

Ministry of Agriculture of the Republic of Kazakhstan  
S. Seifullin Kazakh Agrotechnical University

Reviewed  
at the meeting of the  
Academic Council  
Minute №\_  
«\_\_»\_\_\_\_\_ 2019

CONFIRM

Chairman of the Board

JSC S. Seifullin Kazakh University

A. Kurishbayev

\_\_\_\_\_ 2019 .



**EDUCATIONAL PROGRAM**  
**«Protective afforestation»**

Code and classification of education field:

6B08 Agriculture and bioresources

Code and classification of training direction:

6B083 Forestry

Code in the International standard classification of education:

0821

Degree: bachelor of agriculture in the educational program

**«Protective afforestation»**

Duration of study: 4 years

Team of authors:

Sarsekova D - doctor of agricultural Sciences, associate Professor, the Head of of "Forest resources and forestry" Department, S. Seifullina KATU;

Ebel A - candidate of agricultural Sciences of the Russian Federation, senior lecturer of "Forest resources and forestry", Deputy Dean of "Sary-arka" Agronomic faculty, KATU S. Seifullina;

Dudina N -senior lecturer of "Forest resources and forestry, S. Seifullina KATU;

Mazarzhanova K – candidate of agricultural Sciences senior lecturer of "Forest resources and forestry, S. Seifullina KATU;

Kopabayeva A – master of agricultural Sciences, senior lecturer of "Forest resources and forestry, S. Seifullina KATU .

The team of authors approved by the order of JSC "S.Seifullin Kazakh Agrotechnical University" № 932-N of 12.12.2018.

**Educational program "Protective afforestation"** reviewed at the meeting of "Forest resources and forestry" Minute № 6 from 04. 02 2019, approved by the Faculty Council Minute № 9 28. 05 2019

Dean of Agronomy Faculty

The Head of "Forest resources and forestry"

G. Stybaev

D. Sarsekova

## Content

№	Component Name	Page
1.	Passport of the educational program	4
2.	General characteristics of the educational program	4
3.	Competence model (portrait) of the graduate	5
4.	Base passage of professional practices	6
5.	Structure of the educational program	8
6.	Annex 1. Academic calendar	10
7.	Annex 2. Working curriculum	11
8.	Annex 3. Description of disciplines of compulsory and High school component s	13
9	Annex 4. Description of elective component disciplines	40

## **1 Passport of the educational program**

### **1.1 Purpose of the educational program:**

Modular educational program "Protective afforestation" in the direction 6B083 - "Forestry" is created on the basis of request of employers in connection with the increased need for experts in the field of forestry.

The modular educational program will allow the graduate to get deep theoretical knowledge and practical skills in accounting and protection of forest resources, forest management, creation of forest crops and cultivation of planting material, development of projects of forest nurseries, ways of creation of forest crops, protective forest plantations, technology of forest reclamation and reforestation.

The aim of the program is to prepare a competitive professional capable of production activities in the field of protective afforestation and forestry, the practical implementation of knowledge and further professional growth and creative development.

### **2 General characteristics of the educational program:**

The relevance of the EP is that the implementation of the state Strategy "Kazakhstan-2050" (according to which the area of forests in Kazakhstan by 2030 will increase to 5 %) requires training of highly qualified specialists ready to carry out forest management activities, planning of forest use, reforestation, protection of forests from fires and pests, the creation of forest protection. The need for work on the study of the state of forests of the Republic of Kazakhstan is also due to the increased anthropogenic impact on the environment and forest ecosystems.

Modern rates and quality of forest reclamation and forestry works in protective afforestation are low, they are often not complex, but fragmentary. Therefore there is a problem of training of highly qualified personnel in forest-steppe and steppe zones of Kazakhstan on EP "Protective afforestation".

Competitive advantages are highly qualified teaching staff, teaching in a foreign language, combining methods of domestic and foreign practice, training in computer classes and laboratories with the latest equipment.

The uniqueness is provided by obtaining deep theoretical knowledge and practical skills in accounting and protection of forest resources, forest management, methods of creating forest crops, protective plantations, forest reclamation technology directly in the forests of SNNP "Burabay", arboretum LLP "KazRIFA", RSE "Republican forest selection and seed center".

Stakeholders of the EP are enterprises in the field of forestry: the Council of the CLE "Association of forestry and wood processing organizations of Kazakhstan "Zhasyl Orman" SA forestry "Akkol", Akmola region, the Department of natural resources and environmental management of Astana and other regions of Kazakhstan.

### **3 Competence model (portrait) of the graduate**

#### **3.1 Professional fields of activity:**

The sphere of professional activity of graduates of the educational program "Protective afforestation" are: forestry, landscaping and improvement of settlements, commercial forestry, protective afforestation. The objects of professional activity of graduates are: state forestry institutions, national and natural parks, reserves, landscaping organizations, forest management and design enterprises, forest nurseries. Subjects of professional activity are: the organization of works on the account of forest resources and protection of the woods, forest management, creation of Forest culture and cultivation of landing material, gardening and improvement of settlements.

#### **3.2 Types of professional activity:**

Graduates in the direction 6B083 - "Forestry" educational program "Protective afforestation" can perform the following professional activities:

- industrial-technological;
- organizational and management;
- design.

#### **3.3 General education competencies:**

- to argue their own assessment of what is happening in the social and industrial spheres and use methods and techniques of historical description to analyze the causes and consequences of events in the modern history of Kazakhstan;

- to assess situations in various spheres of interpersonal, social and professional communication, taking into account the basic knowledge of sociology, cultural studies and psychology;

- demonstrate personal and professional competitiveness;

- apply in practice knowledge in the field of social Sciences and Humanities, which has world recognition and summarize the results of the study;

- to enter into communication in oral and written forms in Kazakh, Russian and foreign languages to solve the problems of interpersonal, intercultural and industrial (professional) communication;

- to use different types of information and communication technologies in personal activities.

#### **3.4 Core competencies:**

- to apply at a professional level their knowledge, understanding and abilities to solve problems in a new environment, in a broader interdisciplinary context;

- work with other specialists in joint projects and events;

- demonstrate teamwork, negotiation and organizational skills;

- positively perceive innovations and changes.
- have an idea about the nature of the main physiological processes of green plants, the mechanisms of regulation and the basic laws of the relationship of plants with the environment;
- know the methods of inventory, condition monitoring and inventory in forests;
- be able to perform in the field with the use of geodetic instruments measurements, description of boundaries and binding on the ground forestry objects on the ground.
- to know the forest-forming species of woody plants introduced in Kazakhstan;
- to own skills of evaluation and analysis of the environmental effects of the cutting of Mature, over-Mature stands, thinning and other types of care for forest.

### **3.5 Professional competencies:**

- to know and understand the technology, means and methods of reforestation that increase productivity and sustainability of forests, methods of afforestation to prevent water and wind erosion of soils and reclamation of man-made landscapes
- design, implement and control technologies for the creation and cultivation of forest crops, protective forest plantations;
- to develop projects of development of forests, regulations, production of forest crops, sanitary and health measures, fire-fighting arrangement of forest areas, forest nurseries, plantations, irrigation systems, taking into account environmental and economic parameters;
- to be able to plan and design forest protection measures, to justify their economic and environmental efficiency and expediency;
- have the ability to assess the quality of timber according to current standards;
- to use knowledge about forest resources for the organization of their rational use and definition of actions for reduction of anthropogenic impact on the territory.

### **4 Base passage of professional practices:**

Professional practice - 21 credits, including: educational practice 1 (botany and dendrology) – 4 credits; educational practice 2 (forestry and forest nurseries) – 4 credits; production – 10 credits, undergraduate practice -3 credits.

Students will be trained in the disciplines of "Botany" and "Dendrology" on the basis of JSC "Astana-Zelenstroy", RSE "Zhasyl Aimak" and in the urban parks and squares. Educational practice in the disciplines of "Forestry" and "Forest nurseries" will be held on the basis of Sandyktau training and production forestry and SA forestry "Akkol" Akmola region. Production and undergraduate practice to

be held at the following enterprises: State institutions for the protection of forests and wildlife, regional territorial inspections, enterprises: JSC "Astana-Zelenstroy", RSE "Zhasyl Aimak", JSC "Astana ormany", RSE "Republican forest breeding center", LLP "KazRIFA", State national natural parks, reserves, reserves and other protected areas of Kazakhstan, management of natural resources and environmental management, utilities responsible for the improvement and landscaping of settlements and other state institutions, as well as private firms engaged in activities in the field of forestry.

## 5 Structure of the educational program

№	Name of cycles and disciplines	Total labor intensity	
		in academic hours	in academic credits
1	2	3	4
<b>1</b>	<b>The cycle of General disciplines (GED)</b>	<b>1680</b>	<b>56</b>
	Required component	1530	51
	The modern history of Kazakhstan	150	5
	Philosophy	150	5
	Foreign language	300	10
	Kazakh (Russian) language	300	10
1)	Information and communication technologies (English)	150	5
	Module of socio-political knowledge (sociology, political science, cultural studies, psychology)	240	8
	Physical education	240	8
2)	High school component	150	5
	Ecology and basics of life safety	150	5
<b>2</b>	<b>Cycle of basic disciplines (BD)</b>	<b>3360</b>	<b>112</b>
1)	High school component	1530	51
	Professionally-oriented foreign language	120	4
	Professional Kazakh (Russian) language	90	3
	Forest botany and physiology of woody plants	120	4
	Educational practice in forest botany	60	2
	Dendrology	150	5
	Forestry with the basics of recreational use	180	6
	Educational practice on dendrology	60	2
	Training practice in forestry and forest nurseries	120	4
	Forest nursery business	180	6
	Forest cultures	150	5
	Biometrics in forestry	150	5
	Forest inventory	150	5
2)	Optional component	1830	61
	Forest soil science	120	4
	Meteorology	120	4
	Biology of forest animals and birds	120	4
	Engineering geodesy	150	5



	Mechanization of forest operations	120	4
	Forest science and forest resource studies	180	6
	Plantation forest cultivation	120	4
	Selection of forest tree species	150	5
	Forest regulation	150	5
	Forest management and forest legislation	150	5
	Geoinformation systems and forest remote sensing	150	5
	Forest economics	150	5
	Fundamentals of entrepreneurial activities in forestry	150	5
<b>3</b>	<b>The cycle of majors (MD)</b>	<b>1800</b>	<b>60</b>
1)	High school component	1800	60
	Greening of populated areas	180	6
	Forest fire science	150	5
	Forest protection	180	6
	Protective afforestation and forest reclamation	180	6
	Forest commodity science	150	5
	Wood processing technology	120	4
	Forest exploitation	180	6
	Basics of landscape art	150	5
	Labor protection in forestry	120	4
	Production practice	300	10
	Undergraduate practice	90	3
4	Additional types of training (Feb)		
5	Final attestation	360	12
1)	Writing and defending a thesis (project) or preparing and passing a comprehensive exam	360	12
	Subtotal	7200	240







### Annex 3. Description of disciplines of compulsory and High school components

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Modern history of Kazakhstan
2. Amount of credits	5
3. Prerequisites:	School basic knowledge
4. Post-requisites:	cultural studies, political science, philosophy, sociology
5. Competences:	Demonstrate knowledge of the main periods of formation of independent Kazakhstan's statehood; to relate phenomena and events of the historical past with the General paradigm of world-historical development of human society through critical analysis; to master the methods of historical description and analysis of the causes and consequences of events of contemporary history of Kazakhstan; to offer a possible solution to current problems based on the analysis of the historical past and evidence-based information; to analyze the security and value of modern Kazakhstan development model; to determine the practical potential of intercultural dialogue and respect for the spiritual heritage; to justify the fundamental role of historical knowledge in the formation of Kazakhstan's identity and patriotism; to form their own civil position on the priorities of mutual understanding, tolerance and democratic values of modern society.
6. The author of the course	Department of history of Kazakhstan
7. Main literature	1.Modern history of Kazakhstan . A textbook for students neveryh special. (baccalaureate) higher. studies'. institutions / B. Ayagan [et al.]. ;red. B. Ayagan; In-t history of the state of education and science of Kazakhstan. - Almaty: Rarity, 2010, 2.Aminov T. Modern history of Kazakhstan. Textbook. Astana., 2017. 3. Nazarbayev N. Era of independence.- Almaty: KAZ. Yaz. 4.Nurtazina R. national security of the Republic of Kazakhstan: studies.benefit.- Almaty: Bastau, 2014 5. Ertlesova G. Reforms of the 90s: interviews with key participants of the events. - Almaty: Publishing House Of KazGU.Al-Farabi, 2012. - 2016.
8. The content of the discipline.	Introduction to the discipline; Kazakhstan on the way to Independence stages of formation of the national state; Civil and political confrontation; Implementation of the Soviet model of state building; Contradictions and consequences of Soviet reforms in Kazakhstan in the second half of the XX century; the Policy of "perestroika" in Kazakhstan; Kazakhstan model of economic development; Social modernization-the basis of well-being of society; ethnodemographic processes and strengthening of interethnic harmony; Socio-political prospects of development and spiritual modernization; Policy of formation of new historical consciousness of the people of the great steppe; Kazakhstan-the state recognized by the modern world; N. Nazarbayev-the personality in history; Formation of the nation of the uniform future.

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Philosophy
2. Amount of credits	5
3. Prerequisites:	Sociology, political science, cultural studies, psychology, Modern history of Kazakhstan.
4. Post-requisites:	History and philosophy of science, philosophy of modern society.
5. Competences:	Formation of openness of consciousness, understanding of own national code and national consciousness, spiritual modernization,

	competitiveness, realism and pragmatism, independent critical thinking, cult of knowledge and education.
6. The author of the course	Department of philosophy
7. Main literature	1. Petrova V. F., Khasanov M. Sh. "Philosophy". - Almaty: Evero, 2014. 2. Bertrand R. "History of Western philosophy" - M.: Publisher Litres, 2018. - 1195 p. 3. Kenny A. "New History of Western Philosophy". Volume 1-4. – Oxford University Press, 2006 - 2010. ((Kenny Hey. New history of Western philosophy. Volum 1-4-Oxford University press, 2006-2010)
8. The content of the discipline.	The emergence and development of philosophy. Fundamentals of philosophical understanding of the world. Consciousness, soul and language. Being. Ontology and metaphysics. Human philosophy and the world of values. "Mangilik El" and "Ruhani Jangyru" - the philosophy of the new Kazakhstan.

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Sociology and political science
2. Amount of credits	4
3. Prerequisites:	Basic school knowledge
4. Post-requisites:	Philosophy, history and philosophy of science
5. Competences:	Formation of the ability to critically understand the system of interpersonal relations in society, awareness of the nature of society, its system of groups and institutions. Formation of social and humanitarian worldview as a basis for the modernization of public consciousness through knowledge of the laws and laws of world politics and modern political processes, as well as the formation of national and civil identity.
6. The author of the course	Department of philosophy
7. Main literature	1. Nazarbayev N. A. "a Look into the future: modernization of public consciousness".- Astana, 2017 2. Biekenov K. U., Biekenova S. K., Kenzhakimova G. A. "Sociology: Textbook". - Almaty: Evero, 2016. - 584c. 3. «Sociology. Fundamentals of General theory: textbook " / ed. GV Osipov, Ln Moskvichev. 2nd ed., ISPR. and DOP. - M.: Norma, 2015. - 912 p. 4. J. Macionis Society: The Basics. Pearson, 2016. (Masionis Jay. Society: See Basics. Parson, 2016.) 5. Heywood A. Politics. - N.-Y.: Palgrave Macmillan, 2013. ((Heywood Hey. Politics. – En. – Wye.: Palgrave Macmillan, 2013)
8. The content of the discipline.	Sociology in the understanding of the social world. Introduction to the theory of sociology. Sociological research. Social structure and stratification of society. Socialization and identity. Social change: the latest sociological discussions. Political science as a science and academic discipline. The main stages of formation and development of political science. Politics in the system of public life. Political power: the essence and mechanism of implementation. World politics and modern international relations.

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Cultural studies and psychology
2. Amount of credits	4
3. Prerequisites:	Basic school knowledge

4. Post-requisites:	Philosophy, history and philosophy of science
5. Competences:	The development of social and humanitarian worldview as the basis for the modernization of public consciousness through the formation of cultural identity, the ability to analyze and assess cultural situations on the basis of understanding the nature of cultural processes, the specifics of cultural objects, the role of cultural values in intercultural communication.
6. The author of the course	Department of philosophy
7. Main literature	1. Dzhakupov S. M. "Introduction to General psychology". - A.: Kazakh University, 2014 2. Rudenko A. M. "Psychology in diagrams and tables": a tutorial. - Moscow: Phoenix, 2016. -379 p. 3. Nurzhanov B. G., Erzhanova A. M. "Cultural Studies".- Almaty, 2011. 4. Department of philosophy, A. K., "Cultural studies:a workshop".- Almaty: KazNU. al-Farabi, 2014.
8. The content of the discipline.	The morphology of the culture. Language of culture. Culture of nomads of Kazakhstan. Cultural heritage of the Turks. Formation of the Kazakh culture. Personality in the context of the formation of national consciousness in psychology. Interpersonal communication as a factor in the development of a harmonious personality of Kazakhstan. Technologies of effective interpersonal communication as a basis of modernization of public consciousness.

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Ecology and basics of life safety
2. Amount of credits	4
3. Prerequisites:	Basic school knowledge
4. Post-requisites:	Forestry and forest resources, Forestry with the basics of recreational use, Landscaping settlements
5. Competences:	<p>To study the laws of existence, formation and functioning of biological systems at all levels – from the organism to the biosphere and their interaction with the environment.</p> <p>Be able to analyze the impact of environmental factors on the life of living organisms and habitat;</p> <p>Know the methods of analysis of environmental processes, setting specific tasks and priorities for the environment and society</p> <p>Correctly formulate and justify their point of view on topical issues of life safety</p> <p>To master the rules and methods of protection against environmental emergencies;</p> <p>Possess the basic methods of individual and collective protection of life and health in emergency situations of peace and war.</p> <p>Identify the causes and signs of possible consequences of environmental emergencies</p> <p>To use the acquired knowledge about the laws of interaction between living organisms and the environment in practice for environmental protection and life safety.</p>
6. The author of the course	Ecology and basics of life safety
7. Main literature	1. Perzadaeva A.A. Ecology: course of lectures - Astana: KATU them. S. Seifullina, 2009. 74 p. 2. Askarova U. B., Askarov N. B. Ecology and sustainable

	<p>development: textbook for universities. - Almaty: Print-Service, 2011. - 190 p.</p> <p>3. Korobkin V.I., Near L.V. Ecology: textbook for students of bachelor stage of engineering. prof. education /18th ed., DOP. and pererab. - Rostov n/A: "Phoenix", 2012. - 601 p.</p> <p>4. Alisheva K.A. Ecology: textbook-Almaty: NURPRESS, 2012. - 342 p.</p> <p>5. Nurmukhambetova R.T. Ecology and sustainable development: studies. benefit-Astana: KazATU.S. Seifullina, 2013. - 206 p.</p> <p>6. Satova K.M. Abseitov E.T. Ecology and sustainable development: educational and methodical complex.- Astana: KazATU.S. Seifullina, 2013. - 159 p.</p> <p>7. Gordienko V.A. et al. Ecology and sustainable development: studies. benefit. Part I / Federal state budget. educated. institution of the highest. professional education Moscow state University. M. V. Lomonosov. - KazATU them. S. Seifullina. - Astana, 2014. - 267 p.</p> <p>8. Abdimuratov Zh.S., Khakimzhanov T.E., Dyusebaev M.K. occupational Safety and fundamentals of life safety: lecture notes for students of all forms of education spec. 050717-heat power Engineering. - Almaty: AIEs, 2007. - 41 p.</p>
8. The content of the discipline. The General concept of ecology and the basics of life safety, as a theoretical basis for the protection of society and nature. The relationship of organisms with the environment and living conditions. Vernadsky's V.I. biosphere concept. Definition of the modern noosphere. Environmental problems of our time. Fundamentals of life safety. The concept of technosphere. Principles of safety of human interaction with the environment. Potential, real and realized hazards of natural and man-made origin.	

<b>1. Основная информация о дисциплине:</b>	
Name of the discipline	Kazakh (Russian) language
2. Amount of credits	10
3. Prerequisites:	School course of Kazakh (Russian) language and literature
4. Post-requisites:	Professional Russian language
5. Competences:	<p>To have basic communication skills in Kazakh/Russian languages: to understand, Express, interpret concepts, thoughts, feelings, facts and opinions both orally and in writing (listening, speaking, reading, writing) in the appropriate range of social and cultural contexts. Competently execute business documentation and conduct business correspondence. Have an idea of working with scientific text.</p> <p>The study of the language system of the Kazakh language and its ways through cultural and intercultural activities, improving speech skills of language learners on the basis of texts on everyday, social topics, the formation of lexical and grammatical skills</p>
6. The author of the course	Department of Kazakh and Russian languages
7. Main literature	<p>1. Russian language: textbook for students of Kazakh departments of universities (bachelor's degree) / ed. Akhmedyarov, K. K. Zharkynbekova. - Almaty: Kazakh University, 2008.</p> <p>2. Mukhamadiev H.S. Handbook of scientific style of speech. Russian. - Almaty: Kazan University, 2009.</p>



	<p>3. Fedosyuk M.Yu., Ladyzhenskaya R.A., Mikhailovskaya O.A., Nikolina N.A. Russian language for non-Philology students: textbook. - M., 2000. - 256 p.</p> <p>4. Aitbayeva B.M. textbook of the Kazakh language (level B1). - Karaganda, 2014. 205c.</p> <p>5. Bozbayev-Hungaski S.T., Balabekov K.S., Kosmambetova G.K., Salihov S.O., Gasimova V.R. Kazakh language textbook for intermediate level. National testing center. - Astana: 2017.</p>
<p>8. The content of the discipline. Language and its main functions. Speech: types and forms of speech. Functional and semantic types of speech. Functional styles of speech. General characteristics of functional speech styles. The General concept of the scientific style of speech. Features of scientific style at the lexical, morphological, syntactic level. Structure and meaning of the text. Communicative tasks of the text. The role of the sentence in the text. Text-forming functions of the sentence. The topics of the text. Thesis of the scientific text. Compositional and semantic structure of the scientific text. Synopsis of the scientific text. Annotation of scientific texts. Types of annotations. Abstracting of scientific texts. Types of abstracts. Reviewing the scientific text. The structure of the scientific review. Review of scientific work. Summary-conclusions. Culture of oral speech (General concept). Cultural norms of speech (orfograficheskii, lexical, morphological, syntactic rules). Culture of speech behavior in the professional sphere. Qualities of a good (model) of speech. Improving the ethics of speech behavior (speech etiquette, business etiquette). Types of business communication (business conversation, telephone conversations). Sports complex. National sport. National holidays Freedom of conscience Religious and religious knowledge. Religious holiday. National tradition. Fashion world. Design. National costume. National ornament. Language. Culture. Art. Masters of the art. Education. Vocational guidance.</p>	

<b>1. Основная информация о дисциплине:</b>	
Name of the discipline	Foreign language
2. Amount of credits	10
3. Prerequisites:	School course of Foreign language
4. Post-requisites:	Professional oriented foreign language
5. Competences:	<p>As a result of the development of the program the student has the following competencies:</p> <ul style="list-style-type: none"> <li>- systematizes the conceptual basis for understanding the communicative intentions of the partner, the authors of texts at this level;</li> <li>- compares and selects the appropriate communicative intention forms and types of speech / communication with adequate type of speech logical construction;</li> <li>- adequately expresses its own communicative intentions with the correct selection and appropriate use of appropriate language tools, taking into account their compliance with the socio-cultural norms of the language being studied;</li> <li>- classifies the levels of use of real facts, references to authoritative opinion; speech behavior is communicative and cognitively justified;</li> <li>- identifies patterns of development of a foreign language, paying attention to the study of stylistic originality;</li> <li>- master the techniques of linguistic description and analysis of the causes and consequences of events in the texts of scientific and social nature;</li> <li>- expresses in a foreign language possible solutions to modern problems based on the use of reasoned information;</li> </ul>

	- owns the strategy and tactics of building a communicative act, correctly intonation prepares speech, based on lexical sufficiency within the speech subjects and grammatical correctness.
6. The author of the course	Foreign languages Department
7. Main literature	<p>1 McMillan Dictionary of Contemporary English. - McMillan, 2010.</p> <p>2 R. Harrison, S. Philpot, L. Curnick. New Headway Academic Skills. Reading, Writing, and Study Skills. Oxford University Press. - 2009.</p> <p>3. ArlineBurgmeier, Lawrence J. Zwier, Bruce Rubin, Kent Richmond. Inside Reading. The Academic Word List in Context. Pre-Intermediate to Advanced. Oxford. - 2009.</p> <p>4. Murphy Raymond. Essential Grammar in Use. Intermediate. Cambridge University Press. – 2010.</p> <p>5. British National Corpus: <a href="http://www.natcorp.ox.ac.uk">http://www.natcorp.ox.ac.uk</a></p> <p>6. The Corpus of Contemporary American English (COCA): <a href="http://www.americancorpus">http://www.americancorpus</a>.</p>
8. The content of the discipline. Level A1-B1 (1 semester).	<ol style="list-style-type: none"> <li>1 Greeting.</li> <li>2. My family.</li> <li>3. My house.</li> <li>4. Food.</li> <li>5. Purchase.</li> <li>6. Man and his health.</li> <li>7. Sport in human life.</li> <li>8. Leisure.</li> <li>9. Native country and THIS.</li> <li>10. Daily routine</li> <li>11. World map.</li> <li>12 Protection of the environment.</li> <li>13. My education.</li> <li>14. Famous universities of the world.</li> <li>15. Modern study and modern gadgets.</li> </ol> <p>Level A1-B1(2lb)</p> <ol style="list-style-type: none"> <li>1. Family in modern society.</li> <li>2. Family budget.</li> <li>3. Type of housing.</li> <li>4. Modern design.</li> <li>5. Organization of rest</li> <li>6. Travel, travel Agency</li> <li>7. Spiritual revival.</li> <li>8. The state and the political system.</li> <li>9. The state and the political system.</li> <li>10.Holidays.</li> <li>11.Education system in Kazakhstan.</li> <li>12.The education system in SIYA.</li> <li>13.Future profession.</li> <li>14.Advantages and disadvantages of different professions.</li> <li>15.Demand for the chosen profession.</li> </ol> <p>Level A2-B1( 1 semester)</p> <ol style="list-style-type: none"> <li>1. Me and my family.</li> </ol>

2. Modern young family.
3. Relations between representatives of different generations.
4. My home is my fortress
5. Man and his health
6. Sport in human life.
7. Leisure and Hobbies
8. Native country and THIS
9. Native country and country / countries of the studied language, geographical location, climate, weather, capital
10. Sights of the cities of Kazakhstan and the country of the studied language.
11. Customs and Traditions.
- 12 Traditions and customs of the country of the studied language
- 13 Cultural and national holidays
14. My education. Education.
15. Future profession.

Level A2-B1( 1 semester)

1. Family in modern society
2. The budget of a young family and the main items of expenditure
3. Housing construction; types of housing
4. Modern design; architecture; home improvement; interior decoration;
5. Active, passive recreation; tourism
6. Recreation and recreation
7. Cultural and historical background of national symbols of the countries
8. Political structure, economic sectors
9. National, state, professional and other holidays
10. Historical significance of these holidays
11. The education system in the Republic of Kazakhstan and THIS
12. The choice of University, field of study, standards of admission, trajectory of education, individual educational program
13. Future profession, professional competence
14. Advantages and disadvantages of different professions
15. The demand for selected professions in the labor market

Level B1-B2 (1 Semester)

1. Family in modern society.
2. Budget of a young family.
3. Types of housing (urban, rural house, apartment).
4. Modern design.
5. Planning holidays.
6. Tourism; recreation and recreation; entertainment.
7. Spiritual revival (Ruhengeri)
8. Cultural and historical background of national symbols of Kazakhstan and SIYA.
9. State structure, legal institutions of the Republic of Kazakhstan and SIYA.
10. Branches of economy of RK and SIYA.
11. Holidays Of The Republic Of Kazakhstan.
12. Holidays of the country of the studied language.
13. Nauryz is a holiday of spring birth!
14. Kazakhstan: Festive rituals, cultural projects. Traditions and customs.
15. SIA: Holiday rituals, cultural projects. Traditions and customs.

Level B1B2 (2 Semester)

1. Man and nature.
2. Environmental problem.
3. Scientific and technical progress.

4. Scientific and technical progress.
5. The world's media.
6. Advertising.
7. Art, music, literature of Kazakhstan and the country of the studied language.
8. Outstanding cultural figures of the country of the studied language.
9. Education system in Kazakhstan.
10. The education system in the country of the studied language.
11. choice of University.
12. Professional competence.
13. Advantages and disadvantages of the chosen profession.
14. The demand for the chosen profession in the labor market.
15. Wages.

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Information and communication technology
2. Amount of credits	5
3. Prerequisites:	Mathematics, physics
4. Post-requisites:	Geoinformation systems and remote sensing of forests, forest Management, Biometrics in forestry
5. Competences:	As a result of studying this discipline, students will be able to: <ul style="list-style-type: none"> <li>- design and build simple websites;</li> <li>- to process vector and raster images;</li> <li>- create multimedia presentations;</li> <li>- use different social platforms to communicate;</li> <li>- use various forms of e-learning to enhance professional knowledge;</li> <li>- use a variety of cloud services.</li> </ul>
6. The author of the course	Department of information and communication technologies
7. Main literature	<ol style="list-style-type: none"> <li>1. Shynybekov D.A., Uskenbayeva R.K., Serbin V.V., Duzbayev N.T., Moldagulova A.N., Duisebekova K.S., Satybaldiyeva R.Z., Hasanova G.I., Urmashhev B.A. Information and communication technologies. Textbook: in 2 parts. Part 1, 1st ed. - Almaty: IITU, 2017. - 588 p., ISBN 978-601-7911-03-4 (A textbook in English with the stamp of the Ministry of Education and Science of the Republic of Kazakhstan)</li> <li>2. Shynybekov D.A., Uskenbayeva R.K., Serbin V.V., Duzbayev N.T., Moldagulova A.N., Duisebekova K.S., Satybaldiyeva R.Z., Hasanova G.I., Urmashhev B.A. Information and communication technologies. Textbook: in 2 parts. Part 1, 1st ed. - Almaty: IITU, 2017. - 588 p., ISBN 978-601-7911-04-1 (A textbook in English with the stamp of the Ministry of Education and Science of the Republic of Kazakhstan)</li> <li>3. Urmashhev B.A. Information and communication technology: Textbook / B.A. Urmashhev. – Almaty, 2016. - 410 p., ISBN 978-601-7940-02-7 (A textbook in English with the stamp of the Ministry of Education and Science of the Republic of Kazakhstan)</li> <li>4. Nurpeisova T. B., Kaidash I. N. ICT. Textbook / Almaty, publishing house Bastau, 2017, 183 p.</li> <li>5. Nurpeisova T.B., Kaidash I.N. ICT, Almaty, Bastau, 2017. 241 p.</li> </ol>
8. The content of the discipline.	The role of ICT in key sectors of society. Standards in ICT. Introduction to computer systems. Architecture of computer systems. Software. Operating system.

Human-computer interaction. Database system. Data analysis. Data management. Networks and telecommunications. Cybersecurity. Internet technology. Cloud and mobile technologies. Multimedia technology. Smart technology. E-technology. E-business. E-learning. E-government. Information technologies in the professional sphere. Industrial ICT. Prospects for ICT development.

**1. Основная информация о дисциплине:**

Name disciplines	«Physical culture»
Amount of credits	8
Prerequisites	biology, anatomy, human physiology, hygiene, medical control, valeology, pedagogy, psychology
Post-requisites	The program of the course" Physical culture " develops skills and abilities in the field of physical culture of students, forms the needs for maintaining a healthy lifestyle, maintaining and strengthening health, improves the level of physical fitness for the realization of their abilities in the process of daily activities
Competences	Ensuring a sufficient level of physical readiness of future specialists, a high level of performance; the development of professionally significant physical and psychomotor abilities; own methods and means of physical culture to increase the adaptive reserves of the body and promote health; possess knowledge and skills of a healthy lifestyle, methods of preservation and promotion of health and their application to preserve health.
The author of the course	Kurkov A., SatbayevE.
Main literature	1. V. Ilyinich. Physical culture of the student. Moscow, 2001. 2.G. Ivanov, A. K. Kulnazarov. Physical education of students. Almaty, 2002 3. Theory and methods of physical education. Under the General editorship of O. P. Matveyev and Dmitry Novikov. M., 2005.
8. The content of the discipline. Formation of positive attitude, interest and need in physical culture and sports. Increase of physical health of students on the basis of increase of Arsenal of motor abilities, professionally-applied and methodical readiness. Preparation and participation in mass sports and recreational activities and competitions in sports, providing for the broad involvement of students in active physical education. Complex use of means of physical culture and sports by type of General physical preparation. Increasing the level of physical and functional condition. Preventive use of means of physical culture for the improving purposes. Acquisition by students of additional, necessary knowledge on bases of psychological, pedagogical, medical and biological control on a technique and the organization of independent occupations by physical exercises and "lifelong" sports.	

**1. Основная информация о дисциплине:**

Name of the discipline	Professionally-oriented foreign language
2. Amount of credits	4
3. Prerequisites:	Basic school knowledge, Dendrology, Professional Kazakh (Russian) language, Biometrics in forestry, Ecology and basics of life safety
4. Post-requisites:	Forest nursery business, Forest crops, Forest inventory, forest Management
5. Competences:	Ability to abstract thinking, analysis, synthesis. Readiness for self-development, self-realization, use of creative potential. Readiness to communicate orally and in writing in English to solve problems in the field of forestry. Possession of ability to

	<p>analyze and planning in the field of forestry</p> <p>Know:</p> <ul style="list-style-type: none"> <li>- read educational and other literature in a foreign language on forestry for receiving and transmitting information;</li> <li>- give abstracts and reviews of scientific theses and articles in a foreign language;</li> <li>- conduct a conversation, make reports and reports on forestry in a foreign language;</li> </ul> <p>Have the skills:</p> <ul style="list-style-type: none"> <li>- monologue speech on the topic of specialty;</li> <li>- dialogical speech, allowing to participate in the discussion of issues related to his specialty;</li> <li>- conduct conversations on social and socio-political topics;</li> <li>- rate of reading special texts depending on the purpose.</li> </ul>
6. The author of the course	Kitaybekova Sara
7. Main literature	<p>1. Wood Industry and Forestry / Comp. I. V. Oganesyants. - Leningrad, 1971. – 16s.</p> <p>2. Tokareva T. V. English for Foresters. English for professionals in forestry: a training manual. 2nd ed., the Rev.,</p> <p>3. Yoshkar-Ola: Mari state technical University, 2009, 220 p.</p> <p>4. Large English-Russian dictionary in 2 vols. / ed. I. R. Galperin. - M., 1979.</p> <p>5. Electronic manual " Cambridge English Grammar»<a href="http://www.gerasoft.com/english.html">URL:http://www.gerasoft.com/english.html</a></p>
8. The content of the discipline:	<p>Forest science; Botanical classification of wood; Basic terms and terminology in dendrology in a foreign language; Terms used in the training of foresters and landscapers. Types of forests-Types of forests; how the tree grows-How a tree grows; Horse system and function-Root structure and function; trunk Structure and function-Stem structure and function; leaf Structure-Leaf structure; forest Health-Forest health; Forests in Kazakhstan-Forests in Kazakhstan; advantages of forests-Forestry advances; Planting a tree to restore the environment - Tree planting for environment restoration;</p>

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Professional Kazakh (Russian) language
2. Amount of credits	3
3. Prerequisites:	Russian language, Kazakh language, dendrology, Forest botany and physiology of woody plants
4. Post-requisites:	Forest cultures, Forestry with bases of recreational use, forest nursery business, Biometrics in forestry, forest taxation, forest management.
5. Competences:	<p>To understand, analyze, summarize and reproduce the information contained in scientific texts on the specialty in Russian in a given volume: to argue their point of view. Names, concepts and content of terms used in forestry and landscaping;</p> <p>To be able to work in a team and independently, to perceive diversity and intercultural differences. To read and write correctly the language units and names in professional Russian (Kazakh) language; to determine the components and meaning of forestry terms, concepts and terms about the elements.</p> <p>Use the Russian language in educational and professional activities. To improve skills in all types of speech activity</p>

	(writing, speaking, listening, reading) in Russian to solve problems of professional communication. To study and put into practice new methods of research and processing in the field of forest resources
6. The author of the course	Tumenbaeva Assel
7. Main literature	1 Vvedenskaya L. A. Culture and art of speech / L. A. Vvedenskaya. - Rostov on D., 2006. - 165 p. 2 Golub I. B. Russian language and culture of speech / I. B. Golub. - Moscow: Logos, 2005. - 183 p. 3 Ganapolskaya E. V. Russian language and culture of speech. Seventeen practical training/ E. V. Host. M.: Logos, 2005. - 136 p. 4 Ganapolskaya E. V. Russian language and culture of speech. Seventeen practical training/ E. V. Host. M.: Logos, 2005. - 136 p. 5 Solganik G. Ya. Culture of oral and written speech of a business person: Handbook-workshop / G. ya. Solganik. - Moscow: Logos, 2015. - 186 p. 6 Burtseva V. V. Dictionary of foreign words / V. V. Burtseva. - M., 2004. - 206 p. 7 Antonova E. S. Russian language and culture of speech / E. S. Antonova, T. M. Voiteleva. - M.: Academy, 2012 -105 p. 8 Muravyeva N. V. University information resources and communicative culture of young specialists / N. V. Muravyeva, V. V. Strunina // Social and humanitarian knowledge.-2007.- No. 5. - Pp. 23-25.
8	The content of the discipline. Language as a system. Stylistics. Development of skills of formulation of the theme of scientific research. Basic terms and stable phrases in professional Russian. Selection of material on the topic and problem of scientific research. The rules of the bibliography. Culture of professional speech. Style-forming features of scientific style. Forms of existence of scientific speech. Lexical features of scientific style of speech. Text: structural and semantic features. Annotation. Editing of scientific texts. Text: structural and semantic features. Features of business style. Personal documentation. Administrative and clerical litter. Requirements for registration of details of documents. Terms used in forest pyrology, forest crops, forest nurseries, commodity science, forestry, forestry, dendrology and forest biometrics.

<b>Basic information about the discipline:</b>	
Name of the discipline	Forest botany and physiology of woody plants
2. Amount of credits	4
3. Prerequisites:	Basic school knowledge
4. Post-requisites:	Dendrology, Forest cultures, Selection of forest tree species, Protective afforestation and forest reclamation, Wood processing technology
5. Competences:	Anatomical and morphological structure of tissues, organs of tree and shrub species of plants, their functions and formation in the process of ontogenesis and phylogenesis; the relationship of plant organisms and the environment; knowledge and understanding of the essence of the processes of plant life, metabolism in the process of ontogenesis, patterns of water metabolism, photosynthesis, mineral nutrition, respiration, growth, development, especially the formation of productive organs of woody plants, fruit crops and shrubs, adaptation and

	<p>resistance of plants to adverse factors.</p> <p>Know:</p> <ul style="list-style-type: none"> <li>- work with a microscope and prepare anatomical preparations;</li> <li>- to carry out morphological analysis of plants as a whole and individual organs, to recognize the metamorphosis of plants;</li> <li>- to recognize signs of the main families and representatives of the vegetation cover of different types of biocenoses;</li> <li>- acquisition of practical skills to determine the productivity of tree shrub crops;</li> <li>-the study of the theoretical foundations for production of maximum yields of woody plants and fruit crops.</li> <li>- study the influence of mineral nutrition and growth regulators on the growth and development of plants;</li> <li>- conduct biochemical analysis of different cultures.</li> </ul> <p>Own:</p> <ul style="list-style-type: none"> <li>- Demonstrate basic understanding of the diversity of biological objects</li> <li>- to apply modern experimental methods of work with biological objects in field and laboratory conditions, skills of work with a microscope;</li> <li>- to justify the importance of physiological and biochemical phenomena as a theoretical basis for a system of techniques aimed at increasing plant productivity, improving the quality of wood products;</li> <li>- independent search, analysis and evaluation of the research, the ability to be creative in professional activities, the ability to continue training in the field of physiology of woody plants in the educational programs of the magistracy.</li> </ul>
6. The author of the course	Muranetz A., Zhaksylykova A.
7. Main literature	<ol style="list-style-type: none"> <li>1. Andreev N. G., Andreev L. N. Basics of agronomy and botany: Basics of agronomy and botany: studies. - help. for S. H. universities. - Moscow: Kolos, 2004.- 487c.</li> <li>2. Andreeva I. I., Rodman L. S. Botany.- Kolos, 2005.- 528c.</li> <li>3. Hrzhanovsky V. G. Course of General botany M: Higher.school, 1982, vol. 1-2</li> <li>4. Tutak V. H.. Anatomy and morphology of plants.M.: High school, 1980</li> <li>5. Zhukovsky P. M. Botany.M.: Higher. School, 1982, vol. 1-2</li> <li>6. Khrzhanovsky V. G., Ponomarenko S. V. Workshop on the course of General botany.M.: High school, 1979</li> <li>7. Khrzhanovsky V. G., Viktorov V. S. et al. Botanical geography with the basics of botany.L.: Kolos, 1979</li> <li>8. Muranets A. P., Netesova M. A. Workshop on botany Astana, 2006</li> <li>9. Lotova L. I. Morphology and anatomy of higher plants. M.: Komkniga, 2007. 510c.</li> </ol>
<p>8 The content of the discipline: Forest botany as a component of biological diversity Sciences in higher classical education is a basic biological discipline among General professional disciplines of all biological specialties in the system of training of forestry specialists. This discipline allows us to fully consider the external and internal structure of the lower and higher plant organisms, their development. The study of this discipline will give students not only theoretical basic understanding of the structure</p>	



of cells, tissues, morphology and anatomy of vegetative and generative organs of plants, plant taxonomy, but they will also receive practical skills necessary for the development of compulsory disciplines.

The physiology of woody plants studies the processes of vital activity, functions of the plant organism, chemical composition, transformation of substances and energy in plants throughout their ontogenesis under all possible environmental conditions. Intensive use of mineral fertilizers, physiologically active substances, requires a deep and comprehensive study of their impact on the growth and metabolism of plant organisms in order to significantly increase the productivity of tree and shrub crops.

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Dendrology
2. Amount of credits	5
3. Prerequisites:	Forest botany and physiology of woody plants, Ecology and basics of life safety
4. Post-requisites:	Forestry and forest resources, Forestry with the basics of recreational use, Forest crops, forest nursery business, Forest inventory, Landscaping settlements
5. Competences:	To know botany, the study of woody plants: trees and shrubs; species and their distribution areas; morphology of plants; The ability to select an assortment of wood species for different forms of their use in accordance with their environmental characteristics. Be able to select new tree and shrub species for landscaping, introduction, to justify their position; be able to scientifically approach the placement of forest plantations, creating parks, landscaping streets; - have a sense of tolerance, respect the opinion of other experts. - practical skills in the introduction of trees and shrubs used in landscaping
6. The author of the course	Maisupova I., Kopabayeva A.
7. Main literature	1. B. M. Mukanov, B. D. Baisupova, M. V. Shabalina. Dendrology. Almaty, Nuray Print service, 2011. 2. V. F. Abaimov. Dendrology, 3rd edition. "Academy", M., 2009. 3. Bogdanov P. L. Dendrology-Moscow: Forest industry, 1974-p. 240
8. The content of the discipline.	The concept of environmental factors and ecological properties of plants: climatic, soil, biotic, anthropogenic factors, their impact on woody plants. Fundamentals of the doctrine of vegetation. Botanical species, its range. Introduction of woody plants and its significance. General characteristics of the Department of gymnosperms and angiosperms. Features of species zoning of Kazakhstan. Decorative properties of the crown, trunks, flowers, leaves. Development and duration of woody plants. The main phases of development of woody plants

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Forestry with the basics of recreational use
2. Amount of credits	6
3. Prerequisites:	Forest botany and physiology of woody plants, Dendrology, Ecology and environment, Biometrics in forestry, forestry and forest resources

4. Post-requisites:	Forest nursery business, Forest crops, Forest inventory, geographic Information systems and remote sensing of forests, forest Protection, forest Management
5. Competences:	<p>Know and understand: the Morphological structure of the forest. Theoretical foundations of forest biology and ecology, forest types. Features of seed and vegetative renewal of the wood, change of breeds. Ways of the main cabins and cabins of intermediate polzo-tion. Methods to promote the natural regeneration of forests. Knowledge of the main recreational resources, recreational zoning, basic principles of optimization of recreational forest management.</p> <p>To be able: to Organize and carry out cutting works on cabins of leaving and cabins of the main use. Competently to organize economic activity of the forest enterprise in the conditions of market economy by the principle of continuity and a post of use of forest resources. Provide protection of the woods from fires and in case of their emergence correctly to organize their suppression. Acquisition of practical skills to identify and describe recreational potential, development of a system of measures to improve the sustainability and productivity of recreational forests.</p> <p>Possess: Be able to use in practice the knowledge gained in the discipline "Forestry". To make plans for the organization of recreational areas. To choose the most appropriate method of forest improvement, to assess the need for economic activities. In the field of training-to apply modern experimental methods of work in the use of forests and recreational use of forests Skill with scientific literature and its analysis, the study of innovative methods and their implementation in practice</p>
6. The author of the course	Kurmangaliyev Z. S., Mazarzhanova K.M.
7. Main literature	<ol style="list-style-type: none"> <li>1.Melekhov I. S. Forestry. - Moscow: MGUL, 2003.</li> <li>2.Belov S. V. Forestry. M., 1983.</li> <li>3.Lugansky N. A., Zalesov S. V. et al. Forestry, Ekaterinburg, 2001.</li> <li>4. Rules of logging in the forests of Kazakhstan. Shuchinsk. 2005.</li> <li>5.Utrobina V. G., I. K. Even thinning and intermediate use. M., 1985.</li> <li>6.Baizakov S. B., Gursky A. A., Amanbaev A. K., Toktasynov Zh. n. Forests and forestry of Kazakhstan, Almaty, 1996.</li> <li>7.Gudochkin M. V., Shepherd P. S. Forests of Kazakhstan, Alma-ATA, 1958.</li> <li>8.Morozov G. F. the Doctrine of the forest. Ed.5. M. L. 1949</li> <li>9.Kuramshin V. Y. Management in recreational forests. M., "Agropromizdat", 1988.</li> <li>10. Moiseev V. S., Yankovsky L. N. et al. Construction and reconstruction of forested areas. L., 1990.</li> <li>11.Zhuravkov A. F. Fundamentals of farming in the forests of green zones. V., 1973g.</li> <li>12. Tulipov N. M. Forestry. L., 1975</li> </ol>
8. Content of discipline: the Concept of the forest. The main elements of the forest. The thinning of	

the forest. Technique of felling care. Organization of work on the cabins care. Special types of logging forest care. Cabins of the main use. Selective cutting. Continuous logging. Concentrated cabins. Conditionally-continuous cabins. Gradual felling. Dependence of the choice of the method of felling on the silvicultural properties of the breed. Clearing of places of cabins. Methods to promote the natural regeneration of forests.. Forest protection. Forest fire. Methods of extinguishing forest fires. Forest and forest Park management in suburban recreational forests, in terms of their mass visits by tourists and vacationers.

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Forest nursery business
2. Amount of credits	6
3. Prerequisites:	Dendrology, Forest botany and physiology of woody plants, forestry and forest resources
4. Post-requisites:	Forest crops, Plantation forest cultivation, Selection of forest tree species, Protective afforestation and forest reclamation
5. Competences:	<p>As a result of the study the student should know:</p> <ul style="list-style-type: none"> <li>- theoretical bases of forest seed business and biological features of the main tree and shrub species, bases of design of forest nurseries;</li> <li>principles of seed zoning and agro-technical care, growing pastoznyh materials;</li> </ul> <p>Be able to: predict the yield of tree and shrub species;</p> <ul style="list-style-type: none"> <li>- create a forest nursery project;</li> <li>- to determine the sowing qualities of forest seeds (moisture, purity, germination, viability, goodness, germination energy, weight of 1000 seeds);</li> <li>- draw up documentation on the quality of forest seeds (passport, act of selection of the average sample, certificate of seed conditioning), use GOST.</li> <li>- agrotechnics of cultivation of forest planting material</li> </ul> <p>Own:</p> <ul style="list-style-type: none"> <li>- ability to make projects of forest nursery and to distinguish and recognize menyany; to make settlement and technological cards on cultivation of landing material and to use standard reference material.</li> </ul> <p>Acquire practical skills to use the normative reference material. draw up documentation on the quality of forest seeds, use GOST</p>
6. The author of the course	Mazarzhanova K.M., Maisupova I.
7. Main literature	<ol style="list-style-type: none"> <li>1. Redko G. I. Forest culturess B2H. Part 2-nd ed.6 ISPR. And additional Textbook for academic undergraduate. Arkhangelsk, 2018</li> <li>2. Kentbayeva B. A. Seed business. - Almaty, 2015zh.</li> <li>3. Malakhovets P. M.. Forest cultures.Textbook.The CPI Arkhangelsk NARFU, 2012</li> <li>4. Kruk N. K., Gvozdev N. K. course of lectures on discipline "Forest culturess and protective afforestation". Minsk 2012</li> <li>4. Kentbayev E. J. Kentbaeyva B. A. Trees and shrubs of Kazakhstan for forest cultivation. - Almaty, 2011zh.</li> <li>5. Baizakov S. B., et al. Forest culturess of Kazakhstan. - - Almaty, 1 kN., 2007.</li> <li>6. Maisupova I. K..Orman Tim s PN boiynsha 5B080700-</li> </ol>

	<p>resurslari Orman and Orman sarasalai mamangun sertanly-tarryall glycinin aralen Demek nseula. Astana 2014</p> <p>7. Ushakov M. I., A. V. Kapralov, V. N. Deyneko, A. V. Grigorieva, V. V. Fomin, A. S. Popov. Seed business. Training manual for laboratory work. Part 1. Ural state forestry engineering University. Yekaterinburg., 2018</p>
--	---

8. The Content of the discipline. Seeds as the main source material, the needs for forest seeds and the volumes of harvesting in Kazakhstan. Structure of fruit and seed. Fruiting of trees and shrubs. Accounting and forecast of forest seed yields. Yields of seeds in plantations. The organization of forest seed base. Selection and genetic prerequisites of forest seed production. Selection of a category of seeds. Selection evaluation of trees and plantings. Seed plots (permanent and temporary), seed plantations, methods of laying, cultivation and operation. A survey of the plantations prior to mass harvesting of seeds and evaluation of their quality.

General information about tree nurseries. Development of forest nursery economy in Kazakhstan. Types of planting material and their intended use; types of nurseries: forest, decorative, fruit and berry. The organization of the nursery. Organizational and economic plan of the nursery: project assignment, planning and cartographic material, explanatory note, technical calculations of the cost of grown products. General, useful, producing and auxiliary areas; calculation of the area of sowing, school Department of rooting cuttings, utero-cuttings plantation, auxiliary and total nursery area by conventional methods and using a computer. Crop rotations in forest nurseries. Treatment of soil in forest nurseries of the Primary development site for the nursery. Application of fertilizers and herbicides in forest nurseries. The seed Department. Care of crops and seedlings. The school office. Types of wood schools and their purpose, school decorative species. Crop rotations in schools. Tillage.

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Forest cultures
2. Amount of credits	5
3. Prerequisites:	Forest nursery business, dendrology, forest soil science, Forestry with the basics of recreational use
4. Post-requisites:	Selection of forest tree species, Mechanization of forestry operations, Forest inventory, Geographic information systems and remote sensing of forests, Protective afforestation and forest reclamation
5. Competences:	<p>Know:</p> <ul style="list-style-type: none"> <li>- history of forestry in the Republic of Kazakhstan;</li> <li>- the state of silvicultural Affairs in the Republic of Kazakhstan and the role of the studied subject in the decision of production works on reforestation;</li> <li>-- the main normative documents on reforestation and afforestation in the Republic.</li> <li>- to use in practice the methods of selection of the main fertilizers used in the cultivation of forest crops;</li> <li>- ability to compare the main categories of silvicultural areas and silvicultural zoning;</li> <li>- categories of areas for forest crops and types of forest crops.</li> </ul> <p>Know:</p> <ul style="list-style-type: none"> <li>- to select and use normative and technical literature in professional activity;</li> </ul>
6. The author of the course	Kabanova S. A., Ospangaliev A.S.
7. Main literature	1. Baizakov S.B., Medvedev A. N., Iskakov S. I., Mukanov B. M. Forest cultures in Kazakhstan: - Studies.for Universities-

	<p>Almaty: KazNAU, 2007.-288 PP.</p> <p>2. Rodin A. R., Kalashnikov E. A., Rodin S. A., Silaev G. V., Rysin S. L., Vildanov M. F. Forest cultures. Textbook. Moscow: VNIILM, 2002. - 440 p.</p> <p>3. Protasov A. N. Types of forest crops of Kazakhstan. - Alma-ATA, Kaynar, 1965.</p> <p>4. Red'ko, G. I., Rodin A. R., I. V. Trushevskiy Forest culture. - M., 1985.</p> <p>5. Novoseltseva A. I., Rodin A. R. Handbook of forest cultures. - Moscow: Lesnaya prom-St, 1984. - 312 p.</p> <p>6. The employee Handbook of forestry. Edited by A. I. Prokhorov. - Alma-ATA: Kainar, 1989. – 271 sec.</p> <p>7. Standard norms of production, norms of time for silvicultural, forest protection and fire-prevention works performed in flat conditions. Astana, 2004</p>
<p>8. The content of the discipline of Forest culture – exploring the plantation established by sowing or planting of tree and shrub species. Growing forest crops is one of the main tasks of forestry. When reforestation forest plantations lay on the silvicultural plots of the Fund at the forest reception. and uncomfortable on non-forest lands. Technical acceptance and inventory, quality assessment of forest crops.</p>	

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Biometrics in forestry
2. Amount of credits	5
3. Prerequisites:	Dendrology, Forest botany and physiology of woody plants, Forestry and forest resources
4. Post-requisites:	Forest nursery business, Forest taxation, Forest management, Forest economy
5. Competences:	<p>Know:</p> <ul style="list-style-type: none"> <li>-based on the class of biometric analyses of forest objects, familiarization with the main directions of random velechin research;</li> <li>- supervision of forest practices and forestry, planning and conducting experiments, mastering the basic approaches of the organization;</li> <li>- the main methodological directions of the study of random variables;</li> <li>- learn to conduct experiments, receive and process digital information.</li> </ul> <p>Know:</p> <ul style="list-style-type: none"> <li>- application of statistical approaches to solving specific problems of special disciplines;</li> <li>- perform analysis of simple statistical models accurately and accurately;</li> <li>- use the results in production and research;</li> </ul> <p>The current curriculum includes statistical analysis of digital data on a computer</p> <p>Own:</p> <ul style="list-style-type: none"> <li>- Analysis of the collected statistical data</li> <li>- full self-realization and decision-making;</li> <li>- development of methods and creation of variations using statistical data;</li> </ul>

	- acquire practical skills to use the normative reference material. draw up documentation on the quality of forest seeds, use GOST
6. The author of the course	Mazarzhanova K.M., Kurmangaliev J. S.
7. Main literature	<ol style="list-style-type: none"> <li>1. Yakovlev V. B., Yakovleva O., A. "Biometric processing of experimental data" tutorial., M., 2014</li> <li>2. BEML B. K. Biometrics in forestry ouly. "Nur Print" baspasy. Almaty-2014</li> <li>3. Kentbayev E. Zh., Kentbayeva B. A. Computer programs "Biometrics in forestry", "Correlation", "Dispersion", on magnetic media.- Almaty, 2007</li> <li>4. Shilina M. V., Musatova O. V., Biometrics in forestry Educational and methodical complex. UO " VSU them. Masherova " 2011</li> <li>5. Aubakirov H. A.. Biometrics in forestry "Dauir baspasy" Almaty. Two thousand eleven</li> <li>6. Lakin G. F. Biometrics in forestry.- M., "High school", 1990</li> </ol>
8. The content of the discipline:	Biometrics in forestry-studies the planning of quantities, experiments in forestry and forestry and processing of their results by methods of mathematical statistics., also includes the study of the spatial structure of stands, the analysis of the so-called functions of growth of trees and stands, as well as the use of mathematical modeling methods in forestry and computer-based forestry.

### 1. Basic information about the discipline:

Name of the discipline	Forest inventory
2. Amount of credits	5
3. Prerequisites:	Biometrics in forestry, Forestry with the basics of recreational use, engineering geodesy, Forest cultures, Plantation forest cultivation
4. Post-requisites:	Forest management, Forest management and forest legislation, geographic Information systems and remote sensing of forests, Protective afforestation and forest reclamation
5. Competences:	<p>Know the technique of accounting and measurement of forest products obtained directly in the forest and processed in forest warehouses, technologies of forest inventory works.</p> <p>To use in practice knowledge on use of forest taxation tools and devices, to know their device and the order of storage.</p> <p>Ability to develop planning and cartographic materials of forests, to lay forest management test areas.</p> <p>Be able to master the methods of sorting the growing forest, differentiating wood stocks on the main types of forest products.</p> <p>To be able to own equipment of inventory of the woods, the account of wood growth and establishment of dynamics of growth of plantings.</p>
6. The author of the course	Dudina N. N., Ospangaliev A.S.
7. Main literature	<ol style="list-style-type: none"> <li>1. Forest inventory and forest management. V. V. Zagreev. M. "Ecology". One thousand nine hundred ninety one</li> <li>2. Forest inventory. N. P. Anuchin. M., "Forest industry". One thousand nine hundred eighty two</li> <li>3. Forest inventory and forest management. A. V. vagi et al. M.</li> </ol>

	<p>"Forest industry". One thousand nine hundred seventy eight</p> <p>4. Forest inventory. Z. ya. Nagimov et al. Ekaterinburg. USFEU. Two thousand six</p> <p>5. Basics of forest taxation. V. V. Zagreev, A. V. Vagin. M. "High school". One thousand nine hundred seventy five</p> <p>6. Forest inventory and forest management. V. K. Zakharov. Yekaterinburg. Two thousand</p> <p>7. Workshop on forest inventory and forest management. A. N. Polyakov. M. "Agropromizdat" 1987</p> <p>8. Handbook of forest inventory. A. 1985</p> <p>9. Forests Of Kazakhstan. Status and prospects of development. Kokshetau. Two thousand three</p> <p>Assortment and commodity tables of Kazakhstan</p>
<p>8. The content of the discipline: General information about forest taxation. Taxation of individual trees. Methods for determining the volume of trunks. Inventory of growing trees. Taxation of tree trunk growth. Inventory of plantings. Taxation indicators and their definitions. Determination of the stock of stands of forest elements and their aggregates. Features of inventory of desert forests. Determination of assortment yield in stands. Inventory of the current growth of the stock of stands. Table of the progress of forest growth. Taxation of logging Fund. Inventory of the forest Fund. Taxation of harvested timber.</p>	

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Basics of landscape art
2. Amount of credits	5
3. Prerequisites:	Biology and geography (within the school curriculum), Dendrology, Forest botany and woody plant physiology
4. Post-requisites:	The greening of human settlements
5. Competences:	<p>Know:</p> <ul style="list-style-type: none"> <li>- the main objects of cultural and historical heritage of the national landscape architecture, the history of their creation and the current state;</li> <li>- the main styles used in the arrangement of gardens and parks, estates and Palace residences;</li> </ul> <p>Know:</p> <ul style="list-style-type: none"> <li>- to understand the features of landscape objects of different historical epochs, the typology of landscape design objects, the principles of selection of wood species in this zone;</li> <li>- to understand the problems of the environment and modern urban ecology, especially the formation of landscape objects in Kazakhstan;</li> </ul> <p>Own:</p> <ul style="list-style-type: none"> <li>- methods of improving the microclimate of arid zone cities;</li> <li>- comparative analysis of cultural and historical monuments of landscape architecture.</li> </ul>
6. The author of the course	Dudina N. N., Ospangaliev A.S.
7. Main literature	<p>1. Dormidontova V. V. History of landscape styles. M. Architecture, 2003, - 321s.</p> <p>2. Haritonenko T. S. Handbook of modern landscape designer. Rostov n/D.: Phoenix, 2005.204C.</p> <p>Kryzanowska N. I. Basics of landscape design. Rostov n / A: Phoenix, 2005.-204 PP.</p> <p>3. Sokolskaya O. B. History of landscape art. M. INFRA-M.</p>

	<p>2004, - 372s.</p> <p>4. Teodorowski C. B., Stepanov B. V. landscape architecture and landscape construction. Moscow state University, 2004. 269c.</p> <p>5. Lezhneva T. N. Bases of decorative gardening. M., Academy, 2011.-258 p.</p> <p>6. John. Brooks. Garden design. M. 2003. 105c.</p> <p>7. Negrienko N. And. The basics of landscape design and landscape architecture, P. C. b, Neva. 2004. 351c.</p>
<p>8. The content of the discipline. Subject, objectives and the emergence of the history of landscape art. Egyptian gardens. The Gardens Of Mesopotamia. Formation of objects of landscape design in regular style. Landscape art of Persia and India. Landscape art of Ancient Greece and Rome. Formation of objects of landscape design in landscape style. Parks Of Ancient China. Japanese parks. Elements of the Park composition. The main compositional groups of trees and shrubs. Water devices. MAF and visual communication. French landscape art of the 17th century. Baroque style. Landscape art of England 2nd half of the 18th century. Landscape romantic parks. Modern garden and Park construction and its development trends.</p>	

### 1. Basic information about the discipline:

Name of the discipline	Greening of populated areas
2. Amount of credits	5
3. Prerequisites:	Disciplines necessary for the development of this discipline – Forest soil science, Forest botany and physiology of woody plants, Dendrology.
4. Post-requisites:	The study of greening populated areas allows You to study other special disciplines
5. Competences:	<p>Know:</p> <ul style="list-style-type: none"> <li>- it is rational to include components of the natural landscape (relief, water bodies, vegetation, as well as elements of Ethnography, national creativity, engineering structures, architecture of small forms) in the objects of gardening);</li> <li>- competently develop and execute projects of objects of gardening, including gardening of territories of industrial sites and sanitary protection zones;</li> <li>- to select the range of trees, shrubs, vines and herbaceous plants based on the specifics of landscaping and natural conditions of Kazakhstan;</li> </ul> <p>Know:</p> <ul style="list-style-type: none"> <li>- design, implement, timely and efficiently carry out a range of works on the care and maintenance of green spaces at the landscaping facility;</li> <li>- apply the rules and regulations for the design of objects, the composition of plantings; technology of growing planting material;</li> </ul> <p>Own:</p> <ul style="list-style-type: none"> <li>- skills for reproduction and care of floral and ornamental plants in open and protected ground;</li> <li>the techniques of floral crops in the landscaping of open spaces.</li> </ul> <p>To acquire practical skills: on design, construction and operation of objects of gardening of inhabited places.</p>



6. The author of the course	Olesinskaya E.V., Ospangaliev A.S.
7. Main literature	<p>1. Todorovskii, V. S. Park and Garden construction and management. Textbook / V. S. Theodoronsky-Publishing House: Academy, 2012. - 288 p.</p> <p>2. Kalmykova, A. L. Garden and Park construction and economy: textbook / A. L. Kalmykova, A. V. Tereshkin. - M: (Profile), Alpha-M, Infra-M, 2012. – 240 p.</p> <p>3 Teodoronsky V. S., Gorbatova V. I., Gorbatov V. I. Greening of settlements with the basics of urban planning. Textbook for universities. M., ACADEMA, 2011.</p> <p>4 Bagova I. O., V. S. Todorovski Planting of settlements. Textbook for universities. M., Agropromizdat, 1990.</p> <p>5 Teodoronsky Vs Garden and Park construction. Textbook for universities, Moscow: MSU forests, 2009.</p> <p>6 Gostev V.F., Yuskevich N.N.. Designing gardens and parks: Textbook, M: Stroyizdat, 1991.</p> <p>7 Handbook of green construction worker. A.A. Laptev et al. - Kiev, Budivelnik, 1984.</p> <p>b) additional literature</p> <p>8. Teodorowski V.S. of landscape construction and management. Textbook. Leningrad, "Stroyizdat", 1978.</p> <p>9. Kholyavko V.S. Dendrology and basics of green building. Textbook. M.: Agropromizdat, 1988.</p> <p>10. Architect's quick reference: landscape architecture. Under. Ed.- K.: Budivelnik, 1990-336c.</p> <p>11. Park design guidelines. Belarusian state and design Institute of urban planning: author I. N. Rudeenko et al. - Minsk, Polymya, 1980-140c.</p> <p>12. Lunts L.B. Urban green construction-M.: Stroyizdat, 1974</p>
<p>The content of the discipline. The course is devoted to the study of landscape planning organization of settlements and landscaping objects. Rules of design, principles of structure and spatial organization of objects, composition of plantings, phytocenotic and esthetic aspects of gardening are stated. Issues of garden and Park construction and management in the creation of modern landscaping and recreation facilities in cities and towns. Attention is paid to agrotechnics of creation of green plantings, the device of lawns and flower beds, care of them, protection and protection of green plantings. History of landscape art and modern Park construction.</p>	

### 1. Basic information about the discipline:

Name of the discipline	Forest fire science
2. Amount of credits	5
3. Prerequisites:	Forestry with the basics of recreational use, Protective afforestation and forest reclamation
4. Post-requisites:	Forest protection, geographic Information systems and remote sensing of forests

5. Competences:	<p>To know theoretical and practical bases of forest pyrology:</p> <ul style="list-style-type: none"> <li>- nature of forest fires;</li> <li>- causes of occurrence, spread and development of forest fires;</li> <li>- factors affecting the speed of fire; - the structure of the organization of forest fire protection.</li> </ul> <p>Know:</p> <ul style="list-style-type: none"> <li>- to use in practice methods and techniques of detection of forest fires;</li> <li>- ability to compare analysis data, draw conclusions, justify the position;</li> <li>- to use the natural scales of fire danger; to extinguish fires, depending on their species;</li> <li>- design and carry out fire-fighting measures;</li> <li>- - to extinguish forest fires, to organize preventive fire-fighting measures, to determine the amount of damage from a forest fire.</li> </ul> <p>Own methods of forecasting the development of forest fire, tactical methods of extinguishing forest fires, technical means of extinguishing forest fires, ways to reduce post-fire damage.</p>
6. The author of the course	Dudina N., Ebel A., Ospangaliev A.
7. Main literature	<ol style="list-style-type: none"> <li>1. Melekhov, I. S. Dusha-gudym, S. I., Sergeeva, E. P. Forest fire science. M., 2007.</li> <li>2. Zalesov S. V. Forest fire science. Ekaterinburg, 1998.</li> <li>3. Pogrebnyak N. General forestry.</li> <li>4. Baizakov S., Gursky A., Amanbaev A., Toktasynov Z. Forests and forestry of Kazakhstan-Almaty, 1996.</li> <li>5. Melekhov I. Forestry M., MGUL, 2005. Forest code of RK.</li> </ol>
8. The content of the discipline. Conditions of occurrence, distribution and development of forest fires. Fundamentals of forest pyrology. Classification of forest fires. Classification of forest fires by area. The process of burning during forest fires. Characteristics of forest combustible materials. Causes of forest fires. Detection of forest fires. Prevention of the spread of forest fires. Extinguish forest fires. The main methods of extinguishing forest fires. Organization of forest fire fighting and planning of fire prevention measures.	

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Forest protection
2. Amount of credits	6
3. Prerequisites:	Forestry and forest resources, Forest fire science
4. Post-requisites:	Protective afforestation and forest reclamation, Forest management
5. Competences:	<p>Know:</p> <ul style="list-style-type: none"> <li>- rules of operation of technological equipment in the implementation of forest protection works;</li> <li>- to understand theoretical knowledge in the field of biology and ecology of insects and pathogens;</li> </ul> <p>Know:</p> <ul style="list-style-type: none"> <li>- plan and design forest protection measures, justify their economic and environmental efficiency and feasibility;</li> <li>- to use technological systems and means at care of the woods, protection, reproduction of the woods at the solution of professional tasks;</li> <li>- ability to carry out accounts of pests and diseases, to be able to</li> </ul>

	compare the analysis data, to draw conclusions, to justify their position. Own the main types of technological systems, tools used in forest protection measures
6. The author of the course	Ebel A., Ospangaliev A.
7. Main literature	<ol style="list-style-type: none"> <li>1. Vorontsov A. I. Forest entomology-M.: Higher school, 1994; 1982. - 384 p.</li> <li>2. Vorontsov A. I., Semenkova I. G. Timber Protection. - M.: Agropromizdat, 1988. - 327 p.</li> <li>3. Padiy N. N. et al. Forest entomology-M.: Forest industry, 1965. - 359 p.</li> <li>4. Semenkova I. G., Sokolova E. G. Phytopathology. - M.: Academy, 2003. - 480 p.</li> <li>5. Sokolova E. S., Semenkova I. G. Forest Phytopathology-M.: Forest industry, 1981. - 312 p.</li> <li>6. Vorontsov A. I., Mozolevskaya E. G., Sokolova E. S. forest protection Technology. - Moscow: Ecology, 1991. 304 PP.</li> <li>7. Bey-Bienko G. Ya. General entomology. - Moscow: High school, 1980. - 416 p.</li> <li>8. Gusev V. I. Determinant of damage to forest, ornamental and fruit trees and shrubs. - Moscow: Forest industry, 1984. - 472 p.</li> <li>9. Ilyinsky A. I. Determinant of forest pests. - M.: Selkhozizdat, 1962. - 392 p.</li> <li>10. Zhuravlev I. I. Protection of green spaces from diseases. - Moscow: Forest industry, 1966. - 232 p.</li> <li>11. Sanitary rules in the forests of Kazakhstan. - 29 p.</li> </ol>
8. The content of the discipline.	Ecology and dynamics of pests and diseases of forest plantations. Methods and means of forest protection from pests and diseases. The main features of the biology of forest pests. The main ecological groups of insects-forest pests. Diseases of seedlings and young plants. Diseases of adult plantings. Destruction of wood. Methods of accounting and forecasting of diseases.

### 1. Basic information about the discipline:

Name of the discipline	Labor protection in forestry
2. Amount of credits	4
3. Prerequisites:	Ecology and environment, Forest nursery business
4. Post-requisites:	Mechanization of forestry operations, Wood processing technology, Forest management
5. Competences:	<p>Know:</p> <ul style="list-style-type: none"> <li>- basic legal acts on occupational safety, fire safety, industrial sanitation and hygiene;</li> <li>- the system of state supervision and public control over labor protection.</li> </ul> <p>Know:</p> <ul style="list-style-type: none"> <li>- to assess the danger of production processes and make independent decisions to ensure their safety; to organize work on labor protection;</li> <li>- develop and implement measures to improve working conditions, reduce injuries, develop safety instructions; check the serviceability of technical means of protection;</li> <li>- to use educational and methodical literature, visual and technical means of training, to organize work on labor</li> </ul>

	protection; to monitor compliance with the rules of labor protection and fire safety.
6. The author of the course	Dudina N., Ebel A., Ospangaliev A.
7. Main literature	<ol style="list-style-type: none"> <li>1. Law of the Republic of Kazakhstan "on labor protection".</li> <li>2. Law "on nature protection" of the Republic of Kazakhstan.</li> <li>3. Forest code of the Republic of Kazakhstan. Two thousand three</li> <li>4. Model regulations on labour protection service in associations, corporations, companies and other associations, Alma-Ata, 1994.</li> <li>5. Model regulations on the occupational safety service of the enterprise, Alma-Ata, 1994.</li> <li>6. Model regulations on the Commissioner for labor protection of the labor collective, A-Ata, 1995.</li> <li>7. Regulations on the Chief state inspector of labor protection.</li> <li>8. Bronstein D.L., Alexandrov N.N. -Modern means of measuring atmospheric pollution, L., "Hydrometeoizdat", 1989.</li> <li>9. Nikitin L.I., Shcherbakov A.S. Labor Protection in forestry, forest and woodworking industry, M. "Forest industry", 1985.</li> <li>10. Nikitin L.I., Popov Yu.V. Labor Protection and fire protection, M. "Forest industry", 1974.</li> <li>11. Lukovnikov A.V., Grigoriev N.D., Vargazov V.G. Workshop on labor protection, M, VO "Agropromizdat", 1988.</li> <li>Buyanov V. M.-First aid, M. "Medicine", 1981.</li> <li>12. Fire safety rules in the forests of the Republic of Kazakhstan. PPBS-06-96. Almaty. The forestry Committee of the Republic of Kazakhstan.</li> </ol>
8. The content of the discipline. Theoretical bases of labor protection. Organizational and legal issues of labor protection. Industrial sanitation. Safety basics. Basics of fire safety. Provision of first aid to victims.	

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Protective afforestation and forest reclamation
2. Amount of credits	6
3. Prerequisites:	Ecology and basics of life safety, forestry and forest resources, Forestry with the basics of recreational use, Forest nursery business
4. Post-requisites:	Forest fire science, Forest protection
5. Competences:	<p>Know:</p> <ul style="list-style-type: none"> <li>- zones of influence of reclamation systems on the environment and vegetation;</li> <li>- on ways to prevent and reduce the negative impact of degradation on the restoration and preservation of the landscape;</li> <li>- the main directions of reclamation.</li> </ul> <p>Know:</p> <ul style="list-style-type: none"> <li>- choose training methods according to specific conditions;</li> <li>- development of measures for the rational use of showers;</li> <li>- combating soil erosion and development of a set of forest reclamation measures.;</li> <li>- choose an assortment of trees and shrubs.</li> </ul> <p>Own:</p>

	- selection and development of economic measures for land improvement; - calculation of irrigation rates; design of green spaces.
6. The author of the course	Ebel A., Oserhan B.
7. Main literature	<ol style="list-style-type: none"> <li>1. Treshchevsky I. and Shatalov V. Forest reclamation zonal systems of erosion control measures. Textbook. Voronezh: VSU publishing House, 1982-264c.</li> <li>2. Iskakov S. Forest growing technology in Kazakhstan. Textbook, - Astana: Folio, 2007-216c.</li> <li>3. Baizakov S., Medvedev A. and others. Forest crops in Kazakhstan. Studies'. For Universities in two books, - Almaty: KazNAU, publishing House: "Agrouniversity", 2007, - book. 1. 320c. with Fig.</li> <li>4. Baizakov S., Medvedev A. and others. Forest crops in Kazakhstan. Studies'. For Universities in two books, - Almaty: KazNAU, publishing House: "Agrouniversity", 2007, - book. 2. 288c. with Fig.</li> <li>5. Protective afforestation in Kazakhstan. Under the General editorship of candidates of agricultural Sciences Bozrikov V. and Vibe G. Ed. "Kynar", 1987.</li> <li>6. The system of machines for complex mechanization and technology of forestry and protective afforestation of the Republic of Kazakhstan for the period up to 2005./NATSAI RK, Kazniilh and agroforestry, - RNI "Bastau", 2000-212c.</li> </ol>
8. The content of the discipline.	The course is devoted to the study of the basics of forest reclamation, the system of measures against water and wind erosion. Experience and recommendations on protective afforestation. The impact of protective forest plantations on the environment. Features of placement and cultivation of protective strips in different conditions. Methods of afforestation on Sands, pastures, along highways, on the lands disturbed by industrial enterprises, ecologically unstable regions, landscape-improving zones.

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Forest commodity science
2. Amount of credits	5
3. Prerequisites:	Forest botany and physiology of woody plants, Dendrology, Forestry with the basics of recreational use, Forest fire science, Forest protection, Forest inventory
4. Post-requisites:	Wood processing technology, Forest management, Forest exploitation, Forest economy

5. Competences:	<p>Mastering the necessary knowledge of the consumer properties of forest products, which are necessary for the assimilation of subsequent disciplines and engineering activities aimed at improving the quality of products from wood and other parts of the tree trunk of the main forest-forming species.</p> <p>To know: features of a structure of wood of coniferous and deciduous breeds, the main physical, mechanical and technological properties of wood influencing consumer properties of goods, defects of wood and the reasons of their emergence, influence of silvicultural actions on quality of wood, commodity characteristics of forest materials, bases of rational bucking of whips.</p> <p>Be able to: determine the species of wood by its appearance, to recognize and measure the defects of wood.</p> <p>Possess: the ability to assess the quality of timber according to current standards.</p> <p>To acquire practical skills: to use any determinant of species on wood.</p>
6. The author of the course	Ebel A., Ospangaliev A.
7. Main literature	<p>1 Ugolev B.N. wood Science and forest commodity science M. Academia 2006. - 267 p.</p> <p>3 Osipenko Yu.F., Ryabchuk V.P. Forest merchandising Lviv, 1979. - 278 p.</p> <p>4 Sokolov D.V. Sinkevich A.L., Emelyanova L.A. Wood Science. Training manual for laboratory classes. L., LTA, 1974. - 128 p.</p> <p>5 Mikhaylichenko A.L., Sadovnichy F.P. wood Science and forest commodity science M., High school, 1991. - 190 p.</p>
8. The content of the discipline. Forest commodity science – is the science of the structure properties and defects of wood, forming consumer properties of forest materials and products derived from the trunk, roots and crowns of trees; the basics of standardization of forest products.	

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Wood processing technology
2. Amount of credits	4
3. Prerequisites:	Forest botany and physiology of woody plants, Dendrology, Forestry with the basics of recreational use, Forest pyrology, forest Protection, Forest inventory, Forest commodity science.
4. Post-requisites:	Forest management, Forest exploitation, Forest economy
5. Competences:	<p>Know:</p> <ul style="list-style-type: none"> <li>- the theory of cutting logs into lumber;</li> <li>- technology of sawmill production and equipment used;</li> <li>- features of interaction of moisture with wood and its influence on physical and operational properties;</li> <li>- methods and basic physical laws of processes of heating, drying and impregnation of wood, methods of their calculation;</li> <li>- technology and equipment of production processes of heat treatment, drying of wood;</li> <li>- technology of complex use of secondary raw materials with the use of appropriate equipment.</li> </ul> <p>Know:</p>

	<ul style="list-style-type: none"> <li>- to make and count the logs;</li> <li>- determine the parameters and modes of drying wood;</li> <li>- calculate the duration of drying wood;</li> <li>- to develop technological maps.</li> </ul> <p>Possess: ability to stack and count the logs. To acquire practical skills: to develop technological maps.</p>
6. The author of the course	Ebel A., Ospangaliev A.
7. Main literature	<ol style="list-style-type: none"> <li>1. Yu. P. Tyukina, N. S. Makarova General technology of sawmilling and woodworking production (textbook) M., High school, 1983 – 224 p.</li> <li>2. Yu. P. Tyukina, S. N. Rykunin, V. S. Shalaev Technology of sawmilling and woodworking production (textbook) M., Forest industry, 1986-280 p.</li> <li>3. Sergovsky P.S., Rasaev A.I. Hydrothermal treatment and preservation of wood (textbook) M., Forest industry, 1987-360 p.</li> <li>4. Buglay B.M., Goncharov N.A. Technology of wood products. M., Lesnaya promyshlennost, 1990, 528 p</li> <li>5. Khudyakov A.V. Woodworking machines and work on them (tutorial) M., Higher school, 1972, 328 p.</li> </ol>
8. The content of the discipline.	Wood processing technology is a science that involves the study of cutting materials, wood drying processes, technological processes and modes of manufacture of wood products, rational and integrated use of secondary wood raw materials.

### 1. Basic information about the discipline:

Name of the discipline	Forest management
2. Amount of credits	6
3. Prerequisites:	Forestry and forest resources, Forestry with the basics of recreational use, Seed business and forest nurseries, Mechanization of forestry works
4. Post-requisites:	Forest economics
5. Competences:	<p>Know:</p> <ul style="list-style-type: none"> <li>- technology and organization of cutting and harvesting operations; types and methods of forest transportation, mechanisms and machines used in woodworking, harvesting and processing;</li> </ul> <p>Know:</p> <ul style="list-style-type: none"> <li>- design and organize the production of complex harvesting, transportation and processing of wood, apply mechanisms and machines in woodworking, harvesting and processing;</li> <li>- use in practice of the gained knowledge, implementation of forest management on the basis of the existing rules and instructions.</li> <li>- to convey their point of view in the field of communication, to prove the validity of decisions.</li> </ul> <p>Have skills in the selection of equipment, tools and mechanisms to perform the work.</p>
6. The author of the course	Ebel A., Ospangaliev A.
7. Main literature	<ol style="list-style-type: none"> <li>1. Forest exploitation (team of authors) - Moscow, Academy. - 2006 . - 317 p.</li> <li>2. Forest code of the Republic of Kazakhstan. - Almaty, Lawyer. - 2003. - 96 p.</li> </ol>

	<p>3. Larionov L. A., Shelgunov Yu. V., Kuznetsov G. V. Technology and organization of forest management. - Moscow: Lesnaya prom-Ty, 1990. - 494 p.</p> <p>4. Forestry Handbook for loggers. "Moscow, Lesnaya prom. - 1976. - 224 p.</p> <p>Handbook of forest inventory of Kazakhstan. - Alma-ATA, Kynar. - 1980. - 313 p.</p> <p>5. Typical production rates and prices for the main use of the cabin and cabin care. 1988 - 72 pages.</p> <p>6. Gryazkin A.V., Evdokimov A.m., Yegorenkov M. A. and others. Tapping and side use of the forest. - Moscow: Ecology, 1993. 304 PP.</p> <p>7. A. V. Ebel, Ebel E. I. Forest Management. - Astana: Kazakh agrotechnical University. S. Seifullina, 2015. - 198 p.</p> <p>8. Rules for harvesting oleoresin. 2005. 24 p.</p> <p>9. Side use policy. 2005. 6 p.</p> <p>10. Instruction on branch and taxation of cutting areas. 2005. - 23 p.</p>
<p>8. The content of the discipline. Logging operations and their mechanization. General information on forest exploitation. Preparatory work. Logging. Skidding forests. Mechanization of works at loading points and upper forest warehouses. Technology and organization of logging operations. Technology and mechanization of loading and bucking operations. The production of short-length sticks of timber. Use of waste and low-grade wood. Biological bases of tapping. Technology and technique of tapping. Organization of dairy production. Tapping of coniferous and deciduous species. Basics of chemical processing of non-wood products. Side use of the forest.</p>	

#### Annex 4. Description of elective component disciplines

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Forest soil science
2. Amount of credits	4
3. Prerequisites:	Forest botany and physiology of woody plants, Dendrology
4. Post-requisites:	Forest nursery business, Forestry with the basics of recreational use, Forest crops, Landscaping settlements
5. Competences:	<ul style="list-style-type: none"> <li>- to know and understand: features of forest soil as a natural formation and object of afforestation, factors of soil formation and understanding of the soil-forming process connection of soil science with forestry, agriculture, crop production, geology, ecology and other sciences;</li> <li>- be able to: correctly assess and determine the composition, properties and regimes of soils, their change in relation to soil-forming factors and anthropogenic activities;</li> <li>- possess: the ability to analyze, draw conclusions, competently express and argumentatively justify their position on the scientific use of forest soils; on the basic methods of soil protection from harmful effects, to assess the impact of soil formation factors on the formation and development of soil and its properties;</li> <li>- acquire practical skills to independently analyze and evaluate scientific data, special literature, contributing to the growth of professional activity.</li> </ul>



6. The author of the course	Nazarova A., Zhumabek B.
7. Main literature	<ol style="list-style-type: none"> <li>1. Kaurichev I. S. et al. soil science. - M.: Agropromizdat, 1989.</li> <li>2. The Kovrigo, V. P., etc., and soil science with basics of Geology. - M., Kolos, 2000.</li> <li>3. Durasov, A. M., G. G. Tazabekov Soil Of Kazakhstan. - A-ATA: Kaynar, 1981.</li> <li>4. Kovda VA Fundamentals of the doctrine of soils. - M.: Science, 1973.</li> <li>5. Rare in V. V. Soils of the Tselinograd region. - A-ATA, 1964.</li> <li>6. Kaczynski N. A. soil Physics. - High school, 1970.</li> <li>7. Workshop on soil science. - Moscow: Kolos, 1983.</li> <li>8. Dobrovolsky G. V. soil Geography: Textbook for universities / G. V. Dobrovolsky, I. S. Urusevskaya-2nd ed., additional-M.: Kolos, 2004.</li> </ol>
8. The content of the discipline.	<p>History of the study of forests and forest soils. Subject, tasks and methods of soil science. Soil is the basis of forest biogeocenoses. Ecological functions of soils. Composition and properties of soils. The main processes of formation of soil-forming rocks. The structure of the soil as a natural body. Physical properties of soils. Soil organic matter. Forest litter. Classification of litter and organogenic horizons. The types of soils and their silvicultural characteristics. Soil structure and soil fertility. Genesis and classification of soils. Soil geography. Geography, soil cover structure and forest vegetation properties of forest zone soils. Silvicultural assessment of soils. Anthropogenic soil change. Dynamics of soil cover. Current state of soil cover and anthropogenic transformation of soils. Forest growing conditions and silvicultural assessment of soils. Edaphic features of the main forest-forming species. Mutual influence of soil and forest vegetation properties.</p>

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Meteorology
2. Amount of credits	4
3. Prerequisites:	Physics, geography in high school
4. Post-requisites:	Forest culture, forest fire science, forest management, the writing of the thesis.
5. Competences:	<p>Have an understanding, knowledge and professional skills about meteorological factors and physical processes occurring in the atmosphere that affect the state of forest crops.</p> <p>Know the types of meteorological observations, meteorological instruments. Be able to carry out meteorological observations using meteorological instruments.</p> <p>To master the methods of climatic and meteorological characteristics and assessment of the growing season of trees and shrubs.</p> <p>Be able to take into account weather conditions and weather forecasts to adjust the elements of agriculture as a forestry specialist. Own methods of forecasting adverse weather events.</p> <p>Know the methods of effective use of climate and microclimate resources in the performance of mechanized works in forestry.</p> <p>Have the skills to organize and conduct field work and</p>

	management decisions in different weather conditions.
6. The author of the course	Zhumagulov I. I., candidate of agricultural Sciences, associate Professor
7. Main literature	<ol style="list-style-type: none"> <li>1. Kosarev V. p. Forest meteorology with the basics of climatology. Textbook. LTA, ST. PETERSBURG, 2002. - 263 p.</li> <li>2. Khromov S. P., Petrosyants M. A. Meteorology and Climatology Textbook for universities. M., MSU, 2001. - 528 p.</li> <li>3. Losev A. P., Zhurina L. L. Agrometeorology. Textbook. M., "Kolos", 2001. - 301 p.</li> <li>4. Kosarev V. P., Tarankov V. I. Forest meteorology. Textbook. M., "Ecology", 1991. - 176 p.</li> <li>5. Chirkov Yu. I. Agrometeorology. 2nd ed. - L.: Hydrometeoizdat, 1986. -296 p.</li> <li>6. Pavlova M. D. Workshop on agrometeorology. - L.: Hydrometeoizdat, 1984. - 184 p.</li> <li>7. Ivannikov A. V. a Brief terminological dictionary of agrometeorology. - Astana, 2001.-31 p.</li> </ol>
8. Content of discipline	Subject and methods of research in meteorology. Atmospheric pressure. Composition and structure of the atmosphere. Instruments for measuring atmospheric pressure. Solar radiation. The temperature regime of the soil and air. Air humidity. Precipitation, Types and types of precipitation. Soil moisture and its significance for plants. Methods of regulation of water regime of soils in the zone of Northern Kazakhstan. Wind, its causes and characteristics. Adverse weather events and their significance for agriculture. Air mass. Types of air mass circulation. Weather forecast. Synoptic map. Local signs of the weather. Meteorological observation. Types of meteorological observations and their methods. Meteorological forecast. Modern methods of meteorological forecasts.

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Biology of forest animals and birds
2. Amount of credits	4
3. Prerequisites:	The main basis for the study of the course is knowledge in the volume of: high school Zoology, anatomy, biology
4. Post-requisites:	The level of its study is determined by the quality of theoretical and practical training necessary for the deep development of profiling disciplines and practice.
5. Competences:	<p>As a result of the discipline the student must:</p> <p>Know:</p> <ul style="list-style-type: none"> <li>- faunal composition of birds and mammals of forest ecosystems of Kazakhstan features of their way of life and behavior; forestry value of forest animals;</li> <li>- methods of assessing the damage to the hunting economy in the design of enterprises in the territory of the forest Fund;</li> <li>- bases of the forest legislation for conducting hunting economy and traditional nature management; bases of safe behavior in the wood at meetings with wild animals;</li> </ul> <p>Know:</p> <ul style="list-style-type: none"> <li>- determine the species of birds and mammals in the traditional and electronic identification guides;</li> <li>- apply the acquired knowledge in the rational use of natural resources and environmental protection.</li> </ul>

	Own methods of assessment of harmful activities of forest animals; methods of biological protection of the forest To acquire knowledge of the anatomical and morphological features of birds and mammals, ecological and systematic features of the class of birds, ecological and systematic features of the class mammal, methods for the protection and involvement of ornito and mammal fauna
6. The author of the course	Sabdinova D.
7. Main literature	1. Doppelmair G. G. et al. Biology of forest birds and animals. M., 1975. 2. Sludsky A. A. and other Mammals of Kazakhstan. Alma-ATA, 1969-1985, vol. 1-4. 3. Kolosov a.m., Lavrov N. P., Mikheev A.V. Biology of commercial and hunting animals of the USSR.M. 1983. 4. Ilyichev V. D., Kartashev N. N., Shilov I. A. General ornithology. M. 1982. 5. Martynov E. N. Biology of forest vertebrates. St. Petersburg, 2004 6. Kharchenko N. A. Lihatskij Y. P., Kharchenko N. N. Biology of animals and birds. M., 2003 7. The red book of Kazakhstan (vol. 2, 3). Alma-ATA, 1991, 1996
8. The content of the discipline.	The concept of biology of forest animals and birds as a science engaged in theoretical studies and the development of practical measures for the protection, rational use and reproduction of forest fauna, its place among the biological disciplines. Forest ornithology. Physiological and ecological features of birds. Ecological groups of birds. Bush-forest birds. Life cycles of birds. Periodic phenomena in the life of birds. Practical value and protection of birds. Birds and the forest. Distribution of birds in different types of forests. Forest theriology. General characteristics of the class of mammals. Ecological overview and mammalian life cycles. Practical importance of mammals in forest life. Forestry value of animals. Biotechnical measures, their biological basis.

### 1. Basic information about the discipline:

Name of the discipline	Engineering geodesy
2. Amount of credits	4
3. Prerequisites:	Mathematics, geodesy
4. Post-requisites:	Forest inventory, forest Management, geographic Information systems and remote sensing of forests
5. Competences:	Know: - to create maps for various purposes, terrain plans, as well as digital models of certain areas. - modern software for the development of design and graphic documentation in the field of geodesy; Know: - topographic and geodetic surveys of various sites, sites and trails in order to make plans and profiles; - in field conditions to carry out with use of geodetic devices of measurement, the description of borders and binding on the district of objects of forest and forest Park economy on the district. Own: - measurement of angles and distances on the ground using

	<p>surveying instruments (theodolites, levels, tapes, tape measures, etc.);</p> <p>computing (laboratory) processing of results of field measurements on a computer;</p> <p>- graphic construction of plans, profiles, digital terrain models (DMM).</p>
6. The author of the course	Igilmanov J. A.
7. Main literature	<p>1. Engineering geodesy: Textbook for universities / E. B. Klyushin, M. I. Kiselev, D. sh. Mikhelev, V. D. Feldman; ed.4th ed., ISPR. M.: publishing center "Academy", 2004. 480 PP.</p> <p>2.Kiselev M. I., Klyushin E. B., Mikhelev D. sh., Feldman V. D. Edition: publishing center "Academy", Moscow, 2004, 481 p.</p>
8. Course content: coordinate Systems and orientation.Topographic plans and maps. Processing of geodetic measurements and evaluation of the accuracy of the results. Angular measurement. Planned survey justification of engineering and geodetic works. Survey of the area.	

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Mechanization of forestry operations
2. Amount of credits	4
3. Prerequisites:	Dendrology, Forest soil science, forest nursery, Forest crops, Plantation forest cultivation
4. Post-requisites:	Forest management, forest Management, forest commodity science, Greening of settlements, labor Protection in forestry, Forest economy
5. Competences:	<p>To know the device of basic agricultural machines, the principle of their work, the technological process and adjustment and work.</p> <p>Be able to choose and apply in practice the technical means of mechanization.</p> <p>The ability to assess the quality of work and the effectiveness of the use of technical means of mechanization.</p> <p>To calculate technological indicators of forestry machinery and equipment, to solve issues related to the mechanization of forestry operations.</p>
6. The author of the course	Ebel A., Ospangaliev A.
7. Main literature	<p>1. Lavrukhin A. G., Zlatoustov L. S., Rakov V. S. "Mechanization of forestry and logging" M. "Agropromizdat" 1987</p> <p>2. Winter I. M. Malyugin T. T. "Mechanization of forestry" M., "Forest industry" 1976</p> <p>3. Metalnikov M. S. "Workshop on forestry machines" M. "Forest industry" 1982</p> <p>4. System of machines for complex mechanization and technology of forestry and protective afforestation of the Republic of Kazakhstan for the period up to 2005. Kazniilha RNI "Bastau" 2000 Haliman E. I.</p> <p>5. Ksenevich I. P. "Tractors MTZ-100 and MTZ-102 M. "Agropromizdat" 1986</p> <p>6. Kusakin N. F. "Device and operation of skidders" M. "Forest industry" 1985</p> <p>7. Konchakov V. P. nevmerzhitsky V. N., Minakov A. S. "Technical operation of machines and equipment of logging</p>

	industry" M. "Forest industry" 1986
8. The content of the discipline	Energy resources used in forestry. Forestry machines and tools. The use of machines in forestry. Mechanization of forestry - a science that provides for the study of: the Basics of machine parts and mechanisms, the General structure, tractors and cars, basic forestry machines and tools, the organization of the use of machines and tools in forestry, traction and operational calculations. Fundamentals of technical operation of the machine and tractor fleet.

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Forestry and forest resources
2. Amount of credits	6
3. Prerequisites:	Forest soil science, Meteorology, Ecology and basics of life safety
4. Post-requisites:	Forestry with the basics of recreational use, forest Management, forest exploitation
5. Competences:	<p>As a result of the study the student should know:</p> <ul style="list-style-type: none"> <li>- the morphology and ecology of forest ecosystems; patterns of regeneration and formation of stands, change of tree species;</li> <li>- types of forest resources, their geographical location, ways and possibilities of their rational use.</li> </ul> <p>Know:</p> <ul style="list-style-type: none"> <li>- to distinguish the main directions in forest typology and principles of classification of forest types;</li> <li>- to make calculations on the economic assessment of the use of forest resources;</li> <li>- to study the components of forest biocenoses, to give forest typological characteristics of forest plantations, to determine the composition, structure and productivity of forest plantations.</li> </ul> <p>Own:</p> <ul style="list-style-type: none"> <li>- methods of forecasting directions of forest formation processes occurring in forest phytocenoses;</li> <li>- the main methods of determining indicators of productivity, stability and species diversity of forest phytocenoses</li> </ul>
6. The author of the course	Kurmangaliyev Z., Abzhanov T., Kopabayeva A.
7. Main literature	<ol style="list-style-type: none"> <li>1. Belov S. V. Forestry. M. 1983.</li> <li>2. Melekhov, I. S., Forestry .M. 2005.</li> <li>3. Lugansky N. A., Zalesov S. V. and others forestry. Ekaterinburg, 2001.</li> <li>4. Baizakov S. B., Gursky A. A., Amanbaev A. K. et al. Forests and forestry of Kazakhstan, Almaty, 1996.</li> <li>5. Gudochkin M. F., Shepherd P. S. Forests of Kazakhstan, Alma ATA, 1958.</li> <li>6. Morozov G. F. the Doctrine of the forest. Ed.5 1949.</li> <li>7. Baizakov S. B. Economic assessment of forest resources.</li> <li>8. Forest code of the Republic of Kazakhstan. Astana. 2003.</li> <li>9. Klyuchnikov L. Yu. Secondary forest use. Moscow, 2003.</li> <li>10. Pozdnyakov L. K., Forest resource studies. Ed. "Science", Novosibirsk. 1973.</li> </ol>
8. The content of the discipline:	forestry. The scientific discipline of the nature of the forest, its biology and ecology, patterns of dynamics in space and time. It is an integral part of forestry, its

natural-historical basis.

Forest resources. Identification accounting and integrated assessment of forest plant resources, Quantitative and qualitative accounting of all plant organic matter produced by the forest, multi-purpose, rational, continuous, sustainable use of forests.

### 1. Basic information about the discipline:

Name of the discipline	Selection of forest tree species
2. Amount of credits	5
3. Prerequisites:	disciplines necessary for the development of this discipline - forest nursery business, forest soil science, forest crops
4. Post-requisites:	Forest management, greening of settlements, forest management
5. Competences:	As a result of the study the student should know: - the main methods of modern breeding; supports for selection of plus trees and plantings of the main forest-forming breeds of Kazakhstan. Be able to use breeding methods to produce woody plants with a complex of economically valuable traits. Analyze the results of hybridization, varietal of forest tree species.
6. The author of the course	Ebel A., Ospangaliev A.
7. Main literature	1. Baizakov S. B., Medvedev A. N., Iskakov S. I., Mukanov B. M. Forest cultures in Kazakhstan: - Studies for Universities-Almaty: KazNAU, 2007.-288 PP. 2. Tsarev A. P., Perdution S. P., Trenin V. V. Selection and reproduction of forest tree species: Textbook/edited by A. p. Tsarev. - Moscow: Logos, 2001. - 520 p. 3. Beresin M. M., Efimov Yu. p., Arefyev Y. F. Handbook on forest selection and seed production. – M.:Agropromizdat, 1985. - 245 p. 4. Forest tree breeding. Kundensh A.V. et al. // Forest industry, 1872.-200 PP. 5. Dokuchaeva M. I. Vegetative reproduction of conifers// Lesnaya Pro-St, M., 1967. -106 p. 6. Konovalov N. A., Pugach E. A. Fundamentals of forest selection and varietal seed production // Lesnaya prom-St, 1978. - 176 p. 7. Gusev S. P. Forest selection (terms and definitions). - L.: Leningrad forestry. Academy, 1984. - 38 p. 8. Dospekhov B. A. Technique of field experience (with the basics of statistical processing).-Moscow: Kolos, 1979. - 416 p. 9. Recommendations on seed zoning of the main forest-forming species in Kazakhstan // Bastau, Almaty, 2009. - 50 p. 10. Recommendations on the establishment of a permanent forest seed base of the main forest-forming species in Kazakhstan on a selective basis. - Alma-Ata, 1987. - 71 p. 11. Recommendations on the technology of pine grafting and care for them in the forestry of Northern Kazakhstan. - Alma-ATA, 1970. - 25 p. 12. Danchenko, A. M., Danchenko M. A. Algorithms of

	biometric calculations. Tomsk, 2009. -123 PP.
8. The content of the discipline.	Determination of the source material for selection. Determination of the variability of woody species. Study of mass and individual selection of woody plants in nature on the example of test and geographical cultures. Preparation and carrying out hybridization (production of necessary inventory and equipment). Determination of General and special combinational ability of trees.

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Plantation forest cultivation
2. Amount of credits	4
3. Prerequisites:	Forest soil science, Dendrology, forest nursery business, Forest cultures.
4. Post-requisites:	Forest management, Mechanization of forestry operations, Protective afforestation and forest reclamation
5. Competences:	<p>As a result of the study the student should know:</p> <ul style="list-style-type: none"> <li>- principles of development, agricultural practices, methods and intensive technologies of growing trees and shrubs in forest and ornamental nurseries;</li> <li>- features of cultivation of forest plantations of various breeds and purpose;</li> <li>- principles of development, agricultural practices, methods and intensive technologies of growing trees and shrubs in forest and ornamental nurseries</li> </ul> <p>Know:</p> <ul style="list-style-type: none"> <li>- design, implement and control technologies for growing planting material with closed and open root systems;</li> <li>- analyze the condition and quality of the grown material;</li> </ul> <p>To possess: methods of ecological design, modern technologies of reproduction and rational cultivation, protection and reproduction of planting material of forest-forming and decorative species of trees and shrubs, including those with hereditary improved properties.</p> <p>Acquire practical skills: in the creation of forest crops with intensive technology of forest cultivation</p>
6. The author of the course	Obezinskaya E., Ospangaliev A.
7. Main literature	<p>1. Rodin A. R. Forest cultures: textbook. - 4th ed. /A. R. Rodin M.: GOU VPO MGUL, 2008. - 318 p. ISBN: 5-8135-0428-1, 978-5-8135-0428-0</p> <p>2. Red'ko, G. I. reforestation and protective afforestation: the textbook. / G. I. Redko, M. D. Merzlenko, N. A. Babich, M.: Academy, 2008. 400 PP. ISBN: 978-5-7695-4684-6</p> <p>3. Modern problems of forest growing /I. A. Markova// Textbook 250201-Forestry; St. Petersburg: Spbgltu, 2008-156 p.</p>
8. The content of the discipline.	The study of theoretical bases will allow to apply at development and realization of actions for protection and protection of the woods, on production of planting material of forest-forming and decorative breeds of trees and bushes, on care of the woods, on reforestation and afforestation, reclamation of technogenic landscapes; develop and

implement measures for the creation, operation, reconstruction of forest plantations, increasing their resistance to adverse factors, aesthetic expressiveness, the level of comfort of human stay in the forest environment, its overall aesthetic enrichment); readiness to develop projects for the development of forests, regulations, production of forest crops, sanitary and health measures, fire-fighting arrangement of forest areas, forest and ornamental nurseries, plantations, irrigation systems, taking into account environmental and economic parameters.

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Forest regulation
2. Amount of credits	5
3. Prerequisites:	Engineering geodesy, forest inventory, Forestry with the basics of recreational use, forest pyrology, forest crops, forest nursery business, forest soil science.
4. Post-requisites:	the course "forest management" is the basis for writing the final work and the formation of professional skills of the bachelor
5. Competences:	<p>As a result of the study the student should know:</p> <ul style="list-style-type: none"> <li>- on the importance of forest management in solving the rational use, protection, protection, reproduction, productivity and environmental potential of forests according to the Forest code of the Republic of Kazakhstan;</li> <li>- on the content of forest management works.</li> </ul> <p>Know:</p> <ul style="list-style-type: none"> <li>- determine the taxation indicators of forest stand;</li> <li>- lay the test area, conduct field work and laboratory processing of the results;</li> <li>- to make branch and taxation of an allotment;</li> <li>- apply forest management assessment in the appointment of forestry work.</li> </ul> <p>Possess: the ability to evaluate ongoing forestry activities.</p> <p>To acquire practical skills: to use forest management materials.</p>
6. The author of the course	Obezinskaya E., Ospangaliev A.
7. Main literature	<ol style="list-style-type: none"> <li>1. Forest code of Kazakhstan, 2005, Almaty.</li> <li>2. Murakhtanov E.S., Moiseev N.A. etc. Forest management. M., Forest industry, 1983, 342.</li> <li>3. Anuchin N.P. Forest Management. M., 1992..</li> <li>4. The main provisions for the main use of logging and reforestation in the forests of Kazakhstan.</li> <li>5. Anuchin N. Theory and practice of forestry. M., Forest industry. 1977.</li> <li>6. Antanaitis V.V. Modern direction of forest management. M., 1977.</li> <li>7. Bugaeva V.A. Fundamentals of forest management. Ed. Voronezh state University, 1982.</li> <li>8. Baizakov S.B., Toktasynov Zh.N. et al. Forests and forestry of Kazakhstan, Almaty, 1996.</li> </ol>
8. The content of the discipline.	The main focus of the course "forest Management" will be made on the study of the organization of forestry, the role, means and methods of forest management, balance of forest potential and forest management. Legislative acts and resolutions of the government of the Republic of Kazakhstan in the field of forestry and environmental protection



are studied. The forms of forestry are studied by origin, marketability, method of felling; allocation of economic parts; establishment of methods of felling and reforestation.

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Geographic information systems and remote sensing forest
2. Amount of credits	5
3. Prerequisites:	Forestry with the basics of recreational use, forest nursery business, Protective afforestation and forest reclamation, Forest crops, Biometrics in forestry, Forest taxation
4. Post-requisites:	the course "Geoinformation systems and remote sensing of the forest" is the basis for writing the final work and the formation of professional skills of the bachelor.
5. Competences:	<p>As a result of studying the discipline the student should know:</p> <ul style="list-style-type: none"> <li>- definition, main components and history of GIS;</li> <li>- basic properties and features of analog maps, map projections;</li> <li>- digital and electronic maps, types of digital terrain models, methods of construction of digital terrain models and their accuracy, the principles of "GPS»;</li> </ul> <p>Know:</p> <ul style="list-style-type: none"> <li>- install and configure specialized GIS, create new projects, form the structure of the map, set the attributes of the display of objects on the screen;</li> <li>- solve problems using digital and mathematical models of the terrain;</li> <li>- analyze the terrain using geographic information systems;</li> <li>- monitor compliance with norms and regulations in the workplace.</li> </ul> <p>Possess skills of performance of the basic operations on the analysis of spatial and attributive information, the main software tools of GIS applied in forestry practice, skills of use of satellite navigation systems</p>
6. The author of the course	Obezinskaya E., Ospangaliev A.
7. Main literature	<p>1. Atroshchenko O.A., Tolkach I.V. Remote sensing methods And geographic information systems in forestry. - Meganewton.: BSTU, 2003. -375 PP.</p> <p>2. Atroshchenko O.A., Tolkach I.V. Geographical information systems in forestry. Practicum. – Meganewton.: BSTU, 2003. -375 PP.</p> <p>3. Geographic information system Formap 4.0. User manual. Electronic version, supplied with GIS Formap.</p>
8. The content of the discipline.	The rational use, conservation and restoration of forests in today's urban world is becoming an increasingly complex and, at the same time, urgent task. Plans, decisions on conservation and sustainable use of forest resources and related businesses are often contradictory and are made in a conflict of interest and with a high degree of uncertainty. ARC/INFO software, the world leader in geographic information systems (GIS), enables forestry professionals to easily integrate and use available sources of tabular and cartographic information to improve decision-making.

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Forest management and forest legislation
2. Amount of credits	5
3. Prerequisites:	Forest nursery business, Mechanization of forestry works, Forest crops, forest Protection.
4. Post-requisites:	Forest management, forest Management, Basics of entrepreneurship in forestry, Forest economy
5. Competences:	<p>As a result of studying the discipline the student should know:</p> <ul style="list-style-type: none"> <li>- principles, regulations and standards of management and licensing activities, control functions of state institutions for the protection of forests and wildlife;</li> <li>- structure and basic principles of the organization of forest management and forestry, the activities of state institutions for the protection of forests and wildlife;</li> <li>- silvicultural and economic bases of production processes, technical, technological and organizational and economic methods and ways of the organization of forestry production; fundamentals of labor organization, production management and technical regulation.</li> </ul> <p>Know:</p> <ul style="list-style-type: none"> <li>- to carry out operational management of forest technological processes, to arrange personnel and to rationally use labor, financial, technical resources and to ensure safe working conditions;</li> <li>- independently and creatively use theoretical knowledge to conduct research to identify deficiencies in the legal aspects of sustainable forest management.</li> </ul> <p>Know how to improve the economic impact of forest resources.</p>
6. The author of the course	Obezinskaya E., Ospangaliev A.
7. Main literature	<ol style="list-style-type: none"> <li>1. Anoshin R.M. et al. Economics organization and planning of production in forestry: Textbook, M., "Forest industry" 1984. -280 p.</li> <li>2. Ivanov L.B.. Scientific basis of production management. "Forest industry", 1975 -184</li> <li>3. Orlov M.M.. Forest management. (Classics of domestic forestry / editorial Board: M. D. Giryaev et al.) - M.: LLC Publishing house "Forest industry", 2006 -480 p.</li> <li>4. Teplyakov V.K. et al. Fundamentals of sustainable forest management: studies. Manual for universities / world wildlife Fund. - M., 2009.- 143 p.</li> <li>5. Baizakov S.B., Mukanov B.M.. Problems of sustainable management of forests and forestry in Kazakhstan, - Almaty, 2007, 96 p.</li> </ol>
8. The content of the discipline.	The course is devoted to the study of the main issues of Economics, organization and management of forestry, the organization of operational management of forest technology processes, effective use of forest materials, labor and financial resources, technology and management techniques, regulation and organization of management work. Topical issues of forestry and forest industry, efficiency of forest management measures, rational use and reproduction of forest resources, forest productivity are considered.

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Fundamentals of entrepreneurship in forestry
2. Amount of credits	5
3. Prerequisites:	Forest nursery business
4. Post-requisites:	Forest economics, Forest exploitation, Forest management and forest legislation
5. Competences:	<p>As a result of the development of the discipline the student must</p> <p>Know: the Current rules in the field of business relations, the procedure for registration, re-registration, liquidation of legal entities and individual entrepreneurs, regulations of the organization of legal entities, the mechanism of functioning of organizations of various forms of ownership and more.</p> <p>Be able to: - interpret and apply regulations, make legal decisions and perform other legal actions in strict accordance with the law;</p> <p>- carry out preventive work to explain the legislation and law enforcement practice.</p> <p>Possess: skills of working with information sources, educational and reference literature on economic issues. To acquire practical skills: on the basics of entrepreneurial activity of managers and specialists of enterprises.</p>
6. The author of the course	Dudina N., Ospangaliev A.
7. Main literature	<p>1. Constitution of the Republic of Kazakhstan (as amended in 2016).</p> <p>2. Civil code of the Republic of Kazakhstan (Special part). Comment Resp. Ed. Suleimenov M., Basin Yu. G. Almaty, 2000</p> <p>3. Busygin A. Entrepreneurship. Textbook. Publisher: Busygin, 2003 p. 614.</p> <p>4. Suleimenov M. et al. "Law and entrepreneurship in Kazakhstan" - A., 1994</p> <p>5. Asaul A. Organization of business: Textbook. SPb.: Peter, 2005. Pp. 368.</p> <p>6. The law "On protection and support of economic activities and the development of predprinimatelstva" from 04.07.1992</p> <p>7. Law of RK " on individual entrepreneurship of 29.06.1997</p> <p>8. Law of the Republic of Kazakhstan "on limited and additional liability partnerships" dated 22.04.1998</p> <p>9. Romankov I. Problems of legal regulation of entrepreneurial activity of citizens in Kazakhstan. - A., 1997.</p>
8. The content of the discipline.	Fundamentals of business in forestry is the science of the main directions of business law, the normative legal acts in the field of business relations, the specifics of business relations.

<b>1. Basic information about the discipline:</b>	
Name of the discipline	Forest economics
2. Amount of credits	5

3. Prerequisites:	The basics of entrepreneurial activities in forestry, Forest management and forest legislation, Forest management
4. Post-requisites:	the course "Forest Economics" is the basis for writing the final work and the formation of professional skills of the bachelor.
5. Competences:	<p>As a result of the development of the discipline the student should know:</p> <ul style="list-style-type: none"> <li>- in the field of formation and development of forestry in the Republic, economic reforms and market relations, the role of forestry and forest parks in solving economic and social problems, forms of ownership, the essence and content of the main economic categories;</li> <li>- methods of the organization of effective and rational use of forest resources and means of production, the main standards of expenditure of raw materials</li> </ul> <p>Know:</p> <ul style="list-style-type: none"> <li>- to make a feasibility study of the projected forestry activities;</li> <li>- to analyze the features of functioning of forest and forest Park economy;</li> <li>- keep records of forest resources in state forest institutions.</li> </ul> <p>Acquisition of practical skills in planning in the development of Park management and financing of forestry and Park management, as well as skills in market relations.</p>
6. The author of the course	Dudina N., Ospangaliev A.
7. Main literature	<ol style="list-style-type: none"> <li>1. Safronova N. A. enterprise Economics. - M.: Lawyer, 1998.-584 PP.</li> <li>2. Adamchuk V.V., Romashov O.V., Sorokina M.E. Economics and sociology of labour: Textbook for universities. - Moscow: UNITY, 2000. - 407 p.</li> <li>3. Alekseicheva E.U. Economy organizations (enterprises): the Textbook for students / Alekseicheva E.Y., Magomedov D.M., Costin I.B.. - M.: Dashkov I. K., 2013. - 292 c.</li> <li>4. Volkov O.I. "Enterprise Economics". 3rd ed., pererab. and DOP. - M.: INFRA-M, 2007. - 601 p.</li> <li>5. Mammadov O.Yu. Modern Economics: textbook / KnoRus publishing House, - M.-2010. 320 PP.</li> <li>6. Reisberg B.A. Fundamentals of Economics: Course of Economics / BA Reisberg-M.: Infra-M, - 1997. - 720 p.</li> <li>7. Kozhukhov N.I. Economics of forestry / Publishing house "Forest industry", - M., - 1978.- 230 p.</li> <li>8. Anoshin R.M., Voronin I.V., Kulikova T.A., Pavlov V.V., Tryanov M.A. Economics, organization and planning of production in forestry. - Publishing house "Forest industry", - M., -1971. 280c.</li> <li>9. Voronini. Economics of forestry enterprises. / Publishing house "Forest industry", - M., - 1976. - 312 p.</li> <li>10. Forest Code of RK. - Almaty, 2015.</li> </ol>
8. The content of the discipline.	Forest and Park management, its characteristics and role in the economy of the country. The current state and problems of forestry and forest parks. Material and technical base of forest and forest Park economy. Forests and forest lands Labour resources

and labour productivity in forestry. Infrastructure of forest and forest Park economy. Legal framework, economy and the main directions of development of forestry and forest parks. The role of forestry in the agribusiness system. Economy of the main directions of forest and forest Park economy. Features of use of the market mechanism in forest and forest Park economy. Conditions of functioning of forest and forest Park economy. The concept and features of goods and services in forestry and forest parks. Production cost. Profit and profitability of production. Prices and pricing in forestry.