MINISTRY OF AGRICULTURE OF THE REPUBLIC OF KAZAKHSTAN
S. SEIFULLIN KAZAKH AGROTECHNICAL UNIVERSITY

Considered
at the meeting of the
Academic Council
S. Seifullin KATU
Minutes № 19
31.08.2022

«Confirm»
Chairman of the Board
NJSC "S. Seifullin Kazakh
agrotechnical university"

« 31 » 08 2022

EDUCATIONAL PROGRAM
"7M08201 Feed and feeding of farm animals"

Code and classification of the field of education: 7M08 Agriculture and bioresources
Code and classification of direction of personnel training: 7M082 – Animal production
Code in the International Standard Classification of Education: 7M0811
Degree/qualification awarded: Master in Agricultural Sciences in the EP "Feed and feeding of agricultural animals"

Period of study: 2 years

Nur-Sultan – 2022

The author's team:
1. Full name - academic degree, title, position, place of work

Bostanova Saule Kuanyshpekovna, candidate in agricultural sciences, associate professor, head of the department "Technology of production and processing of livestock products"

Omarkozhauly Nurbergen - doctor in agricultural sciences, professor of the department "Technology of production and processing of livestock products"

Omarova Karlygash Mirambekovna - candidate in agricultural Sciences, senior lecturer of the department "Technology of production and processing of livestock products "

Isabekova Saltanat Aitymovna, candidate in agricultural sciences, senior lecturer of the department "Technology of production and processing of livestock products"

Mukhametzharova Ilmira Ermekovna, master of agricultural sciences, assistant of the Department "Technology of production and processing of livestock products"

Saginbayev Azamat Kuandykovich, candidate in agricultural sciences, Executive Director of the Republican Chamber of Dairy and Combined Breeds of Cattle

The team of authors was approved by the order of the AO "S. Seifullin KATU"
№ 932 H from 12.12.2018 (order with changes № 517-H from 4.10.2022).

Educational program 7M08201"Feed and feeding of farm animals" considered at the meeting of the department "Technology of production and processing of livestock products"
Minutes № 1 of 27.08. , 2022
approved by the "Veterinary and animal husbandry technology" Faculty Council
Minutes № 10 of 27.08. , 2022

The content of the educational program

1 Passport of the educational program

1.1 Purpose of the educational program

To train highly qualified scientific and pedagogical personnel with in-depth training in feed quality and feeding methods to implement the basic principles and methods for improving the productive qualities of farm animals and poultry, who have the skills to purposefully influence the qualitative and quantitative indicators of the livestock industry.

1.2 Educational outcome

ON 1. To demonstrate developing knowledge and understanding in managing both pedagogical activity and that sector for which it trains personnel in a vocational educational institution and be fluent in a foreign language at a professional level, allowing to conduct scientific research and be able to show their leadership qualities for the development of enterprises in the industry. To apply at the professional level the functional and stylistic characteristics of the scientific presentation of the material in the foreign language being studied, the general scientific terminology and the terminological sub-language corresponding to specialty in a foreign language.

ON 2. To communicate clearly and unambiguously information, ideas, problems and solutions about current trends in the development of scientific knowledge; about current methodological and philosophical problems of science, the methodology of scientific knowledge; principles and structure of the organization of scientific activity.

ON 3. To apply at the professional level their knowledge, understanding in the principles and structure of the organization of scientific and pedagogical activities, the psychology of students' cognitive activities in the learning process; psychological and pedagogical methods and means of improving the effectiveness of training and education; modern technologies of applying leadership skills for the implementation of the educational process taking into account the requirements of society, as well as the peculiarities of professionalization of teachers in the field of animal husbandry.

ON 4. To collect and interpret information to form judgments in the field of research methodology and implementation of research projects and research in the professional field of animal husbandry; use the knowledge gained for the original development and application of ideas in the context of scientific research; have the ability to apply modern methods and techniques of feeding animals and the effective use of feed for animals and poultry.

ON 5. To apply at the professional level their knowledge, understanding the legislative and regulatory legal acts issued in our country in the prescribed manner concerning the regulation of relations in the field of livestock breeding, the history of the development of animal husbandry and the science of "Zootechny", methods of breeding new animals and their improvement, modern methods of assessing the breeding qualities of animals, the biological basis and patterns of formation of highly productive animals, modern animal gene pool and its effective use.

ON 6. To use the training skills necessary for independent continuation among undergraduates about the methods of the most rational use of animals associated with the organization of livestock production through the use of innovative technologies that

contribute to the effective management of the grown; development of analysis skills in the production of milk, meat (beef, pork, lamb, poultry).

ON 7. To demonstrate developing knowledge and understanding the role of energy, nutrient, biologically active and mineral substances in the body of animals and poultry; the nutritional value of feed used by animal husbandry; the physiological and productive need of all species of sex-age animals and birds in nutrient, biologically active and mineral substances; technical regulations and quality control methods on the environmental safety of feed and methods of feeding animals and birds.

ON 8. To apply at the professional level their knowledge, understanding the program of statistical monitoring of the industry. Definition of a system of indicators characterizing the results of livestock production; know information technologies in the production of livestock products, methods for their integrated assessment and effective use, to collect and interpret information for keeping zootechnical accounting and entering into the database in the IAS, computer programming.

ON 9. To demonstrate developing knowledge and understanding the state of the feed base and the levels of feeding in the livestock industry of the Republic of Kazakhstan; on modern technologies of feeding all gender and age groups of animals and birds. Know the need of animals and birds for nutrients, depending on age, physiological state and direction of productivity; modern technologies of feeding animals and birds; be able to make up the rations of feed by rational selection of fodder low at cost and not inferior in quality.

ON 10. To use the training skills necessary for independent continuation the modern concepts on the organization of abundant and full-fledged feed base, progressive technologies of harvesting, storage and preparation of feed for feeding, a scientifically based system of standardized feeding of farm animals, to use the data in their professional activities.

2   General characteristics of the educational program (relevance, features, competitive advantages, uniqueness, stakeholders, etc.)

The educational program was developed in accordance with the National Qualifications Framework, professional standards and approved by the SES of the Ministry of Education and Science of the Republic of Kazakhstan dated October 31, 2018 №604.

The EP includes 120 credits (3600 hours) of training, including: 62 credits (1860 hours) - theoretical training, 24 credits (720 hours) – research work and 12 credits (360 hours) - final certification. At the same time, the master's student must master the volume of the BD cycle is 35 academic credits, of which 20 academic credits are allocated to the university component, the volume of the PD cycle is 49 academic credits in the total volume of the master's educational program.

2.1 Relevance:

Currently, specialists who have in-depth knowledge of the chosen specialty and possess the ability and skills of the specialty in feed technology, animal feeding, including animal husbandry, are in demand. Consequently, a specialist of the new formation should be prepared to work in universities and scientific organizations with in-depth scientific, pedagogical and research training, as well as in farms of various forms of ownership, where different types of livestock and poultry products are produced. In this regard, the training of specialists in the educational program is very relevant.

2.2 Features, competitive advantages:

Masters in agricultural sciences prepared according to the educational program, including animal husbandry are in demand, both in the structures of universities and scientific organizations with in-depth scientific, pedagogical and research training, as well as in the conditions of work of production enterprises for the production of animal feed and livestock products located in farms of various forms of ownership, located in rural areas where agricultural animals, as well as poultry. This is the features and competitive advantages of specialists studying under this educational program "Feed and feeding of farm animals".

3 Competence model (portrait) graduate

A graduate of the EP "Feed and feeding of farm animals" is an employee of the public service, educational and scientific-pedagogical organizations with in–depth scientific-pedagogical and research training, as well as a production manager who organizes technologies to produce feed and feeding of agricultural animals and poultry, using modern approaches and methods, innovative and information technologies production of animal products.

3.1 Areas of professional activity

The sphere of professional activity of the master of the educational program "Feed and feeding of farm animals" in the direction of training of the master 7M082 – "Animal production" is public services, research and educational organizations in the field of zootechnical research and development aimed at solving complex problems of organizing and producing high-quality products of farm animals in modern animal husbandry. Objects of professional activity: farm animals, scientific foundations of full-fledged feeding and feed technology, feed production, feed sanitation, livestock production technologies.

3.2 Types of professional activity

The types of professional activity of the Bachelor of the educational program "Feed and feeding of farm animals" in the specialty "7M08 Agriculture and bioresources, the direction of training of the master of 7M082 – "Animal Husbandry" are: a) production and technological, b) organizational and managerial, c) scientific and research, d) selection and breeding work.

3.3 General education competencies

Learning outcomes are formulated at level of master's entire educational program program and individual level modules or discipline.

Descriptors shall reflect learning outcomes that characterize learner's abilities:

1) to demonstrate developing knowledge, understanding studied area, based on advanced knowledge, ideas development and / or application in study context;

2) to apply professional level knowledge, understanding, abilities to solve problems in new environment, wider interdisciplinary context;

3) to collect, interpret information form judgments taking into account social, ethical considerations;

4) to clearly, unambiguously communicate information, ideas, problems, solutions, both specialists, non-specialists;

5) training skills necessary for education independent continuation in area.

3.4 Basic competencies

Upon study completion of basic disciplines cycle, undergraduates must: be competent in modern educational technologies; apply the knowledge of pedagogy, psychology of higher education in their teaching activities; apply interactive teaching methods; be fluent in foreign language at professional level, allowing scientific research, special disciplines teaching in universities; considering main laws, legislative acts on animals feeding, principles of regulatory support formation for livestock breeding in the Republic of Kazakhstan; be able to form solutions based on research problems by integrating knowledge from new or interdisciplinary fields; leading employees group taking responsibility for actions result at specific site of technological process.

3.5 Professional competencies

Upon completion of study of PD cycle, undergraduates must: application of practical skills in strategic planning, work evaluation, situation analysis; being able to develop and propose various, including alternative, decision options on their own when drawing conclusions; comprehensive knowledge of professional situations systematic analysis, design methodology; be competent in carrying out research projects, research in scientific research methodology, professional field; acquired knowledge use for original development, ideas application in scientific research context; have ability to use feeding modern methods, ways livestock, poultry, feed for livestock efficient use, poultry; agricultural livestock breeding determination, productivity characteristics; should know marketing, information research methods.

4 The base of passing professional practices

The basis for passing professional practices of the EP are:

1) Research practice: "Agrofirma Rodina" LLP, "Astana Onim" JSC, "Capital Projekts LTD" LLP, "Zhaksybay Agro" LLP, SKO, "Bayserke Agro" LLP, Almaty region, "Aina" dairy farm, "Kamyshenka" LLP, "Izhevsky" LLP, "SK Food" LLP, "AKA" LLP, "Astana kus" LLP, Akmola region, "KazBeef" LLP, Karaganda region and all agricultural enterprises of different ownership in Akmola, Karaganda, North Kazakhstan regions.

2) Pedagogical practice: S. Seifullin Kazakh agrotechnical university and on the basis of other universities.

5 Structure of the Master's degree educational program

№	Name of cycles and disciplines	Total labor intensity	
		in academic hours	in academic credits
1	2	3	4
1.	**Theoretical learning**	**1860**	**62**
1	**Cycle of basic disciplines (BD)**	**1050**	**35**
	University component	**600**	**20**
1)	History and philosophy of science	150	5
	Foreign language (professional)	150	5
	Pedagogics of higher school	90	3
	Psychology of management	150	5

	Pedagogical practice	60	2
2)	**Component of choice**	**450**	**15**
	English for Academic Purposes/ Foreign language for academic purposes	150	5
	Mathematical modeling in animal husbandry/ Planning and modeling of the breeding process in animal husbandry	150	5
	Fundamentals of scientific research/ Methodology of scientific research and analysis of zootechnical experiments	150	5
2	**Cycle of profile disciplines (PD)**	**1470**	**49**
1)	**University component**	**600**	**20**
	Technological innovation of livestock products	240	8
	Feeds and feed additives	120	4
	Research methods in agricultural animals feeding	120	4
	Statistical analyzes in animal husbandry	120	4
	Research practice	**600**	**20**
2)	**Component of choice**	**270**	**9**
	Information technologies in livestock/ Digital animal husbandry	120	4
	Scientific basis for the rational feeding of farm animals/ Rational feeding of agricultural animals	150	5
3)	Research practice	600	20
3	**Research work**	**720**	**24**
1)	Master student's research work, including implementation of master's thesis	720	24
4	**Final attestation**	**360**	**12**
	Preparation and defense of a master's thesis	360	12
	Total	**3600**	**120**

Appendix 1. Academic Calendar

ACADEMIC CALENDAR
for 2022-2023 academic year
in areas of Master's training

	Beginning of 1st trimester	1 September
1	Presentation week	from 1 September to September 2 (from August 29 to September 2 for 1 course)
2	*Constitution day*	*30 August*
3	*The day of knowledge*	*1 September*
4	Examination session	from 14 to 25 November
5	*The day of the First President*	*of 1 December*
6	FX delivery	from 14 November to 9 December
7	*Independence day*	*16 December*
8	Holidays	from 28 November to 31 December
9	*The New year's holiday*	*January 1,2,3*
	Beginning of 2nd trimester	1 January
10	*Christmas*	*7 January*
11	*International Women's Day*	*on 8 March*
12	*Nauryz holiday*	*21,22,23 March*
13	Examination session	from March 13 to 24 March
14	FX delivery	from March 13 to 31 March
15	Holidays	from March 27 to March 31
	Beginning of 3rd trimester	*1 April*
16	*Holiday of Unity of Nations of Kazakhstan*	*1 May*
17	*Defender is day*	*7 may*
18	*Victory Day*	*9 may*
19	Examination session	from 12 June to 23 June
20	Holidays	from 26 June to 31 August
21	FX delivery	from 12 June to 30 June
22	Enrollment for a trimester	from 26 June to 30 June
23	Final examination	until June 30
24	Summer trimester	from 3 June to 11 August
25	*Capital Day*	*6 July*

Approved by the Academic Council of the NAO 'S.Seifullin KATU',
Protocol No. 14 of 13.05 2022.

⊘ **Note:** If it concurs with a weekend or a holiday, study begins on the next workin day.

Shedule of the educational process for the 2022-2023 academic year for the Master's degree programs of the Faculty of Veterinary and Animal Husbandry Technology

		September				October				November				December				January				February				March				April				May				June				July				August			
Курс		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
	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28	5	12	19	26	2	9	16	23	30	6	13	20	27	6	13	20	27	3	10	17	24	1	8	15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28
	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	31	7	14	24	31	7	14	21	28	5	12	19	26	2	9	16	23	30	7	14	21	28	4	11	18	25	1

7M091 EP "Veterinary" diagnostics, treatment and prevention of animal diseases, direction: scientific and pedagogical

| I | | PW | . | . | . | . | . | . | . | . | Es/DFx | Es/DFx | DFx/H | DFx/H | H | H | H | . | . | . | TP/. | TP/. | TP/. | TP/. | . | Es/DFx | Es/DFx | DFx/H | RP | RP | RP | RP | . | . | . | . | . | . | . | . | Es/DFx | Es/DFx | RD/DFx/H | Ss/H | Ss/H | Ss/H | Ss/H | Ss/H | Ss/H | H | H | H |
| II | RP | RP | RP | RP | RP | RP | . | . | . | . | Es/DFx | Es/DFx | DFx/H | DFx/H | H | H | H | RP | RP | RP | RP | RP | RP | RP | SRWM | SRWM | H | SRWM | SRWM | SRWM | SRWM | SRWM | SRWM | SET | SET | SET | SET | SET | SET | SET | | | | | | | | | | | | |

7M091 EP "Veterinary" diagnostics, treatment and prevention of animal diseases, direction: scientific and pedagogical WINTER

| I-II win | H | H | . | . | . | . | TP/. | TP/. | TP/. | TP/. | . | . | . | Es/DFx | Es/DFx | DFx/H | DFx/H | H | H | H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| I win | | | | | | | | | | | | | | RP | RP | RP | RP | RP | RP | . | . | . | . | . | Es/DFx | Es/DFx | DFx/H | RP | RP | RP | RP | RP | RP | RP | RP | SRWM | SRWM | RD/DFx/H | Ss/H | Ss/H | Ss/H | Ss/H | Ss/H | Ss/H | H | H | H |

7M091 EP "Food safety and quality", direction: scientific and pedagogical

| I | | PW | . | . | . | . | . | . | . | . | Es/DFx | Es/DFx | DFx/H | DFx/H | H | H | H | . | . | . | RP | RP | RP | RP | RP | RP | SRWM | SRWM | SRWM | H | SRWM | SRWM | . | . | Es/DFx | Es/DFx | DFx/H | RP | TP/. | TP/. | TP/. | TP/. | TP/. | Es/DFx | Es/DFx | RD/DFx/H | Ss/H | Ss/H | Ss/H | Ss/H | Ss/H | Ss/H | H | H | H |
| II | | RP | RP | RP | . | . | . | . | . | . | Es/DFx | Es/DFx | DFx/H | DFx/H | H | H | H | RP | RP | RP | RP | RP | RP | RP | SRWM | SRWM | SRWM | H | SRWM | SRWM | SRWM | SRWM | SRWM | SRWM | SET | SET | SET | SET | SET | SET | SET | | | | | | | | | | | | |

7M082 "Animal breeding " for the education program "Selection and reproduction of agricultural animals" and for the education program "Feed and feeding of farm animals", Master's program by specialization (Scientific & pedagogical direction)

| I | | PW | . | . | . | . | . | . | . | . | Es/DFx | Es/DFx | DFx/H | DFx/H | H | H | H | . | . | . | . | . | . | . | Es/DFx | Es/DFx | DFx/H | RP | RP | RP | . | . | . | . | . | . | . | . | Es/DFx | Es/DFx | RD/DFx/H | Ss/H | Ss/H | Ss/H | Ss/H | Ss/H | Ss/H | H | H | H |
| II | H | H | . | . | . | . | TP/. | TP/. | TP/. | TP/. | . | . | . | Es/DFx | Es/DFx | DFx/H | DFx/H | H | H | H | RP | RP | RP | RP | SRWM | SRWM | SRWM | SRWM | SRWM | SRWM | SET | SET | SET | SET | SET | SET | SET | | | | | | | | | | | | | | | | |

7M082 "Animal breeding " for the education program "Selection and reproduction of agricultural animals" (winter)

| I-II win | H | H | . | . | . | . | . | . | . | . | Es/DFx | Es/DFx | DFx/H | DFx/H | H | H | H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| I win | | | | | | | | | | | | | | RP | RP | RP | RP | RP | RP | TP/. | TP/. | TP/. | TP/. | Es/DFx | Es/DFx | DFx/H | RP | RP | RP | RP | RP | RP | RP | RP | SRWM | SRWM | RD/DFx/H | Ss/H | Ss/H | Ss/H | Ss/H | Ss/H | Ss/H | H | H | H |

7M082 OP "Veterinary biotechnology", direction: scientific and pedagogical

| I | | PW | . | . | . | . | . | . | . | . | Es/DFx | Es/DFx | DFx/H | DFx/H | H | H | H | . | . | . | . | . | . | . | . | . | Es/DFx | Es/DFx | DFx/H | RP | RP | RP | . | . | . | . | . | . | . | Es/DFx | Es/DFx | RD/DFx/H | Ss/H | Ss/H | Ss/H | Ss/H | Ss/H | Ss/H | H | H | H |
| II | RP | RP | RP | RP | . | . | . | . | . | . | . | . | Es/DFx | DFx/E | H | H | . | . | . | . | . | . | . | . | Es/DFx | Es/DFx | DFx/H | SRWM | SRWM | SRWM | SRWM | SRWM | SRWM | SET | SET | SET | SET | SET | SET | SET | | | | | | | | | | | | |

PW - presentation week
• - theoretical training
Es - examination session
Ss - summer trimester
RP - research practice

TP - teaching practice
SRWM - scientific and research work of Master student
RD - Registration for discipline
DFx - delivery of FX

H - holidays

SET - state exams and thesis defense

Appendix 2. Working curriculum

WORKING CURRICULUM
For the modular education program "Feed and feeding of farm animals"
Field of education 7M08 – Agriculture and bioresources
Direction of training 7M082 –
In specialty M132 – Animal breeding
Course years 2022-2024
Degree : Master's program by specialization (Scientific & pedagogical direction)
Form of education: Full-time (MS 2 years) trimester
Entry year : 25-05-2022

Module code	Module name	Discipline cycle	Discipline	Code of subject	Subject name	Academic credits	Control in the academic period					Volume of hours						Self-study work of Ms	Self-study work of Ms	Distribution of credits per academic period					
							Exams	Different iated test(prac	Different iated test(cou rse	Practice/ SRW	Total	In-class learning	including						1 course			2 course		
													Lectures	Practice	Lab practicals			1	2	3	4	5	6
																		Number of weeks in the academic period					
																		10	10	10	10	10	10
					General modules																		
1	Social sciences	BS	UC	IFN 5201	History and philosophy of science	5	2				150.0	50.0	1/20	2/30		1/20	5/80		5.0				
2		BS	UC	PVSH 5202	Pedagogics of higher school	3	2				90.0	30.0	0/10	1/20		0/12	3/48		3.0				
3		BS	UC	PU 5203	Psychology of management	5	2				150.0	50.0	1/20	2/30		1/20	5/80		5.0				
4	Professional foreign	BS	UC	IYaP 5212	Foreign language (professional)	5	2				150.0	50.0		3/50		1/20	5/80		5.0				
5		BS	ES	AYaDAC 5207	English for Academic Purposes	5	1				150.0	50.0		3/50		1/20	5/80	5.0					
6		BS	ES	IYaDAC 5213	Foreign language for academic purposes	5	1				150.0	50.0		3/50		1/20	5/80	5.0					
					Modules of specialty/education programm																		
7	Scientific research in	AS	UC	MIKSZh 5303	Research methods in agricultural animals feeding	4	3				120.0	40.0	1/20	1/20		1/16	4/64				4.0		
8		AS	UC	KKD 6305	Feeds and feed additives	4	4				120.0	40.0	1/20	1/20		1/16	4/64					4.0	
9		AS	ES	NORKSZh 5310	Scientific basis for the rational feeding of farm animals	5	3				150.0	50.0	1/20	2/30		1/20	5/80				5.0		
10		AS	ES	RKSZh 5313	Rational feeding of agricultural animals	5	3				150.0	50.0	1/20	2/30		1/20	5/80				5.0		
11	Innovative technologies in animal	AS	UC	ITPPZh 5301	Technological innovation of livestock products	4	1				120.0	40.0	1/20	1/?20		1/16	4/64	4.0					
12		AS	UC	ITPPZh 5315	Technological innovation of livestock products	4	2				120.0	40.0	1/20	1/20		1/16	4/64		4.0				
13		AS	UC	SAZh 5302	Statistical analyzes in animal husbandry	4	3				120.0	40.0	1/20	1/20		1/16	4/64			4.0			
14		AS	ES	CZh 6314	Digital animal husbandry	4	4				120.0	40.0	1/20	1/20		1/16	4/64				4.0		
15		AS	ES	ITZh 6308	Information technologies in livestock	4	4				120.0	40.0	1/20	1/20		1/16	4/64				4.0		
					Modules of choice																		
16	Genetic assessments and	BS	ES	MNIAZE 5215	Methodology of scientific research and analysis of zootechnical	5	1				150.0	50.0	1/20	2/30		1/20	5/80	5.0					
17		BS	ES	MMZh 5206	Mathematical modeling in animal husbandry	5	1				150.0	50.0	1/20	2/30		1/20	5/80	5.0					
18		BS	ES	NOMI 5208	Fundamentals of scientific research	5	1				150.0	50.0	1/20	2/30		1/20	5/80	5.0					
19		BS	ES	PMSPZh 5214	Planning and modeling of the breeding process in animal husbandry	5	1				150.0	50.0	1/20	2/30		1/20	5/80	5.0					
					Scientifically research																		
20	The research work of a master student	R	CS	NIRMVVMD	Master student's research work, including implementation of master's	1					30.0							1.0					
21		R	CS	NIRMVVMD	Master student's research work, including implementation of master's	1					30.0								1.0				
22		R	CS	NIRMVVMD	Master student's research work, including implementation of master's	1					30.0									1.0			
23		R	CS	NIRMVVMD	Master student's research work, including implementation of master's	3					90.0										3.0		
24		R	CS	NIRMVVMD	Master student's research work, including implementation of master's	10					300.0											10.0	
25		R	CS	NIRMVVMD	Master student's research work, including implementation of master's	8					240.0												8.0
26		BS	UC	PP 6205	Teaching practice	2					60.0										2.0		
27		AS	UC	IP 5304	Research practice	4					120.0									4.0			
28		AS	UC	IP 6306	Research practice	6					180.0										6.0		
29		AS	UC	IP 6307	Research practice	10					300.0											10.0	
	Total of theoretical course					86	19	0	0	0	3960	860	310	550	0	344	1376						
AC	**Additional courses**					46								1380.0									
PP	Teaching practice					2		4		4				60									
RP	Research practice					20		3, 4, 5		5				600									
MSSR	Master student's research work, including implementation of master's thesis					24				1, 2, 3,				720									
FA	**Final attestation**					12								360.0									
	Master dissertation defence					12				6				360									
	Total					144					4320	860	310	550	0	344	1376						

WORKING CURRICULUM
For the modular education program "Feed and feeding of farm animals"
Field of education 7M08 – Agriculture and bioresources
Direction of training 7M082 –
In specialty M132 – Animal breeding
Course years 2021-2023
Degree : Master's program by specialization (Scientific & pedagogical direction)
Form of education: Full-time (MS 2 years) trimester
Entry year : 25-05-2021

Module code	Module name	Discipline cycle	Discipline	Code of subject	Subject name	Academic credits	Exams	Diff. test (prac)	Diff. test (course paper)	Practice/SRW	Total	In-class learning	Lectures	Practice	Lab practicals	Self-study work of Ms	Self-study work of Ms	1 (10)	2 (10)	3 (10)	4 (10)	5 (10)	6 (10)
					General modules																		
1	Social sciences	BS	U	IFN 5201	History and philosophy of science	5	2				150.0	50.0	1/20	2/30		1/20	5/80		5.0				
2		BS	U/C	PVSH 5202	Pedagogics of higher school	3	2				90.0	30.0	0/10	1/20		0/12	3/48		3.0				
3		BS	U	PU 5203	Psychology of management	5	2				150.0	50.0	1/20	2/30		1/20	5/80		5.0				
4	Profes sional	BS	U	IYaP 5204	Foreign language (professional)	5	2				150.0	50.0		3/50		1/20	5/80		5.0				
5		BS	E	AYaDAC 5207	English for Academic Purposes	4	3				120.0	40.0		2/40		1/16	4/64			4.0			
					Modules of specialty/education programm																		
6	Scientif ic researc h in agricult	BS	E	MMZh 5206	Mathematical modeling in animal husbandry	4	1				120.0	40.0	1/20	1/20		1/16	4/64	4.0					
7		BS	E	NOMI 5208	Fundamentals of scientific research	5	1				150.0	50.0	1/20	2/30		1/20	5/80	5.0					
8		AS	U	MIKSZh 5303	Research methods in agricultural animals feeding	4	3				120.0	40.0	1/20	1/20		1/16	4/64			4.0			
9		AS	U	KKD 6305	Feeds and feed additives	4	4				120.0	40.0	1/20	1/20		1/16	4/64				4.0		
10		AS	E	NORKSZh	Scientific basis for the rational feeding of farm animals	5	1				150.0	50.0	1/20	2/30		1/20	5/80	5.0					
11	Innovati ve technol ogies	AS	U	ITPPZh 5301	Technological innovation of livestock products	4	1				120.0	40.0	1/20	1/20		1/16	4/64	4.0					
12		AS	U	ITPPZh 5309	Technological innovation of livestock products	4	2				120.0	40.0	1/20	1/20		1/16	4/64		4.0				
13		AS	U	SAZh 5302	Statistical analyzes in animal husbandry	5	3				150.0	50.0	1/20	2/30		1/20	5/80			5.0			
14		AS	E	ITZh 6308	Information technologies in livestock	5	4				150.0	50.0	1/20	2/30		1/20	5/80				5.0		
					Scientifically research																		
15	The researc h work of a master student	R	C	NIRMVVMD	Master student's research work, including implementation of master's	1					30.0							1.0					
16		R	C	NIRMVVMD	Master student's research work, including implementation of master's	1					30.0								1.0				
17		R	C	NIRMVVMD	Master student's research work, including implementation of master's	1					30.0									1.0			
18		R	C	NIRMVVMD	Master student's research work, including implementation of master's	3					90.0										3.0		
19		R	C	NIRMVVMD	Master student's research work, including implementation of master's	10					300.0											10.0	
20		R	C	NIRMVVMD	Master student's research work, including implementation of master's	8					240.0												8.0
21		BS	U	PP 6205	Teaching practice	2					60.0										2.0		
22		AS	U	IP 5304	Research practice	4					120.0									4.0			
23		AS	U	IP 6306	Research practice	6					180.0										6.0		
24		AS	U	IP 6307	Research practice	10					300.0											10.0	
Total of theoretical course						62	14	0	0	0	3240	620	230	390	0	248	992						
AC	Additional courses					46								1380.0									
PP	Teaching practice					2		4		4				60									
RP	Research practice					20		3, 4, 5		5				600									
MSSR	Master student's research work, including implementation of master's thesis					24				1, 2, 3,				720									
FA	Final attestation					12								360.0									
	Master dissertation defence					12				6				360									
	Total					120					3600	620	230	390	0	248	992						

Appendix 3. Matrix of achievability of the formed learning outcomes according to the educational program with the help of academic disciplines

№	Name of the discipline	Brief description of the discipline	Number of credits	Generated learning outcomes									
				ON 1	ON 2	ON 3	ON 4	ON 5	ON 6	ON 7	ON 8	ON 9	ON 10
Cycle of basic disciplines University component													
1	Foreign language (professional)	Language of professional and academic purpose at an advanced level, scientific and conceptual apparatus of the specialty, scientific information base, interpretation of scientific information, argumentation, persuasion, scientific controversy, academic writing.	5	v									
2	History and philosophy of science	The structure and functions of scientific knowledge, methods of science in their professional activities; differences between ideological, political, religious constructions from scientific concepts. Means and methods of modern science, analysis of philosophical and ideological, epistemological, logical and methodological issues, the style of scientific thinking.	5		v								
3	Pedagogics of higher school	Fundamentals of pedagogy of high school. Subject and tasks of pedagogy of higher school. Methodology and methods of pedagogical research in higher education. Didactics of higher school. Pedagogical process in higher school. Laws and principles of training. Methods, forms and means of higher	3			v							

№	Discipline	Description												
		education. The current state of higher education in the Republic of Kazakhstan. Professional development of a teacher of higher education. The process of education in higher education. The purpose of education as a pedagogical problem. Teaching and educational team as a form of functioning of a holistic pedagogical process.												
4	Psychology of management	Introduction to the psychology of management. Conceptual apparatus of the psychology of management. Leader and team. Conflicts in the workplace. Managerial communication. Decision making technology. The concept of the subject and object of management. Leader and leader. Psychology of the order. Personality as a subject and object of management. Democratic leadership style and its features. Psychology of criticism. Psycho types of subjects of communication. Psychological persuasive technique. Psychological problems of selection of leading cadres. Psychological problems of training and retraining of managerial personnel. Selection and placement of personnel. Staff rotation. Certification and staff turnover.	5			v								
Cycle of basic disciplines Component of choice														
1	English for Academic Purposes	Comprehensive theoretical and linguistic, practical and informational-analytical training in order to perform functions related to the use of a foreign language in professional and scientific activities:	5	v										

№	Discipline	Description	Credits											
		possession of public speaking skills, conducting discussions, the ability to work with information from various sources, edit texts of professionally significant content in a foreign language.												
2	Foreign language for academic purposes	Use of a foreign language in professional and scientific activities, possession of public speaking skill, conducting discussion, the ability to work with information from various sources, edit texts of professionally content in a foreign language.	5	v										
3	Mathematical modeling in animal husbandry	The discipline reveals the concept of mathematical modeling and models, the process, the purpose of modeling in animal husbandry. Master students study abstract and material, speculative and verbal, informational and mathematical models. The discipline teaches undergraduates to establish the form of a connection between two features and the selection of a mathematical equation that expresses this connection. Functional, stochastic dependencies are mastered.	5				v							
4	Methodology of scientific research and analysis of zootechnical experiments	The content of the discipline covers the issues of setting up and conducting scientific research, registration of technical documentation; scientific activity; public speaking. Undergraduates acquire the skill of writing scientific letters, participating in scientific events and organizing them, conducting patent searches, protecting intellectual property rights, formulating goals, tasks related to the implementation of professional	5		v		v							

		functions. They master the adoption of specific organizational decisions to achieve the goals and objectives, interaction with various groups and institutions of power, society, and pedagogical activities. The discipline studies the use of foreign languages to the extent necessary for the implementation of professional, research, teaching activities. Instills skills in working with laws and other regulations in the field of conducting a scientific experiment, field and laboratory work.													
5	Fundamentals of scientific research	When studying the discipline, students master the stages of research work, including the choice of the direction of research, the formulation of a scientific and technical problem, and the conduct of theoretical and experimental research in animal husbandry. Master students acquire the skill of searching, accumulating and processing scientific information, as well as learning to conduct, process and formalize the results of experimental research. They master the methodological foundations of scientific research, types of research, experiment, formulation of the problem, methods of choosing and goals of the direction of scientific research, the course of scientific research, the main methodological techniques for setting up modern experiments, the form, structure and design of scientific papers. They study the basic requirements for writing	5		v		v								

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№	Name of discipline	Brief description of the discipline (30-40 words)	Number of credits											
		articles in scientific journals indexed by the Web of Science, Scopus, and other databases.												
6	Planning and modeling of the breeding process in animal husbandry	Knowledge of the above course will allow undergraduates, when conducting research work on animal breeding, to widely use many modern methods for analyzing the hereditary inclinations of an animal, to know the principles of operation of basic laboratory instruments and the rules for their operation, to correctly interpret the results of research and are necessary when preparing and writing a dissertation.	5				v							
Cycle of profile disciplines University component														
1	Technological innovation of livestock products	The discipline "Technological innovation of livestock products " studies innovative technologies for breeding and reproduction of agricultural animals and poultry, innovative technologies in feeding agricultural animals and poultry, innovative technologies for increasing the productivity of agricultural animals and poultry, innovative technologies for improving the quality of livestock products and poultry farming, innovative technologies for the production of beef, milk, lamb, horse meat, koumiss, pork, eggs and poultry meat. The discipline gives the skills to apply modern methods of feeding, breeding, breeding work in scientific work. Master students master the skill of determining the efficiency of growing farm animals, ensuring the rational maintenance, feeding and	8						v					

№	Discipline	Description		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
		breeding of all types of farm animals and making decisions in the conditions of innovative technologies.												
2	Feeds and feed additives	The discipline reveals the scientific rationale for the classification of feed for agricultural animals and poultry; master students study modern technologies for forage harvesting and preparation of feed additives (preservation, extrusion, biological and chemical). The discipline provides a scientific substantiation of the factors affecting the quality of feed and feed additives, technologies for reducing negative factors on the quality of feed and feed additives. Master students learn methods for assessing and improving feed quality.	4				v		v					v
3	Research methods in agricultural animals feeding	In the discipline "Research methods in agricultural animals feeding", master students gain knowledge about the classification of research methods in animal husbandry and their brief description. Master students learn methods for assessing the nutritional value of feed and feed additives, methods for the energy nutrition of feed, methods for studying the safety of feed and feed additives, methods for determining mycotoxins in feed, methods for determining heavy metals in feed, methods for assessing the usefulness of feeding, methods for balance experiments in animal husbandry.	4				v		v					
4	Statistical analyzes in animal	The discipline studies the programs of statistical observation of the activities of	4								v			

	husbandry	the industry. Master students master methods for determining the system of indicators that characterize the results of livestock activities. The discipline provides the skills to analyze the structure and structural shifts in the volume of production of the main types of livestock products, the analysis of various factors that affect the results of livestock farming													
Cycle of profile disciplines Component of choice															
1	Information technologies in livestock	The discipline considers information systems in animal husbandry, regulations in the field of animal husbandry, rules for identifying farm animals, rules for subsidizing livestock breeding. Introduces the work of breeding and distribution centers. Gives the concept of Services - cattle, small ruminant, appraisal of cattle, small ruminant. Automatic work place of boniter, event planning, pedigree reporting forms, buying and selling semen on the farm. Master students master information software products for planning feeding and calculating diets based on a general methodological principle. The discipline provides skills in the use of digital technologies and software applications used in international practice for feeding control, fodder preparation, storage, formulating compound feed, in the biometric processing of the obtained scientific research results; skills in using computerized platforms and services	4					v			v		

№	Discipline	Description	Cr.												
		such as https://msusheepration.montana.edu (MSU Sheep Ration Program), https://www.sites.ext.vt.edu (Ration Balancing Software: DAIR4, NRC Dairy, Spartan, CNCPS, and CPM), www.korall-agro.ru/, https://plinor.ru, https://ama.spbgau.ru													
2	Scientific basis for the rational feeding of farm animals	The main essence of the study of the discipline is familiarization with scientifically based methods of drawing up feeding plans. The discipline studies the rational selection of components in the preparation of feed mixtures (fully mixed rations) based on scientific research and development of domestic and foreign scientists, modern scientific foundations for the rational feeding of agricultural animals and poultry in various climatic conditions of Kazakhstan, the scientific basis for the use of materials for the preparation and storage of feed and feeding process. Studying this subject allows monitoring the quality of the rational feeding process.	5									v		v	v
3	Rational feeding of agricultural animals	The discipline provides knowledge about the state of the forage base and feeding technology in the livestock sectors of the republic. Considers the basic principles of the organization of rational feeding of farm animals and poultry. Master students master modern and efficient technologies for feeding agricultural animals and poultry. The discipline	5									v		v	v

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		studies the definition of the nutritional value of feed and feed additives in order to include them in the composition of balanced diets for feeding agricultural animals. The issues of optimizing the diets of feeding of agricultural animals in terms of usefulness and cost.												
4	Digital animal husbandry	The discipline provides knowledge about the functional capabilities of livestock breeding subjects in the information and analytical system of livestock breeding. Master students digital technologies in the production of livestock products, methods for their comprehensive assessment and effective use, and zootechnical accounting. They master the skills of checking and controlling the entered information and planning events in the information and analytical system.	4					v			v		

MAP of methodological support
«7M08201 Feed and feeding of farm animals»

Total disciplines of the educational program - 13
Of these, how many disciplines are taught at the graduating department - 7
Of these, how many in other departments - 6

Мaр №1.
Information on the availability of a fund of educational and scientific literature
NJSC «S.Seifullin KATU» of the Department «Technology of production and processing of animal products» for the 2022-2023 academic year

№ i/n	Academic subject, academic discipline	The number of students studying the subject, the discipline (estimated enrollment)	Educational literature (title, year of publication, authors)	Educational and methodical, scientific literature (title, year of publication, authors)	Quantity at least 1 copy
1	2	3	4	5	6
1	Foreign language (professional)	10	1 Профессионально-ориентированный иностранный язык для неязыковых специальностей: Учебное пособие. - Усть-Каменогорск: Изд. ВКГУ им. С. Аманжолова, 2014. - 69 с. 2 Alexander L.G. (2015) Longman English Grammar Practice for Intermediate students. Longman 3 Войнатовская, С. К. Английский язык для зооветеринарных вузов: учебное пособие / С. К. Войнатовская. - СПб.: Лань, 2018. - 240 с.	1 Профессионально-ориентированный иностранный язык (английский): Учебно-методический комплекс дисциплины - Костанай: КГУ им. А. Байтурсынова, 2013. - 69с. 2 R. Harrison, S. Philpot, L. Curnick.(2014). New Headway Academic Skills. Reading, Writing, and Study Skills. Oxford University Press.	1 10

2	History and philosophy of science	10	1 Философия: оқулық / А.К.Абдина, Х.С.Абдильдина, Т.М.Садыкова		Web resources
			2 Основы философии: учеб. пособие / Р.К. Турысжанова; М-во образования и науки РК. - 2-е изд. - Қарағанды: Medet Group, 2014. - 250 с.		49
			3 История и философия науки: учеб. пособие для магистрантов / Р.К. Турысжанова, М.К. Ташбулатова ; М-во образования и науки РК. - Алматы : Medet Group, 2014. - 292 с.		49
			4 Кенни, Э. Батыс философиясының жаңа тарихы . 1 том. Антика философиясы / Э. Кенни ; ауд.: А. С. Аяпбекова, Н. Т. Базарбай, А. Рыскиева ; ағылшын тілінен аударма. - Алматы : Ұлттық аударма бюросы, 2018. - 408 б.		60
3	Pedagogics of higher school	10	1 Сағалиева Ж.К., Сейлхан Г.И. Педагогика. Оқу құралы.-Астана: С. Сейфулина. ҚазАТУ баспасы, 2018.-188 б.	1 Баширова Ж.Р. Развитие университетского образования в аспекте подготовки преподавателя высшей школы. Монография. -Алматы: АТУ им. Абая, 2018. - 160 с.	28
			2 Ахметова Г.К., Исаева З.А. Педагогика: Учебник для магистратуры университетов. - Алматы: Казак университеті, 2019. - 328 с.		Web resources
			3 Мынбаева А.К. Основы педагогики высшей школы: Учебное пособие. -Алматы, 2018.	2 Кредитная система обучения в вузе. - Алматы: Казак университеті, 2018. – 180 с.	Web resources

			- 190 с. 4 Сағалиева, Ж. К. Педагогика : оқу құралы / Ж. К. Сағалиева, Р. С. Омарова, Г. І. Сейілхан ; пікір беруші: З. Д. Баубекова, Ш. М. Майгелдиева, Т. Т. Ғалиев. - Астана : С.Сейфуллин атындағы ҚазАТУ, 2016. - 188 б.		30
4	Psychology of management	10	1 Захарова, Л.Н. Басқару психологиясы: Оқулық / Л.Н. Захарова. - М.: Логотиптер, 2013 ж.- 376 б. 2 Н.С.Ахтаева, А.И.Абдигапбарова, З.Н.Бекбаева. Басқару психологиясы Оқу құралы. Ал-маты «Қазақ университеті» 2018ж. 3 Умбиталиев А.Д.«Басқару психологиясы»: оқу құралы / А.Д.Умбиталиев, К.Б. Сатымбекова, Ғ.Е. Керімбек / Алматы: 2017. - 464 бет 4 Руденко А.М. Управленческая психология / А.М.Руденко — Ростов н/Д: Феникс, 2019 5 Майерс, Д. Г. Әлеуметтік психология : оқулық / Д. Г. Майерс, Ж. М. Туенж ; ауд.: Г. Қ. Айқынбаева [ж.б.] ; Ағылшын тілінен аударма. - 12-басылым. - Алматы : Ұлттық аударма бюросы, 2018. - 648 б.	1 Базаров, Т.Ю. Персоналды басқару психологиясы: академиялық бакалаврға арналған оқулық пен семинар / Т.Ю. Базаров. - Люберцы: Юрайт, 2016. - 381 б.	1 5 57
5	English for Academic Purposes	10	1. Justin Zobel. Writing for Computer Science. The university of Melbourne, Parkville, Australia		

			Third Edition, 2014. 2. Carolyn Brimley Norris, Ph.D. Academic Writing in English. Language Services, University of Helsinki, 2016. 3. Stephen Bailey, Academic Writing: A Handbook for International Students, (2011) by Routledge, Milton Park, Abingdon. 4 Войнатовская, С. К. Английский язык для зооветеринарных вузов: учебное пособие / С. К. Войнатовская. - СПб. : Лань, 2018. - 240 с.		Web resources 10
6	Foreign language for academic purposes	10	1. Justin Zobel. Writing for Computer Science. The university of Melbourne, Parkville, Australia Third Edition, 2014. 2. Carolyn Brimley Norris, Ph.D. Academic Writing in English. Language Services, University of Helsinki, 2016. 3. Stephen Bailey, Academic Writing: A Handbook for International Students, (2011) by Routledge, Milton Park, Abingdon. 4 Белоусова, А. Р. английский язык для студентов сельскохозяйственных вузов: учеб. пособие / А. Р. Белоусова, О. П. Мельчина. - 5-е изд., стер. - СПб. : Лань, 2016. - 352 с.		Web resources 4
7	Mathematical modeling in animal husbandry	10	1 Гмурман В.Е. Теория вероятностей и математическая статистика. – М.: Научная школа,	1 A.B.Aruova, L.K. Dyussembaeva, A.G. Zharoeva . Probability theory	43 Web resources

			2014. 2 Кремер Н.Ш. Теория вероятностей и математическая статистика. –М., Научная школа, 2016. 3 DeGroot M.H., Schervish M.J. Probability and Statistics-Addison Wesley, 2015. 4 Мукашева, Н. А. Моделирование систем : учебное пособие / Н. А. Мукашева ; Министерство образования и науки Республики Казахстан, Казахский агротехнический университет им. С. Сейфулина. - Астана : КазАТУ им. С. Сейфуллина, 2014. - [2], 158 с.	and discrete mathemat-ics.-Астана 2018.	1
8	Methodology of scientific research and analysis of zootechnical experiments	10	1 S.Bostanova, I.Mukhametzharova. Research in animal husbandry. - Nur-Sultan 2020. 2 Бостанова, С.К. Научные исследования в животноводстве: учеб. пособие / С.К. Бостанова ; рец.: К.Н. Баязитова, Б.С. Майканов ; М-во сельского хоз-ва РК, Каз. агротехн. ун-т им. С.Сейфуллина. - Астана : КазАТУ им. С.Сейфуллина, 2018. - 111 с.	1 McIntire, John Grace, The Impact of the International Livestock Research Institute. eBook. ISBN: 978-1-78924-185-3. Delia UK: CABI, 2021. 2 Webster, John.Animal Husbandry Regained [Текст] : the place of farm animals in sustainable agriculture / J. Webster. - London : Routledge, 2013. - 243 p : il. Index: p. 239 - 243. - ISBN 978-1-84971-421-1	20 20 1
9	Fundamentals of scientific research	10	1 S.Bostanova, I.Mukhametzharova. Research in animal husbandry. - Nur-Sultan 2020. 2 Бостанова, С.К. Научные	1 McIntire, John Grace, The Impact of the International Livestock Research Institute. eBook. ISBN: 978-1-78924-	20 20

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10	Planning and modeling of the breeding process in animal husbandry	10	1 Гмурман В.Е. Теория вероятностей и математическая статистика. – М.: Научная школа, 2014. 2 Кремер Н.Ш. Теория вероятностей и математическая статистика. –М., Научная школа, 2016. 3 DeGroot M.H., Schervish M.J. Probability and Statistics-Addison Wesley, 2015. 4 Мукашева, Н. А. Моделирование систем : учебное пособие / Н. А. Мукашева ; Министерство образования и науки Республики Казахстан, Казахский агротехнический университет им. С. Сейфулина. - Астана : КазАТУ им. С. Сейфуллина, 2014. - [2], 158 с.	1 A.B.Aruova, L.K. Dyussembaeva, A.G. Zharoeva . Probability theory and discrete mathemat-ics.-Астана 2018.	43 Web resources 1
11	Technological innovation of livestock products	10	1 Применение элементов цифровых технологий в молочном скотоводстве Северного Казахстана / Л. В. Алимжанова [и др.]. ; рец.: С. К. Шауенов, К. Н.	1 Zachariah, Annie Bobby. Precision Agriculture and the Future of Farming. Ashland: Delve Publishing. 2019. eBook.	20 Web resources

			Баязитова, К. Ш. Нургазы ; М-во сельского хоз-ва РК, Каз. агротехн. ун-т им. С.Сейфуллина. - Нур-Султан : КазАТУ им. С.Сейфуллина, 2020. - 84 с	2 Advances in Sensors, Big Data and Machine Learning in Intelligent Animal Farming. MDPI - Multidisciplinary Digital Publishing Institute, 2022. eBook.	
12	Feeds and feed additives	10	1 Омарқожаұлы Н., Абдрахманов С. Мал азықтандыру және азық сапасын бағалау / Анықтамалық оқу құралы.- Алматы, Лантар Трейд, 2018, 217 б	1 Маннапова, Р. Т. Кормовые добавки для повышения молочной продуктивности первотелок [Текст] / Р. Т. Маннапова, И. М. Файзуллин // Ветеринария. - 2012. - № 8. - С. 44--47.	3
			2 Омарқожаұлы Н., Азық қоректілігі мен сапасын бағалау / Оқу құралы.- Алматы, Лантар Трейд, 2018, 79 б.		3
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17	Rational feeding of agricultural animals	10	1 Омарқожаұлы Н., Абдрахманов С. Мал азықтандыру және азық сапасын бағалау / Анықтамалық оқу құралы.- Алматы, Лантар Трейд, 2018, 217 б	1 Хохрин, С. Н. Кормление животных [Текст] : учеб. пособие для студентов высш. учеб. заведений / С. Н. Хохрин. -	3 5

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Information about the availability of educational and scientific literature on digital media
NJSC «S.Seifullin KATU» of the Department «Technology of production and processing of animal products» for the 2022-2023 academic year

№ i/n	Academic discipline by profession, direction of personnel training, by specialty qualifications being prepared	Name, year of creation	The author(s)	Information about the presence of a subscription to international, national databases
1	2	3	4	5
1	Foreign language (professional)	«Кәсіби бағытталған шетел тілі» пәні бойынша тәжірибелік сабақтарға арналған практикум к практическим занятиям по дисциплине «Профессионально-ориентированный иностранный язык»/С.Сейфуллин атындағы Қазақ агротехникалық университеті-2016	Бекенова Ш.Ш., Жақып Д., Байбусенов К.С.	http://repository.kazatu.kz/jspui/handle/123456789/1006
2	History and philosophy of science	Философия тарихы, 2018	Есбол Ғ.Ш.	http://rmebrk.kz/book/1158234
3	Pedagogics of higher school	Педагогика высшей школы, 2019	Ибраева К.Ж.	https://e.lanbook.com/book/233915
4	Psychology of management	Басқару психологиясы, 2016	В.В. Козлов	//dialogue-irk.ru/kk/beznalichnye/spisok-ispolzovannoi-literatury-po-psihologii-upravleniya-aktualnyi/
		Психология управления, 2021	Т.А. Бергис	https://e.lanbook.com/book/243236
5	English for Academic Purposes	Английский язык для академических целей, 2017	Волченкова К.Н.	https://e.lanbook.com/book/260285
6	Foreign language for academic purposes	Facing challenges in writing (Преодолевая трудности	В.Ф. Гревцева, М.Н. Клевина	https://e.lanbook.com/book/266909

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7	Mathematical modeling in animal husbandry	Математикалық модельдеуге кіріспе, 2019	Муканова Б.Г., Хаджиева Л.А.	http://rmebrk.kz/book/1177637
8	Methodology of scientific research and analysis of zootechnical experiments	Логика и методология научного исследования, 2022	Шорохова С.П.	https://www.iprbookshop.ru/119090.html
		Animal breeding and genetics for BSc students, 2014	Kor Oldenbroek en Liesbeth van der Waaij	https://www.wur.nl/upload_mm/d/b/b/614bcc19-036f-434e-9d40-609364ab26da_Textbook%20Animal%20 Breeding%20and%20Genetics-v17-20151122_1057.pdf
9	Fundamentals of scientific research	Методы научных исследований, 2019	С.Ю. Махов	https://www.iprbookshop.ru/95404.html
		Методология научных исследований, 2014	А.Б. Пономарев, Э.А. Пикулева	https://pstu.ru/files/file/adm/fakultety/ponomarev_ Pikuleva_metodologiya_nauchnyh_issledovaniy.pdf
10	Planning and modeling of the breeding process in animal husbandry	Математикалық және компьютерлік модельдеу негіздері, 2014	Сұлтанов М.А.	http://rmebrk.kz/book/1020590
11	Technological innovation of livestock products	Инновационные технологии производства продукции животноводства, 2012	Д.К. Найманов	http://rmebrk.kz/book/1024698
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12	Feeds and feed additives	Мал азығын өндіру, 2016	Бақтыбаев М.С., Тасқұлова А.М	http://rmebrk.kz/book/1151586
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14	Statistical analyzes in animal husbandry	Методологическое положение о статистике. 2018	Министерство национальной экономики Республики Казахстан	https://stat.gov.kz
		Прикладной статистический анализ данных, 2018	Е.С. Каган	https://e.lanbook.com/book/134318
15	Information technologies in livestock	«Информационные технологии в науке и производстве» (Информационные технологии в науке и производстве, 2020	Т.Ю. Гусева	https://e.lanbook.com/book/171669
		Жүйе қолдану бойынша нұсқаулық 2015	Республиканская система животноводства информационно-аналитическая система	http://www.plem.kz/Ақпараттық-сараптамалық
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		Основы питания и кормления сельскохозяйственных животных, 2022	Рядчиков В.Г.	https://lanbook.com/catalog/veterinariya/osnovy-pitaniya-i-kormleniya-selskohozyajstvennyh-zhivotnyh-68442506/
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Chairman of the FCAQ Faculty of Veterinary and Animal Husbandry Technology

Shaikenova K.H.

Head of the Department «Technology of production and processing of animal products»

Bostanova S.K.

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Chairman of the FCAQ Faculty of Veterinary and Animal Husbandry Technology

Shaikenova K.H.

Head of the Department «Technology of production and processing of animal products»

Bostanova S.K.

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