learning Outcomes
ON9 To use the main laws of engineering technology, which are effective in the process of manufacturing engineering products, the choice of a rational technology for obtaining products, technological equipment with software control.
Prerequisites
Manufacturing engineering Fundamentals of design of machine manufacturing engineering processes Manufacturing technology and machining methods of standard parts in mechanical engineering industry
Postrequisites
Final examination

Technology of overhaul of electrical equipment and instrumentation and equipment of armored weapons and equipment

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32177 (3024082)
Course	4
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
This course describes the technology of overhaul of electrical equipment and instrumentation and automation of armored weapons and equipment - it is included in ensuring its reliable operability during operation as part of armored weapons and equipment; essence and scope of works performed during overhaul of electrical equipment and automation units are the same as for mechanical units;
safety measures during operation, maintenance and repair of electrical equipment systems of armored weapons and equipment
Purpose of studying of the discipline
study of the technology of overhaul of electrical equipment and instrumentation and control equipment of armored vehicles
Learning Outcomes
ON8 Perform the necessary calculations during the design of engineering enterprises of their technical equipment, arrangement of equipment, automation means, control, control in modern conditions of the market economy
Prerequisites
The basics of repairing armored weapons and equipment Technology of overhaul of armored weapons and equipment Conveyor mechanisms in mechanical engineering
Postrequisites
Final examination

Technology of production of machines

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32172 (3024064)
Course	4
Term	1
Credits count	6
Lections	15hours
Practical and seminar classes	15hours
Laboratory works	30hours
Independent work of a student under the guidance of a teacher	40hours
Independent work of the student	80hours
Total	180hours
Knowledge control form	Examination and term work/Project

Short description of discipline
This course covers a variety of methods of workpiece processing in the manufacture of machine parts; the principles and methods of constructing technological processes for manufacturing parts, the basics of modern technology for assembling machines and assembly

units; justification of the economic benefits of automation of technological processes implemented in conditions of small-scale and mass production, quality assurance in the manufacture of parts; accuracy of processing.

Purpose of studying of the discipline

Familiarize the student with the basic design, design, development of technological processes according to the ESKD and ESTD standards, with modern progressive methods of product production.

Learning Outcomes

ON9 To use the main laws of engineering technology, which are effective in the process of manufacturing engineering products, the choice of a rational technology for obtaining products, technological equipment with software control.

Prerequisites

Manufacturing engineering Fundamentals of design of machine manufacturing engineering processes Manufacturing technology and machining methods of standard parts in mechanical engineering industry

Postrequisites

Final examination

Prediploma practice

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32191 (3024008)
Course	4
Term	2
Credits count	15
Working practice	450hours
Total	450hours
Knowledge control form	Total mark on practice

Short description of discipline

Pre-diploma practice prepares students for the implementation of the diploma project, which consists in the study and analysis of the industrial and technological, design and research activities of the enterprise, the study, analysis and systematization of issues of economics, organization, planning and management of production, issues of environmental protection and labor protection directly related to the topic of the diploma project "Selection of the necessary initial materials for diploma design and justification of new technical proposals.

Purpose of studying of the discipline

The purpose of practice is the training of students for implementation of the degree project consisting in studying and the analysis of production and technological, design and research activity of the enterprise according to a subject of the degree project

Learning Outcomes

ON9 To use the main laws of engineering technology, which are effective in the process of manufacturing engineering products, the choice of a rational technology for obtaining products, technological equipment with software control.

Prerequisites

Production practice III

Postrequisites

Final examination

Final examination

Writing and defending a graduation project or preparing and passing a comprehensive exam.

Diploma project

Credits count	8

Comprehensive exam

Credits count	8

4.Summary table on the scope of the educational program

«6B07106 - Mechanical Engineering»

Name of discipline	Cycle/ Component	Term	Number of credits	Total hours	Lec	SPL	LC	IWST	IWS	Knowledge control form
Module 1. Fundamentals of social and humanitarian knowledge										
Foreign language	GER/CC	1	5	150		45		35	70	Examination
Kazakh language	GER/CC	1	5	150		45		35	70	Examination
Bases of economics, law and ecological knowledge	GER/US	1	5	150	15	30		35	70	Examination
Russian language	GER/CC	1	5	150		45		35	70	Examination
Physical Culture	GER/CC	1	2	60		60				Differentiated attestation
Kazakh language	GER/CC	2	5	150		45		35	70	Examination
Foreign language	GER/CC	2	5	150		45		35	70	Examination
History of Kazakhstan	GER/CC	2	5	150	30	15		35	70	Qualification examination
The module of socio-political knowledge (sociology, political science, cultural studies, psychology)	GER/CC	2	8	240	30	45		55	110	Examination
Russian language	GER/CC	2	5	150		45		35	70	Examination
Physical Culture	GER/CC	2	2	60		60				Differentiated attestation
Physical Culture	GER/CC	3	2	60		60				Differentiated attestation
World of Abai	BS/US	3	3	90	15	15		20	40	Examination
Information and communication technology	GER/CC	4	5	150	15	15	15	35	70	Examination
Physical Culture	GER/CC	4	2	60		60				Differentiated attestation
Philosophy	GER/CC	5	5	150	15	30		35	70	Examination
Module 2. Physical and mathematical foundations										
Mathematics	BS/US	1	5	150	15	30		35	70	Examination
Physics	BS/US	1	3	90	15	15	0	20	40	Examination
Module 3. General technical training										
Introduction to the profession	BS/US	1	3	90	15	15		20	40	Examination
Training practice	BS/US	2	2	60						Total mark on practice
Engineering Graphics	BS/CCh	2	5	150	15	30		35	70	Examination
Engineering drawing	BS/CCh	2	5	150	15	30		35	70	Examination
Descriptive geometry	BS/CCh	2	5	150	15	30		35	70	Examination
Computer graphics	BS/CCh	3	5	150		30	15	35	70	Examination

Computer programs and equipment	BS/CCh	3	5	150		30	15	35	70	Examination
Bases of computer modeling	BS/CCh	3	5	150		30	15	35	70	Examination
Machine graphics basics	BS/CCh	5	5	150	15	15	15	35	70	Examination
Engineering graphics in AutoCAD environment	BS/CCh	5	5	150	15	15	15	35	70	Examination
Machine graphics	BS/CCh	5	5	150	15	15	15	35	70	Examination
Fundamentals of scientific activity	BS/US	7	5	150	15	30		35	70	Examination
Module 4. Basic engineering training										
Bases of cutting of metals	BS/CCh	3	5	150	15	15	15	35	70	Examination
Theory of cutting	BS/CCh	3	5	150	15	15	15	35	70	Examination
Constructional materials and heat treatment	BS/US	3	5	150	15	15	15	35	70	Examination
Interchangeability bases	BS/US	3	5	150	15	15	15	35	70	Examination and term work/Project
Theoretical mechanics	BS/CCh	3	5	150	15	15	15	35	70	Examination
Theoretical Foundations of Mechanics	BS/CCh	3	5	150	15	30		35	70	Examination
The theory of cutting with thermophysics elements	BS/CCh	3	5	150	15	15	15	35	70	Examination
Theoretical mechanics	BS/CCh	3	5	150	15	15	15	35	70	Examination
The analysis and synthesis of mechanisms	BS/CCh	4	5	150	15	15	15	35	70	Examination and term work/Project
Mechanics of Materials	BS/CCh	4	5	150	15	15	15	35	70	Examination
Strength of materials	BS/CCh	4	5	150	15	15	15	35	70	Examination
Theory of mechanisms and machines	BS/CCh	4	5	150	15	15	15	35	70	Examination and term work/Project
Stability of Mechanical Systems	BS/CCh	4	5	150	15	15	15	35	70	Examination and term work/Project
Analytical dynamics and vibration theory	BS/CCh	4	5	150	15	15	15	35	70	Examination
Innovative materials	BS/US	4	3	90	15	15		20	40	Examination
Production practice I	BS/US	4	5	150						Total mark on practice
Technological processes of machine-building production	BS/US	4	5	150	15	15	15	35	70	Examination
Module 5. Designing bases										
Fundamentals of design and machine parts	BS/US	5	5	150	15	15	15	35	70	Examination and term work/Project
Bases of technology of mechanical engineering	BS/CCh	5	5	150	15	15	15	35	70	Examination
Design and manufacture of preparations	BS/CCh	5	5	150	15	15	15	35	70	Examination
Choice of workpiece in mechanical engineering industry	BS/CCh	5	5	150	15	15	15	35	70	Examination
Engineering creativity in mechanical engineering	BS/CCh	5	5	150	15	30		35	70	Examination

Key elements of manufacturing preparation in mechanical engineering	BS/CCh	5	5	150	15	15	15	35	70	Examination
Bases of scientific and technical creativity	BS/CCh	5	5	150	15	30		35	70	Examination
Bases of production of machines	BS/CCh	5	5	150	15	15	15	35	70	Examination
Design and production of preparations in mechanical engineering	BS/CCh	5	5	150	15	15	15	35	70	Examination
Theory of inventive problem solving	BS/CCh	5	5	150	15	30		35	70	Examination
Hydraulics and the hydropneumatic drive	BS/CCh	6	5	150	15	30		35	70	Examination
Optimization of calculations at design	BS/CCh	6	5	150	15	30		35	70	Examination
Manufacturing practice II	BS/US	6	5	150						Total mark on practice
Ergonomics	BS/CCh	6	5	150	15	30		35	70	Examination
Planning of the technological rigging	AS/CCh	6	5	150	15	15	15	35	70	Examination
Calculation and design of machine accessories in mechanical engineering industry	AS/CCh	6	5	150	15	15	15	35	70	Examination
Planning of the technological rigging	AS/CCh	6	5	150	15	15	15	35	70	Examination
Module 6. Machine equipment of machine-building production										
Planning and calculation of metal-cutting instrument	BS/CCh	6	5	150	15	15	15	35	70	Examination and term work/Project
Planning of instrument	BS/CCh	6	5	150	15	15	15	35	70	Examination and term work/Project
The cutting tool	BS/CCh	6	5	150	15	15	15	35	70	Examination and term work/Project
Machine equipment of tool production	AS/CCh	7	5	150	15	15	15	35	70	Examination and term work/Project
Metal-cutting machine tools	AS/CCh	7	5	150	15	15	15	35	70	Examination and term work/Project
Principles of machine desiqn	AS/CCh	7	5	150	15	15	15	35	70	Examination and term work/Project
Production practice III	AS/CCh	8	15	450						Total mark on practice
Module 7. Design of machine-building enterprises										
Automation and mechanization of technological processes in mechanical engineering	AS/CCh	7	5	150	15	30		35	70	Examination
Bases of planning of toolrooms	AS/CCh	7	5	150	15	30	0	35	70	Examination
Bases of planning of smith workshops	AS/CCh	7	5	150	15	30	0	35	70	Examination
Fundamentals of design of sites	AS/CCh	7	5	150	15	30	0	35	70	Examination
Preparation of machine-building production	AS/CCh	7	5	150	15	30		35	70	Examination
Mechanical engineering enterprise’s economics	AS/CCh	7	5	150	15	30		35	70	Examination
Module 8. Manufacturing engineering										

Fundamentals of design of machine manufacturing engineering processes	AS/CCh	6	5	150	15	15	15	35	70	Examination
The basics of repairing armored weapons and equipment	AS/CCh	6	5	150	15	15	15	35	70	Examination
Conveyor mechanisms in mechanical engineering	AS/CCh	6	5	150	15	15	15	35	70	Examination
Technology of overhaul of armored weapons and equipment	AS/CCh	6	5	150	15	15	15	35	70	Examination
Manufacturing engineering	AS/CCh	6	5	150	15	15	15	35	70	Examination
Manufacturing technology and machining methods of standard parts in mechanical engineering industry	AS/CCh	6	5	150	15	15	15	35	70	Examination
SAPR in mechanical engineering	AS/CCh	7	5	150	15	15	15	35	70	Examination
Manufacturing technology of parts on CNC machines	AS/CCh	7	6	180	15	15	30	40	80	Examination and term work/Project
Fundamentals of repair of electrical equipment and instrumentation and equipment of armored weapons and equipment	AS/CCh	7	5	150	15	15	15	35	70	Examination
Design of technological processes of machine manufacturing	AS/CCh	7	6	180	15	15	30	40	80	Examination and term work/Project
Preproduction planning of machining processes on computer controlled machines	AS/CCh	7	6	180	15	15	30	40	80	Examination and term work/Project
Technological processes of treatment on machine-tools with CNC	AS/CCh	7	6	180	15	15	30	40	80	Examination and term work/Project
Manufacturing technology of standard parts	AS/CCh	7	6	180	15	15	30	40	80	Examination and term work/Project
Technology of overhaul of electrical equipment and instrumentation and equipment of armored weapons and equipment	AS/CCh	7	5	150	15	15	15	35	70	Examination
Technology of production of machines	AS/CCh	7	6	180	15	15	30	40	80	Examination and term work/Project
Prediploma practice	AS/CCh	8	15	450						Total mark on practice
Final examination										
Diploma project		8	8	240						
Comprehensive exam		8	8	240						