Ministry Agriculture of the Republic Kazakhstan
Kazakh agrotechnical university named of S. Seyfullin

Considered at the meeting of the
University Academic Council
Protocol № 15
«28» 05 2020

APPROVED
by First Vice Chairman of the Board
of «S.Seifullin Kazakh
AgroTechnical University» NCJSC
_____ A. M. Abdyrov
«___» _____2020

EDUCATIONAL PROGRAM
"Vegetable growing of the protected ground"

Code and classification of the field of education: 7M08 Agriculture and bioresources

Code and classification of the directions of preparation: 7M081 Plant growing

The code in the International standard classification of education: 0812 Rural, forest and fishing economy

The awarded degree: the master of agricultural sciences according to the educational program "Vegetable growing of the protected ground"

Training term: 2 years (scientific-pedagogical)

Nur-Sultan, 2020

Authors:

Name Place	Place of work	Position, academic degree, title
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The team of authors approved by the order of S. Seifullin KATU NCJSC No. 932-H of 12.12.2018.

The educational program "Vegetable growing of the protected ground" was reviewed at a meeting of the Department "Agriculture and Crop Production" Protocol No. 9 of "20" may 2020, approved by the Council of the Agronomy Faculty Protocol No. 10A "26" may 2020.

The Dean of the faculty of agronomy Stybaev G. J.

Head of the Department Amantayev B. O.

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Content

1 Passport of the educational program

1.1 Purpose of the educational program

"Vegetable growing of the protected ground" is the purpose of the educational program – training of specialists with the high level of professional culture, capable to formulate and solve modern and practical problems in the field of hothouse vegetable growing, to successfully carry out research, administrative and teaching activity.

Tasks of the educational program:

- formation of skills of independent research and pedagogical activity of the undergraduate;
- training of the master of agriculture for the activity demanding profound and vocational training, in the field of Vegetable growing of the protected ground and also for research, methodical and pedagogical work.

1. 2 General characteristic of the educational program

The educational program "Vegetable growing of the protected ground" is created on the basis of inquiry of employers in the specialists in hothouse vegetable growing having professional competences.

The educational program was developed according to the National frame of qualifications and professional standards, agreed with the Dublin descriptors and the European frame of qualifications.

The uniqueness of the educational program consists in what provides social mobility of vyspusknik, their demand in labor market and is created together with scientists-teachers of the university Davies, the State of California (USA).

The educational program "Vegetable growing of the protected ground" is designed on the basis of the modular system of studying of disciplines and contains 5 modules forming basic and professional competences.

Total number of the credits for this educational program - 120 credits, from them: total number of the credits for theoretical training - 84 credits, for research work of the undergraduate - 24 credits, on a final assessment - 12 credits.

2. Competence-based model (portrait) of the graduate

2.1 Spheres of professional activity

Graduates of the educational program "Vegetable growing of the protected ground" can work in:

- local and republican public institutions of an agrarian profile and different types of agricultural formations;

- institutions of formation of the highest, specialized secondary, professional level of an agrarian and biological profile;
- research and production institutions of agar science.

2.2 Types of professional activity

Masters of the educational program "Vegetable growing of the protected ground" can carry out: organizational and administrative, production and technological, research and pedagogical activity.

2.3 Basic competences

Nobility: methodology of scientific knowledge; psychology and pedagogics of cognitive activity of students; a foreign language at the professional level; modern means and methods of protection of plants; scientific bases of management of food of crops.

To be able: to know not less than one foreign language at the professional level; to apply knowledge of pedagogics and psychology of the higher and vocational education; to apply the system of the integrated protection of plants and use of fertilizers;

To have skills: foreign language skills (B2 level); research activity in the sphere of agricultural sciences; the correct and logical registration of the thoughts in an oral and written form; formations of practical skills of teaching; calculation of agronomical and cost efficiency of use of fertilizers and means of protection of plants.

3.5 Professional competences

Nobility: theoretical and practical bases of seed farming of vegetable cultures, zone systems of agriculture; modern ways of production of vegetables in greenhouses; modern methods of protection of plants and scientific bases of food of vegetable cultures in hothouse conditions; a technique of carrying out researches and the main methods of mathematical statistics in hothouse vegetable growing; fundamentals of applied sciences for production of vegetable products;

To be able: to regulate a microclimate and to apply technology of cultivation of vegetable cultures in modern greenhouses; to organize the modern systems of the integrated protection of plants and optimization of food of vegetable cultures in the conditions of the greenhouse; to make experiments and statistical processing of the obtained data; to conduct patent search within area of researches; to generalize results of research.

To have skills:practical work of conducting seed farming of vegetable cultures; applications of modern ways of cultivation of vegetable cultures and to introduce necessary amendments in the planned technology in hothouse vegetable

growing; uses of modern methods of protection of plants and regulation of food of vegetable cultures in greenhouses; to formulate conclusions of results of statistical processing of scientific data; independent carrying out patent search; carrying out research works.

3 Base of passing professional practician

The educational program "Vegetable growing of the protected ground" provides:

1) pedagogical (2 credits - 60 hours) – at department of farming and plant growing of KazATU named of S. Seyfullin.

2) research (9 credits - 270 hours) – at the venue of research works.

Student teaching is carried out for formation of practical skills of teaching and carried out to the period of theoretical training without separation from educational process. Undergraduates are involved in training in a bachelor degree.

Research practice is carried out for the purpose of acquaintance with theoretical, methodological and technological achievements of domestic and foreign science and production in the field of vegetable growing and carrying out own researches. Content of research practice is defined by a subject of scientific research.

Depending on the chosen subject of the master thesis bases of research practice are production bases of large-scale greenhouse facilities, research institutes, including: phytothrone of Agronomical faculty of the Kazakh agrotechnical university named of S. Seyfullin, LLP “KazRSI fruit vegetable growing”, LLP “Astanaekostandart”, LLP “Toparskiye greenhouses”, LLP “IZET GREEN House”, LLP "Greenhouse Technologies of Kazakhstan", LLP “BRBAPK”. LLP “Bio Prom Technologies”, LLP “Zhasulan Flora”, LLP “Led System Media” etc.

4 Structure of the educational program of a magistracy in the scientific-pedagogical direction

№ п/п	The name of the cycles of disciplines and activities	General labor input	
		in class periods	in the academic credits
1.	Theoretical training	2520	84
1.1	Cycle of the basic disciplines (BD)	1050	35
1)	High School Component (HSC):	750	25
	Foreign language (professional)	300	10
	History and philosophy of science	150	5
	Pedagogics of the higher school	90	3
	Psychology of management	150	5
	Teaching practice	60	2
2)	Component for choice (CC)	300	10
	The integrated protection of plants	150	5
	Optimization of food agricultural cultures	150	5
1.2	Cycle of the main subjects (MS)	1470	49
1)	High School Component (HSC)	600	20
	Seed farming of vegetable cultures	150	5
	Systems of farming and production of crop products	150	5
	Technique experienced case	150	5
	Patenting and intellectual property protection	150	5
2)	Component for choice (CC)	600	20
	The technology of growing vegetables in greenhouses	150	5
	Modern methods of plant protection in greenhouse vegetable growing	150	5
	Scientific bases of food of vegetable cultures in the protected soil	150	5
	Biometrics	150	5
3)	Research practice	270	9
2	Science-research work	720	24
1)	Research work of the undergraduate, including passing of a training and implementation of the master thesis (SRWM)	720	24
3	Additional Types of Training (ATT)		
4	Final Assessment (FA)	360	12
1)	Registration and protection of the master thesis (RaPMT)	360	12
	Total	3600	120

Annex 1. Academic calendar ***

The schedule of educational process in 2020-2022 years

For the modular education program "Vegetable growing of the protected ground"

Direction of preparation: scientific and pedagogical

Degree: master of agricultural Sciences in the educational program "Vegetable growing of the protected ground"

Trainig period: 2 years

Mode of study: Full-time

Courses		September					October					November				December				January					February				Mart				April					May				June				July					August			
I	2020	31	7	14	21	28	5	12	19	26	2	9	16	23	30	7	14	21	28	4	11	18	25	1	8	15	22	1	8	15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28	5	12	19	26	2	9	16	23	26
	2021	4	11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	5	12	19	26	2	9	16	23	30	7	14	21	28	4	11	18	25	2	9	16	23	30	7	14	21	28	31
№ of week			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
I		P	·	·	·	·	·	·	·	M/·	·	·	·	·	·	·	M/·	::	::	=	=	=	=	=	=	=	·	·	·	·	M·	::	·	·	·	·	M/·	RP	RP	RP	RP	RP	::	·	·	·	·	M/·	::	R/RP	R/RP	R/RP	R/RP	R/RP
II	2021	26	2	9	16	23	30	7	14	21	28	4	11	18	25	2	9	16	23	30	6	13	20	27	3	10	17	24	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	6	13	20	27	3	10	17	24
	2022	31	7	14	21	28	5	12	19	26	2	9	16	23	30	7	14	21	28	4	11	18	25	1	8	15	22	29	7	14	21	28	4	11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29
№ of week			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
II			R/RP	RP	S/=	S/=	S/=	S/=	S/=	S/=	S/=	·	·	·	·	·	·	·	M/·	·	·	·	·	·	·	M/·	::	::	TP	TP	TP	R	R	R	R	R	R	R	/	/	X	X	X	X	//	//								

Presentation	Theoretical Course	Midterm Exam	Exams	Summer semester	Vacation	Research Practice	Teaching Practice	MSSRW	Final Exam	Master dissertation design	Master dissertation defence
P	·	M	::	S	=	RP	TP	R	/	X	//

Holydays

Day of knowledge	1 September	International Women's Day	8 Mart
Day of the first President of RK	1 December	The holiday "Nauryz"	21-23 Mart
Independence day	16 - 17 December	Day of Unity of People of Kazakhstan	1 May
New Year	1-2 January	Defender of the Fatherland Day	7 May
Constitution Day of Kazakhstan	30 August	Victory Day	9 May

*** Reviewed and approved at the beginning of the school year

Annex 2. Working curriculum

WORKING CURRICULUM

For the modular education program "Vegetable growing of the protected ground"

In specialty M131 – -

Course years 2020-2022

Degree : Master's program by specialization (Scientific & pedagogical direction)

Form of education: Full-time (MS 2 years) trimester

Entry year : 25-05-2020

Module code	Module name	Discipline cycle	Discipline component	Code of subject	Subject name	Academic credits	Control by semesters			Volume of hours							Distribution of study hours by semester/terms/quarters					
												including			Self-study work of Ms student with teacher (office)	Self-study work of Ms student	1	2	3	4	5	6
							Exams	Differentiated test(practice)	Differentiated test(course paper)	Total	In-class learning	Lectures	Practice	Lab practicals			Number of weeks in the semester/term/quarter					
General modules																						
1	Social and pedagogical	BS	UC	IFN 5201	History and philosophy of science	5	1			150	50	1/20	2/30		1/20	5/80	10					
2		BS	UC	PVSH 5202	Pedagogics of higher school	3	1			90	30	1/20	0/10		0/12	3/48	10					
3		BS	UC	PU 5203	Psychology of management	5	1			150	50	2/30	1/20		1/20	5/80	10					
4		BS	UC	PP 5205	Teaching practice	2				0	0						10					
5	Language of the discipline	BS	UC	IYaP 5204	Foreign language (professional)	5	1			150	50		3/50		1/20	5/80	10					
6		BS	UC	AYaDAC 5206	English for Academic Purposes	5	2			150	50		3/50		1/20	5/80		10				
Modules of specialty/education programm																						
7	Modern bases of selection	AS	ES	Bio 6305	Biometrics	5	4			150	50	1/20	2/30		1/20	5/80				10		
8		AS	UC	SSOK 6304	Plant breeding and seed production of vegetable crops	5	4			150	50	1/20	2/30		1/20	5/80				10		
9	Crop production	AS	UC	PZIS 6303	Patenting and intellectual property protection	5	5			150	50	1/20	2/30		1/20	5/80					10	
10		AS	ES	TVOKZG 6306	The technology of growing vegetables in the protected ground	5	5			150	50	1/20	2/30		1/20	5/80					10	
11	Nutrition and protection of plants	BS	ES	IZR 5209	Integrated plant protection	5	2			150	50	1/20	2/30		1/20	5/80		10				
12		BS	ES	OPSK 5210	Optimizing nutrition of crops	5	2			150	50	1/20	2/30		1/20	5/80		10				
13		AS	ES	ZRZG 5308	Plant protection in the protected ground	5	3			150	50	1/20	2/30		1/20	5/80			10			
14		AS	ES	SPOKZG 6307	System of nutrition of vegetable crops in the protected	5	4			150	50	1/20	2/30		1/20	5/80				10		
15	Research techniques	BS	UC	IP 5207	Research practice	5				0	0								10			
16		BS	UC	IP 6208	Research practice	4				0	0									10		
17		AS	UC	MOD 5301	Methodology of research work	5	2			150	50	1/20	2/30		1/20	5/80		10				
18		AS	UC	SZPRP 5302	Farming systems and crop production	5	3			150	50	1/20	2/30		1/20	5/80			10			
Scientifically research																						
19	Research practice	RW	UC	NIRMVVMD 5501	MS student's research work, incl. Master thesis	5				0	0								10			
20		RW	UC	NIRMVVMD 6502	MS student's research work, incl. Master thesis	1				0	0									10		
21		RW	UC	NIRMVVMD	MS student's research work, incl. Master thesis	10				0	0										10	
22		RW	UC	NIRMVVMD	MS student's research work, incl. Master thesis	8				0	0											10
Total of theoretical course						73	15	0	0	2190	730	270	460	0	292	1168						
AC	**Additional courses**					35							1050.0									
PP	Teaching practice					2	12		1					60								
RP	Research practice					9	54		3, 4					270								
MSSRW	MS student's research work, incl. Master thesis					24	144		3, 4, 5, 6					720								
FA	**Final attestation**					12							1260.0									
	Design and defense of master's thesis/project					12		6					1260									
	Total					120				4500	730	270	460	0	292	1168						

Annex 3

Description of disciplines of obligatory and high school components

1. Main information on discipline:	
Name of discipline	**Foreign language (professional)**
2. Quantity of the credits	**5**
3. Prerequisites:	Foreign language according to the program of a bachelor degree
4. Post requisites:	English language for the academic purposes
5. Competences:	*nobility:* - functional and stylistic characteristics of the scientific report of material in the required foreign language, general scientific terminology and terminology of sublanguage on the correct specialty in a foreign language, bases of business correspondence within the international cooperation. to be able: - to be fluent in the foreign language at the professional level allowing to conduct scientific research and to carry out teaching special disciplines in higher education institutions; - to eksplitsirovat scientific information (The summary, the summary) in writing, to participate in a professional discussion, scientific disputes, discussions, conversations at "a round table", to translate original literature in the specialty with the subsequent analysis correct, interpretations and estimates of required information. to have skills: - professional communication and cross-cultural communication in a foreign language; to be competent: - in obshcheny zarubezhny scientific community in professional area.
6. Author of a course	Department of a foreign language: Rakhimbekova G. O., associate professor
7. Main literature	1.Kathy Cox, David Hill *English for Academic Purposes*, Pearson Longman, 2011.231p. 2.Агабекян И.П., Коваленко П.И. Английский для технических вузов. Серия «Высшее образование». – Ростов н/Д: 3.McCarthy, Michael & O'Dell, Felicity. (2008). *Academic Vocabulary in Use* (Edition with answers). Cambridge: CUP. Годман А. Толковый словарь английской научной лексики / А. Годман, ЕМФ Пейн. - М.: Рур.яз., 1989.-728 р.
8. Content of discipline. The communicative and adequate use of rules of execution of oral and written texts of scientific and technical character in English language; acquaintance with the requirements to execution of documentation (within the program) accepted in the international environment in the sphere of professional and business communication; realization of the acquired speech skills in the course of implementation of term papers and other educational tasks and also final qualification work in English language. Complex theoretic-linguistic, practical and	

information and analytical training of the student for the purpose of performance by the graduate of the functions connected with use of a foreign language in professional activity, scientific and practical work, in communication with foreign partners for self-educational and other purposes. Mastering the advanced level of English for the academic purposes (EAP) will allow to operate freely with a specialty scientific conceptual framework, to expand scientific and information base, to seize abilities of interpretation of scientific information, argument, belief, scientific polemic, the academic letter. It will provide free exchange of views at the international level during the discussions, scientific conferences and forums and also conducting occupations with students in a foreign language on a specialty profile.	
1. Main information on discipline:	
Name of discipline	**English language for the academic purposes**
2. Quantity of the credits	**5**
3. Prerequisites:	English according to the program of a bachelor degree
4. Post requisites:	Special disciplines with training English
5. Competences:	to be able: - to generalize results of research and analytical work in the form of the thesis, the scientific article, the report, an analytical note, etc. in the state and foreign language. to have skills: - oratory, the correct and logical registration of the thoughts in an oral and written form in a foreign language; - expansion and the increasing knowledge necessary for daily professional activity and continuation of education in doctoral studies. to be competent: - in ways of ensuring continuous updating of knowledge through, expansions of professional skills and abilities.
6. Author of a course	Department of a foreign language Orazbekova S. O., doctor PhD
7. Main literature	1/Kathy Cox, David Hill *English for Academic Purposes*, Pearson Longman, 2011. Evans V. *Successful Writing. Proficiency*. Express Publishing, 2008.
8.Content of discipline. Education. Planning of the essay. English in a century of the Internet. Science and technologies. Search on the Internet. Literature. Types of texts. Structure of scientific articles. Oral skills of the presentation. Mini-research project. How to publish the manuscript. Compare the essay. Development of skills of the publication. Development of skills of knowledge of English. Introduction discussion. Analysis of the academic letter	
1. Main information on discipline:	
Name of discipline	**History and philosophy of science**
2. Quantity of the credits	**5**
3. Prerequisites:	Humanitarian and natural-science disciplines of a bachelor degree
4. Post requisites:	Basic and main subjects of a magistracy
5. Competences:	to have an idea: - about a role of science and education in public life; - about current trends in development of scientific knowledge of the field of agriculture; - about current methodological and philosophical problems natural (social, humanitarian, economic) sciences; nobility:

	- methodology of scientific knowledge of the field of agriculture; - principles and structure of the organization of scientific activity; - to be able: - to use the gained knowledge for professional development and use of the ideas in the context of scientific research; - to critically analyze the existing concepts, theories and approaches to the analysis of processes and the phenomena; - to integrate knowledge gained within different disciplines for the solution of research tasks; - by integration of knowledge to take out judgments and to make decisions on the basis of incomplete or limited information; - to have skills: - research activity, solution of standard scientific tasks; - to be competent: - in the field of methodology of scientific research; - in implementation of scientific projects and researches in the field of plant growing and farming.
6. Author of a course	Department of philosophy: Bekmaganbetov U.Zh., associate professor
7. Main literature	1.История и философия науки. Под. ред. Крянева Ю.В., Моторинский Л. Е.,-М;ИНФА-М, 2011. – 416 р. 2.Мырзалы Р.К. Ғылымның тарихы мен философиясы. – Алматы: Бастау, 2014. 3.Степин В.Р. История и философия науки. –М: Академический проект, 2011. –423 р. 4.Хасанов М. Ш., Петрова В.Ф. История и философия наук. –Алматы:Қазақ университеті, 2013,–150 р.
8. Content of discipline. Philosophy and methodology of science as industry of philosophical knowledge. Science in culture and a civilization. Emergence of science. Main stages of historical dynamics of science. Structure of scientific knowledge. Scientific revolutions. Scientific rationality. Features of the present stage of development of science. Science as social institute Natural sciences in structure of modern scientific knowledge. Story of formation of sciences about society, culture, history and person. Studying of discipline "History and philosophy of science" is acquaintance of undergraduates with structure of scientific knowledge, with methods of scientific research, with functions of scientific theories and laws; expansion of their world outlook outlook; elaboration of ideas of criteria of scientific character and about requirements to which scientific research and its results and also development of style of scientific thinking on the basis of studying of history and philosophy of science has to answer.	
1. Main information on discipline:	
Name of discipline	**Pedagogics of the higher school**
2. Quantity of the credits	**3**
3. Prerequisites:	Humanitarian and natural-science disciplines of a bachelor degree
4. Post requisites:	Teaching practice
5. Competences:	to have an idea: - about professional competence of the teacher of the higher and vocational education, college;

	nobility: - psychological methods and means of increase in efficiency and quality of training; - to be able: - to work with students and to conduct with them educational, research and other types of works; - to apply knowledge of pedagogics and psychology of the higher and vocational education, college in the pedagogical activity; - to apply interactive methods of training; - to carry out information and analytical and information and bibliographic work with attraction of modern information technologies; - to have skills: - implementation of educational and pedagogical activities for credit technology of training in educational institutions of the higher and vocational education, colleges; - techniques of teaching professional disciplines in the field of farming and plant growing; - uses of modern information technologies in educational process; - formations of practical skills of teaching at the higher school, specialized secondary, professional educational institutions on carrying out necessary cycles of a lecture and practical training to agronomical disciplines. to be competent: - to give studies in the ucherezhdeniyakh of secondary vocational and higher education, to develop and use educational and methodical providing, to direct research work of students; - in questions of modern educational technologies;
6. Author of a course	Department of vocational education (Mukhanbetkaliyev E.E., associate professor)
7. Main literature	1. Ахметова Г.К., Исаева З.А. Педагогика: Учебник для магистратуры университетов. - Алматы: Казак университет!, 2006. - 328 р. 2. Баширова Ж.Р. Развитие университетского образования в аспекте подготовки преподавателя высшей школы. Монография. -Алматы: АТУ им.Абая, 2003. - 160 р. 3. Мынбаева А.К. Основы педагогики высшей школы: Учебное пособие. - Алматы, 2013. - 190 р. 4. Кредитная система обучения в вузе. - Алматы: Қазақ университеті, 2006. - 180р. 5. Пионова Р. Педагогика высшей школы. - Минск: Университетское, 2002. 6. Педагогика и психология высшей школы. - Ростов н/Д: Феникс, 2002. - 544 р.
8. Content of discipline. Subject and problems of pedagogics of the higher school. Fundamentals of didactics of the higher school. Features of student's age and a problem of education at the higher school. Development of creative thinking of students in the course of training. Pedagogics of the higher school and problem of improvement of the higher education. "Education paradigms". Essence of the concepts "humanization" and "humanitarization.	

Integration processes in modern education. Informatization of educational process. Forms of the organization of educational process at the higher school. Structure of pedagogical activity. Pedagogical design. Pedagogical technologies. Pedagogical communications.	
1. Main information on discipline:	
Name of discipline	**Psychology of management**
2. Quantity of the credits	**5**
3. Prerequisites:	Humanitarian and natural-science disciplines of a bachelor degree
4. Post requisites:	Basic and main subjects of a magistracy
5. Competences:	nobility: - psychology of cognitive activity of students in the course of training; to be able: - to carry out information and analytical and information and bibliographic work with attraction of modern information technologies; - to think creatively and to approach creatively the solution of new problems and situations; - to have skills: - professional communication and cross-cultural communication; - oratory, the correct and logical registration of the thoughts in an oral and written form; - expansion and the increasing knowledge necessary for daily professional activity and continuation of education in doctoral studies. - to be competent: in ways of ensuring continuous updating of knowledge, expansions of professional skills and abilities.
6. Author of a course	Department of vocational education (Mukhanbetkaliyev E.E., associate professor)
7. Main literature	1. Аверченко Л.К. «Психология управления» М.:1997г 2. Урбанович А.А. «Психология управления» Минск - 2005 г. 3. Столяренко Л.Д. «Психология управления» Ростов-на-Дону 2005 г 4. Райзберг Б.А. «Психологические основы управления» М.: 2003 г. 5. Шейнов В.П. «Психология и этика делового контакта»Минск 1997 6. Вересов Н.Н. «Психология управления» М.: 2001 г. Венедиктова В.И. «Деловая репутация» М. 1996 г.
8. Content of discipline. Psychology of management – the industry the psychologists studying psychological regularities of administrative activity and a problem of interaction and communication of people in various social structures. A subject of psychology of management are psychological regularities of the organization of administrative process and also the administrative relations. Psychology of the personality; psychology of administrative activity and informative processes. The general and procedural questions of the organization of administrative activity in terms of its psychological efficiency. Questions of complementarity of processes of the management and leadership; theories of leadership. Intra organizational social psychological processes and the phenomena, possibilities of purposeful management of them in activity of the head. Identity of the head and employees, possibility of their professional self-	

improvement and development. Administrative professional communication and interaction of the head with subordinates. Psychological health of the head and a stress - management. Psychological stability and steadiness in professional activity	
1. Main information on discipline:	
Name of discipline	**Seed farming of vegetable cultures**
2. Quantity of the credits	**5**
3. Prerequisites:	Disciplines on seed farming of a bachelor degree
4. Post requisites:	Theoretical bases modern seeds of maintaining and seed farming of vegetable cultures. Agrobiological fundamentals technologies cultivation of field cultures, Systems of farming and production of crop products
5. Competences:	to have an idea: - about achievements of domestic and foreign scientists and practicians in the field of seed farming of vegetable cultures; - about the priority directions in seed-growing researches of vegetable cultures in Kazakhstan. nobility: - theoretical and practical bases in seed farming of vegetable cultures, modern methods of seed farming, a way of its development and improvement on the basis of the latest opening in biology, the organization of seed farming of vegetable cultures, the system of placement and introduction in production. to be able: to formulate and prove conclusions, to enter the offers in the field of seed farming of vegetable cultures; to have skills: - theoretical and practical skills of work with modern methods of conducting seed farming of vegetable cultures. - on aprobatsionny and economic signs to describe grades of the main vegetable cultures; to be competent: - in carrying out approbation of crops, filling of documents on seed farming of vegetable cultures.
6. Author of a course	Department of farming and plant growing (Dzhatayev S.A., candidate of biological sciences
7. Main literature	1.Гуляев Г.В., Гужов Ю.Л. Селекция и семеноводство полевых культур. М.: Агропромиздат. 2005. 2.Швидченко В.К. Селекция сельскохозяйственных растений, Astana, 2006. 3. Сулейменов А.А. Руководство по апробации р.-х. культур, распространенных в Северном и Центральном Казахстане, Акмола,1997. 4. Щепетков Н.Г. Овощеводство Северного Казахстана, Astana, 2018 5. Юсупов М.З., Петров Е.П., Турбекова А.Р., Ахметова Ф.Р. Овощеводство Казахстана. КазАТУ, - Astana, 2018. 6. Прохоров И.А. Селекция и семеноводство овощных культур. Учебник/ И.А. Прохоров, А.В. Крючков, В.А. Комиссаров, М.- Колос, 1997, 479 р. 7. Прохоров И.А. Практикум по селекции и

	семеноводству овощных и плодовых культур. Учебное пособие./ И.А. Прохоров, Р.П. Потапов, М.Колос, 1988, 319 р.

8. Content of discipline. Theoretical bases of seed farming of vegetable cultures. Modern system of seed farming. Organizational structure of seed farming in Kazakhstan. Primary seed farming and production of original seeds. Grades change, seed farming of new grades.

1. Main information on discipline:	
Name of discipline	**Systems of farming and production of crop products**
2. Quantity of the credits	**5**
3. Prerequisites:	Farming, plant growing, soil science, botany, physiology of plants, agricultural meteorology, protection of plants, agrochemistry, biology and the car use in agriculture
4. Post requisites:	Theoretical bases modern seeds of maintaining and seed farming of cultures. Agrobiological fundamentals of technologies of cultivation of field cultures, Confirmation of compliance of products of crop production. Biometrics.
5. Competences:	to have an idea: - about methods of rational and effective use of the earth, increase in fertility of soils and increases in efficiency of cultures. nobility: - general-theoretical bases of zone systems of farming; factors of fertility of the soil and methods of reproduction of fertility of the soil in various soil-climatic zones; - scientific bases of processing of the soil, principles of minimizing processing of the soil, soil erosion and measures of fight against it; to be able: regulations of living conditions of plants in the zone systems of agriculture and feature of a system of farming in the conditions of the Republic of Kazakhstan; -application of crop rotations in various modern systems of farming; to have skills: - measures of fight against weed plants in the soil-protective system of farming. - drawing up zone systems (agrolandscape) farmings taking into account soil and climatic a condition of economy; to be competent: - in application of the agricultural receptions promoting preservation and increase in fertility of soils, protection of the soil against an erosion and allowing increase in productivity of agricultural cultures in various soil-climatic zones.
6. Author of a course	Department of farming and plant growing (Karipov R.H., associate professor)
7. Main literature	1.Земледелие. Под. ред. А.И. Пупонина.- М.: 2004. – 552 с 2.Каштанов А.Н. и др. Научные основы современных систем земледелия.-М.: 1988.Р.256 3.Иванников А.В., Шрамко Н.В., Мукажанов К. М. Земледелие Северного Казахстана – Astana , 2001- 295

	p. 4.Почвозащитная система земледелие. – Алма-Ата: Кайнар, 1985-200 р. 5.Земледелие. Под. ред. А.И. Пупонина.- М.: 2004. – 552 р. 6.Карипов Р.Х Основы земледелия.-Astana,2012.-275р. 7..Карипов Р.Х. Практикум по земледелия – Astana, 2002 –238 р.
8. Content of discipline. History of development and classification of systems of agriculture of production of crop products, scientific bases of zone systems of farming. The main links of zone (modern) systems of farming, the principles of modern zone systems of agriculture and production of crop products. Complex measures of fight against weeds, diseases and wreckers of crops, the system of crop rotations in the modern zone systems of agriculture, Minimizing a system of processing of the soil. Resource-saving system of processing of the soil, advantage and application condition. Modern systems of farming: Exact, biological it is also adaptive – landscape, resource-saving agriculture and their feature. Soil-protective farming and its theoretical bases and practical receptions	
1. Main information on discipline:	
Name of discipline	**Technique experienced case**
2. Quantity of the credits	**5**
3. Prerequisites:	Biology and physiology of plants, soil science, agrometeorology, technological disciplines (farming, agrochemistry, plant growing)
4. Post requisites:	Theoretical bases modern seeds of maintaining and seed farming of cultures. Agrobiological fundamentals of technologies of cultivation of field cultures, Confirmation of compliance of products of crop production. Systems of farming and production of crop products. Biometrics.
5. Competences:	to have an idea: - about modern methods of scientific agronomics. nobility: - basic elements of a technique of field experiment; - basic principles of data processing of field experiment - about influence of a technique of field experiment on its mistake. to be able: - to plan, to put and make one-factorial and multiple-factor experiments; - to keep documentation and the reporting under field experiment; - to conduct the phenological and other accompanying observations of growth and development of crops during their vegetation; to have skills: - technicians of laying of field experiment, technique of planning of an experiment; - methods of accounting of a harvest and methods of preliminary processing of experimental data; - principles of processing of long-term these field

	experiments. to be competent: - in practical use of knowledge in the field of scientific agronomics.
6. Author of a course	Department of farming and plant growing (Amralin A.U., associate professor)
7. Main literature	1. Можаев Н.И., Серикпаев Н.А., Стыбаев Г.Ж. Основы научных исследований в агрономии. Astana, 2010. 2. Доспехов Б.А. Методика полевого опыта. М., Агропромиздат, 1985. 3. Методика опытов на сенокосах и пастбищах. М., Изд. ВНИИкормов, 1971. 4. Иванников А.В. Биометрия Учебное пособие. – Astana: Изд-во КазГАТУ, 2005. Иванников А.В. Биометрия практикумы. Оқу құралы. – Astana: КазАТУ баспасы, 2006.
8. Content of discipline. Technique of skilled business as subject. Value of an experiment for the solution of practical tasks. Requirements imposed to the researcher. Short historical sketch of agricultural skilled business. Types of research establishments. The methods and researches applied in scientific agronomics. Observation, experiment. Characteristic of methods of a research. Statistical method. Requirements imposed to field experiment. Natural and agrotechnical typicality. Basic elements of a technique of field experiment. Methods of placement of options in experiences (statistical, randomized, a method of a latin square, standard). Influence of elements of a technique on the accuracy of field experiment (number of options, form and area of an allotment). Number of repetitions, uniformity of fertility of the pilot site, methods of placement of options, orientation of allotments in relation to a relief, roads, forest belts. Planning of field experiment. Development of a working hypothesis, statement of the purpose and tasks, the program and a technique of researches, the agricultural technician in experience the Schematic plan. Transferring of experience to nature. The working plan of experience the Technique of accounting of productivity in field experiments. Features of accounting of productivity on cultures (grain, silage, root crops, tuber crops, annual and long-term herbs.). Production experience.	
1. Main information on discipline:	
Name of discipline	**Patent science and protection of intellectual property**
2. Quantity of the credits	**5**
3. Prerequisites:	Humanitarian and natural-science disciplines of a bachelor degree. On a magistracy - Technique experienced case
4. Post requisites:	Patent search in the master thesis, preparation and registration of works on intellectual property.
5. Competences:	*быть компетентным:* анализировать и оценивать полученные данные. to have an idea: - about carrying out patent science and protection of intellectually property in the field of agrarian science; nobility: - fundamentals of fundamental and applied sciences for the solution of research, information retrieval tasks; to be able:

	- to conduct patent search within area of researches, to discuss problems, to reason conclusions and to operate competently with information; to have skills: - independent carrying out patent search in the field of carrying out research works on topical issues of agrotechnologies; - works with scientific literature, methods of writing articles, analysis of methodological problems. to be competent: in ability to analyze and estimate the obtained data.
6. Author of a course	Department of veterinary sanitation (Baldzhi Yu.A., associate professor)
7. Main literature	1. Ткалич В.Л., Лабковская Р.Я., Пирожникова О.И., Коробейников А.Г., Симоненко З.Г., Монахов Ю. Р. Патентоведение и защита интеллектуальной собственности: Учебное пособие. - Санкт-Петербург: СПб: Университет ИТМО, 2015. - 171 р. 2. Интеллектуальная собственность (исключительные права). Учебное пособие. Под редакцией Н.М.Коршунова. Москва, EKSMO EDUCATION, 2006, p. 576. 3. Артемьев Г.А. и др. Патентоведение, Под ред. проф.Рясенцева для ВУЗов. М.: Машиностроение, 2004. Мэггс П.Б., Сергеев А.П. Интеллектуальная собственность.-М., 2012.
8. Content of discipline. Intellectual property in the system of property. Creative thinking and invention. Patent and information researches. The international agreements in the field of protection of industrial property. Identification and registration of inventions. Use of objects of industrial property, transfer of rights. The legislation of the Republic of Kazakhstan concerning protection of intellectual property. Patent department of RK. World Intellectual Property Organization (WIPO). Definition of the UDC and MPK classification indexes. Patent search - domestic databases. Patent search - foreign databases. Report on patent researches. Execution of the application for an invention. Execution of the description of an invention. Registration of a formula and the paper on an invention. License contracts for transfer of rights to use of the patented inventions.	

Annex 4 Description of Disciplines of a Component for choice

1. Main information on discipline:	
Name of discipline	**The integrated protection of plants**
2. Quantity of the credits	**5**
3. Prerequisites:	Plant growing. Seed farming. Protection of crops. Chemical protection of plants.
4. Post requisites:	Theoretical bases of modern seed farming of agricultural cultures. Agrobiological fundamentals of technologies of cultivation of field cultures. Confirmation of compliance of products of crop production. Technique of skilled business. Biometrics.
5. Competences:	to have an idea: about bioecological features of the main wreckers of plants, their systematic situation; features of life cycle and reproduction of phytophages; morphological and biological features of phytopathogens; main types of manifestation of diseases, the most dangerous types of diseases of agricultural cultures; nobility: preventive and destructive actions and also methods and ways of protection of plants for fight against harmful organisms; to be able: to define the specific list of wreckers and diseases of agricultural cultures; to define signs of damage and defeat of plants, to carry out diagnostics and accounting of wreckers and diseases of agricultural cultures, to make the decision on need of holding protective measures; to have skills: to analyze a state and possible development of the situation in the agrophytocenosis on harmful organisms of plants, to do the conclusion about need of holding protective measures, to make the complex system of actions for protection of plants; to be competent: in observance of security measures when using means of protection of plants; uses in practice of techniques of identification of wreckers and causative agents of diseases of plants, their diagnostics, a right choice and application of a package of measures of protection of plants, work with scientific and technical, standard and other documentation in the field of protection of plants.
6. Author of a course	"Protection and Quarantine of Plants" departments - Baybusenov Kurmet Serikovich
7. Main literature	1. Защита растений от болезней. Под ред. Шкаликова В.А. – М., 2004 2. Зашита растений от вредителей. Под ред. Исаичева В.И., 2003 3.Садыков Б.Р., Турганбаев Т.А. Фитосанитарные технологии возделывания сельскохозяйственных культур / Учебное пособие. – Astana: КАТУ им. Р. Сейфуллина, 2015. – 260 р. 4. Чулкина В. А. Интегрированная защита растений: фитосанитарные системы и технологии / Учебник. – М.:

	Колос, 2009. – 670 р. 5. Справочник агронома по защите растений Под. редСагитова А.О., Исмухамбетова Ж.Д. – Алматы, 2004 6. Тулеева А.К. Защитасельскохозяйственных культур от вредителей/ Руководство к лабораторно-практическимзанятиям. – Astana, 2006 7. Горбуля В. Р. Защита сельскохозяйственных культур от болезней/ Руководство к лабораторно-практическимзанятиям. – Astana, 2006 8. Груздев Г.Р., Зинченко В.А., и др. Химическая защита растений. – М.: Агропромиздат, 1987.– 414 р. 9.Закон о защите растений // Казахстанская правда, 9-11 июля 2002 года
8. Content of discipline. Content of discipline includes common goals and problems of studying of discipline, a chemical method in the integrated system of protection of plants; fundamentals of agronomical toxicology, physical and chemical bases of use of pesticides; Chemical means of protection of plants from wreckers, diseases and weeds, a biological method of protection of plants; physicomechanical and genetic methods of protection of plants; agrotechnical method and phytosanitary monitoring of development and distribution of harmful organisms; quarantine of plants.	
1. Main information on discipline:	
Name of discipline	**Optimization of food of crops**
2. Quantity of the credits	**5**
3. Prerequisites:	Program of a bachelor degree for discipline agrochemistry. On a magistracy- Technique experienced case.
4. Post requisites:	Theoretical bases modern seeds of maintaining and seed farming of cultures. Agrobiological fundamentals of technologies of cultivation of field cultures. Confirmation of compliance of products of crop production. Systems of farming and production of crop products. Biometrics
5. Competences:	to have an idea of rational and effective use of fertilizers, increase in fertility of the soil and increase in efficiency of cultures. - nobility: theoretical bases of features of food of plants, their requirements to soil conditions and environmental conditions; properties of fertilizers and features of their behavior and transformation in the soil, availability to plants; factors of the different types and forms of fertilizers defining efficiency; - to be able to develop the receptions and methods of purposeful management of fertility of soils providing optimization of food and realization of potential efficiency of cultures by the differentiated application of fertilizers at high cost efficiency and environmental safety. - to have skills of development of an evidence-based system of use of fertilizers, drawing up technological projects of obtaining the set efficiency of agricultural cultures and reproduction of fertility of soils of various agrotsenoz. - to be competent of questions of scientific bases and practical methods of purposeful management of fertility of soils, the providing optimizations of food and formation of the greatest possible harvest in specific conditions.

6. Author of a course	Department of agrochemistry and soil science (Nurmanov E.T., associate professor)
7. Main literature	В.Г. Минеев. Агрохимия. МГУ, 2004., 2017; Б.А. Ягодин. Агрохимия. М. Колос, 2003.; А.П. Щербаков Плодородие почв, круговорот и баланс питательных веществ. М.: Колос, 1983. - 189 р.; Т.М. Кулаковская. Оптимизация агрохимической системы почвенного питания.-М.:Агропромиздат.; В.Г. Черненок. Азотный режим почв Северного Казахстана и применение азотных удобрений. Акмола, 1997.; В.Г. Черненок. Особенности фосфорного режима почв Северного Казахстана. Акмола. Вестник науки ААУ. № 9, 1997.; В.Г. Черненок. Теоретические основы оптимизации условий фосфорного питания зерновых культур. Astana. Вестник науки ААУ. Т. 2. № 2, 1998.; Научные основы и практические приемы управления плодородием почв и продуктивностью культур в Северном Казахстане. Astana, 2009.; В.Г.Минеев. Экологические проблемы агрохимии.-М.: Изд-во МГУ, 1988; В.Г.Минеев. Химизация земледелия и природная среда.-М А. Агропромиздат. 1990
8. Content of discipline. Domestic and foreign experience of management of fertility of soils and efficiency of cultures. External conditions and food mode of the main types of soils of RK. Fertility of soils and efficiency of fertilizers. A concept about optimization of mineral food and the main methods. A role of biotic and abiotic factors in formation of a harvest of crops and methods of their regulation. Optimization of conditions of mineral food of crops. Nitric, phosphoric. potash modes of soils. Economic and ecological justification of methods of optimization of conditions of mineral food of crops.	
1. Main information on discipline:	
Name of discipline	**Technology cultivation of vegetable cultures in greenhouses**
2. Quantity of the credits	**5**
3. Prerequisites:	Botany, physiology of plants, vegetable growing.
4. Post requisites:	Master thesis, scientific articles, reports and so further
5. Competences:	Nobility: - the best conditions for sustainable development and high efficiency of the industry of production of vegetables in constructions of the protected soil; - a microclimate role in formation of a harvest; - the conditions defining features of food of vegetable cultures in защищ unlimited soil; - hothouse soil for the protected soil; - ways of cultivation of seedling; - ways of care of vegetable cultures; - technology of cultivation of vegetable cultures in the protected soil. To be able:

	- to define signs of a lack of separate batteries of vegetable cultures; - to choose modern cars and tools for work in the protected soil; - to grow up seedling of vegetable cultures for the discovered and protected soil; - to carry out the short-term protected soil storage of vegetable products; - to find an optimal solution and to introduce necessary amendments in the planned technology depending on the developed conditions; - to plan, to put and make one-factorial and multiple-factor experiments in the protected soil; - to keep documentation and the reporting under experience with vegetable cultures in the protected soil; - to conduct the phenological and other accompanying observations of growth and development of vegetable cultures during their vegetation in the protected soil; To own: - modern technologies of cultivation of vegetable cultures in the protected soil; To be competent: - in assessment of a state and the prospects of development of Vegetable growing of the protected ground in the Union of the Independent States and Kazakhstan; - in questions of a role and formation of an optimum microclimate in the protected soil for growth of vegetable plants; - the technologies and conditions defining food of vegetable plants in the protected soil; - selection of hothouse soil for constructions of the protected soil; - the choice of the most optimum way of maintaining culture when using a hydroponic method of cultivation of vegetables
6. Author of a course	Department of farming and plant growing (Turbekova A. S., candidate of agricultural sciences)
7. Main literature	Щепетков Н.Г. Овощеводство Северного Казахстана, Astana, 2018 Щепетков Н.Г. Научные основы высокой продуктивности овощных культур, Astana, КазАТУ, 2013 Брызгалов В.А., Советкина В.Е., Савинова Н.И. Овощеводство защищенного грунта. – Л.: Колос, 1985, 1995 Юсупов М.З., Петров Е.П., Турбекова А.Р., Ахметова Ф.Р. Овощеводство Казахстана. КазАТУ, - Astana, 2018. Гиль Л.Р., Пашковский А.И., Сулима Л.Т. Современное овощеводство закрытого и открытого грунта. Практическое руководство. Житомир. "Рута", 2012
8. Content of discipline. Current state and the prospects of development of the protected soil. Vegetable growing of the protected ground abroad. Influence of a microclimate of the protected soil on efficiency of vegetable plants and ways of its regulation. The thermal mode for vegetable	

cultures in the protected soil. The mode of humidity of the soil and air in the protected soil. Air-gas mode and its regulation. The conditions defining features of food of vegetable cultures in the protected soil. Hothouse soil for constructions of the protected soil. A diet of vegetable cultures at cultivation on various soil. Hydroponic method of cultivation of plants.	
1. Main information on discipline:	
Name of discipline	**Modern methods of plant protection in greenhouse vegetable growing**
2. Quantity of the credits	**5**
3. Prerequisites:	ecology and sustainable development, biology, microbiology, vegetable growing, crop production, protection of plants, modern technologies of cultivation of vegetable cultures in the protected soil
4. Post requisites:	т.д. Master thesis, scientific articles, reports and. etc.
5. Competences:	to know about a biodiversity of harmful and useful organisms, their bioecological properties; to understand the processes influencing decrease in number of harmful organisms in the conditions of the protected soil; to be able to analyze a biodiversity of harmful organisms and to organize the modern systems of the integrated protection of plants of the protected soil on obtaining ecologically balanced, profitable, stable productivity of agricultural products; to own skills of the analysis of the main world outlook and methodological problems arising during the work and to be able to generate the new ideas at the solution of practical tasks; to be able to get independently by means of information technologies and to use new knowledge and abilities in practical activities; to carry out the personal choice in various professional and moral and valuable situations, to assess the consequences of the made decision and to bear for it responsibility to itself and society;
6. Author of a course	Turganbayev T.A., candidate of agricultural sciences
7. Main literature	Основная литература 1. Чулкина В.А. Экологические основы интегрированной защиты растений./ под ред. М.Р.Соколова, В.А.Чулкиной. - М.: Колос, 2007. 2. Сорока Р.В., Прищепа И.А. и др. Интегрированные системы защиты овощных культур и картофеля от вредителей, болезней и сорняков: рекомендации. – Несвиж: Несвиж. укрупн. типогр., 2011. Дополнительная литература 1. Баздырев Г.И., Третьяков Н.Н., Белошапкина О.О. Интегрированная защита растений от вредных организмов. - М.: ИНФРА-М, 2014. - 302 р. 2. Словцов Р.И., Борисова Т.Г., Голенева Л.М. Принципы, методы и технологии интегрированной защиты растений. - М.: Издательство РГАУ - МСХА имени К.А. Тимирязева, 2008.

	3. Фадеев Ю.Н.. Новожилов К.В. Интегрированная защита растений. - М.: Колос, 1991. 4. Защита растений от болезней. /под ред. Шкаликова В.А. - Москва: Колос, 2001. 5. Защита растений от вредителей. /под ред. Исаичева В.В. - Москва: Колос, 2001.
8. Content of discipline. Scientific bases of the integrated protection of plants. Structural model of the integrated protection of plants. World and domestic concepts in development and application of model of the integrated protection of plants. Theoretical and methodological bases of development of systems of the integrated protection of plants. The main methods of the integrated protection of plants. The system of observation and accounting of a phytosanitary condition of cultures of the protected soil. The system of actions for protection of cultures in the protected soil from harmful organisms. Agroecological and economic assessment of the integrated protection of cultures in the protected soil.	
1. Main information on discipline:	
Name of discipline	**Scientific bases food of vegetable cultures in the protected soil**
2. Quantity of the credits	**5**
3. Prerequisites:	botany, chemistry inorganic and analytical, ecology, soil science with fundamentals of geology, chemistry physical and colloidal, physiology and biochemistry of plants, microbiology.
4. Post requisites:	Master thesis, scientific articles, reports and. etc.
5. Competences:	Nobility: - a role of mineral fertilizers in increase in production of vegetable cultures in the protected soil. - the conditions defining features of food of vegetable cultures in the protected soil; - greenhouse soil for the protected soil;. To be able: - to define signs of a lack of separate batteries of vegetable cultures; - to choose modern power supply systems in the protected soil; - to perform various technological operations in the protected soil directed to receiving a qualitative harvest of the sowed cultures; - to find an optimal solution and to introduce necessary amendments in the planned technology depending on the developed conditions; To own: - by the newest methods of a system of optimization of food of a tomato and cucumber and also other vegetable plants. To be competent of questions - roles and formations of an optimum microclimate in the protected soil for growth of vegetable plants; - the conditions defining food of vegetable plants in the protected soil; - selection of hothouse soil for constructions of the protected soil; - the choice of the most optimum way of maintaining culture when using a hydroponic method of cultivation of vegetables

6. Author of a course	Hamzina R.H., associate professor
7. Main literature	1.Агрохимия (под ред. акад. В.Г. Минеева М: МГУ, Колор. 2007. 2.Прянишников Д.Н. Избранные сочинения// Д.Н. Прянишников.. Т.1, М. Колос, 1965. 3.Артюшин А.М., Дерюгин И.П., КулюкинА.Н.., Ягодин Б.А. Удобрения в интенсивных технологиях возделывания сельскохозяйственных культур. М. Агропромиздат, 1991. 4.Минеев В.Г. Химизация земледелия и природная среда. - М. Агропромиздат, 1990. 5.Минеев В.Г. Агрохимия и биосфера. - Агропромиздат, 1984. 6.Титова В.И., Дабахов М.В. Агроэкосистемы: проблемы функционирования и сохранения устойчивости. - Н-Новгород, 2000. 7 .Минеев В.Г., Дебрцени Б., Мазур Т. Биологические земледелие и минеральные удобрения. – М., 1993; 8. Минеев В.Г. Экологическая агрохимия. – М., 2000; 9.Церлинг В.В. Диагностика питания сельскохозяйственных культур: Справочник / В.В. Церлинг. М.: Агропромиздат, 1990. 10. Ринькис Г.Я. Оптимизация минерального питания растений /Г.Я. Ринкир. Рига: Зинанте, 1972.
8. Content of discipline. Soil culture: requirements to greenhouse soil, classification and properties of greenhouse soil, a diet of vegetable cultures, soil for seedling. Hydroponic method cultivation of plants: ways of supply of nutritious solution and substrates (riding peat, mineral wool, perlite, zeolite, coconut flakes) for cultivation of plants. Role and value of batteries. Scientific bases optimization conditions of food. Requirements to water quality for drop watering, a technique of correction of nutritious solution. Nutritious solutions for cultivation of vegetable cultures. Not root food. Definition of security with nutritious elements on appearance of plants. Influence of mineral fertilizers on qualitative characteristics of vegetable cultures. Requirements imposed to the received products norms of maximum allowable concentration.	

1. Main information on discipline:	
Name of discipline	**Biometrics**
2. Quantity of the credits	**5**
3. Prerequisites:	Discipline of a bachelor degree of a basis scientific research. On a magistracy - the Technique of skilled business, Theoretical bases of a modern semenovedeniye and seed farming of cultures, the Integrated protection of plants, Optimization of food of crops, the Systems of farming and production of crop products.
4. Post requisites:	Master's dissertation
5. Competences:	to have an idea: about methods of selection of numerical indicators of the varying objects of studying, obtaining statistical characteristics selective sets for processing and the analysis of numerical results of experiments, observations and accounts. nobility: the main methods of mathematical statistics applied in modern

	conditions in biology, scientific agronomics and selection to be able: to apply results of statistical processing the dispersive analysis, correlation and регрессияю for practical purposes. to have skills: to compare, formulate conclusions to results of statistical processing of scientific data to be competent: in the field of agriculture, ability to analyze scientific data
6. Author of a course	Amralin A.U. candidate of agricultural sciences
7. Main literature	1. Лакин Г.Ф. Биометрия. Изд. 4-е. –М.: Высшая школа. 1990. –352 р. 2. Доспехов Б.А. Методика полевого опыта (с основами статистической обработки результатов исследовании). Изд. 5-е. М: Агропромиздат, 1985.-357 р. 3. Иванников А.В. Биометрия Учебное пособие. – Astana: Изд-во КазГАТУ, 2005. Иванников А.В. Биометрия практикумы. Оқу құралы. – Astana: КазАТУ баспасы, 2006.
8. Content of discipline. Biometrics as science. Main stages of development. Communication with other sciences. Methods of statistical processing of results of observations, analyses and accounts. Average sizes. General formula and properties of average sizes. Statistical characteristics of a sample. Limits. Scope of variation. Dispersion, average quadratic (standard) deviation. Variation coefficient. Differences between arithmetic averages. Difference error. The ranged variational series. Probabilistic analysis. Fashion. Modal class. Histogram, ground, kumulyat, ogive. Asymmetry and excess. Comparison of curves of distribution. Transgression. Rectilinear correlation. Determination coefficient. Dot schedule. Calculation of the correlation relation. Index of determination. Function and argument. Practical application of the equations of regression in agronomics and forestry and landscape business. Weather factors and productivity. Factors of soil fertility and productivity. Use of the equations of regression for assessment of practical results.	