TITLE OF THE Curricula/Module

INNOVATIVE PRODUCTION TECHNOLOGY OF ANIMAL PRODUCTS

KATU /Kazakhstan

2021

1. INFORMATION ABOUT EDUCATOR

Saltanat Issabekova - PhD, Senior Lecturer
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ZOOM ID 384 351 8755

Classes: audience 8310; according to the approved timetable,
«Production and processing technology of animal husbandry products»
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Department - «Technology and processing of livestock products»

1.1 Syllabus supplement the following "classes are held according to the approved schedule using remote technologies in the online and offline modes.

2. INFORMATION ABOUT DISCIPLINE

Discipline name - «Innovative production technology of animal products»
Is an integral component of the module - «Innovative technologies in animal husbandry»
The number of module credits - 8 credits (240 hours);
Module type - BS (optionally component)

Approximate distribution of training time

Trimester weeks	1	2	3	4	5	6	7	8	9	10	Total
1 trimestr											
Lectures	2	2	2	2	2	2	2	2	2	2	20
Practical	2	2	2	2	2	2	2	2	2	2	20
SIWGE	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	16
SIW	6,4	6,4	6,4	6,4	6,4	6,4	6,4	6,4	6,4	6,4	64
Total	12	12	12	12	12	12	12	12	12	12	120
2 trimestr											
Lectures	2	2	2	2	2	2	2	2	2	2	20
Practical	2	2	2	2	2	2	2	2	2	2	20
SIWGE	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	16
SIW	6,4	6,4	6,4	6,4	6,4	6,4	6,4	6,4	6,4	6,4	64
Total	12	12	12	12	12	12	12	12	12	12	120

3. COURSE PREREQUISITES

For successful study of «Innovative production technology animal products» course necessary to assimilate the learning core content subjects such as Feeding animals, Breeding livestock, livestock production technology, livestock processing technology.

4. COURSE POSTREQUISITES

After completing the course, the acquired knowledge is used by master students in the further study of such disciplines as Agricultural management, Agricultural marketing, Innovation in livestock production, quality and market competitiveness of livestock production.

5. COURSE DESCRIPTION

5.1 Discipline object: To form knowledge among master students about innovative technologies in animal husbandry and use them in practical work.

5.2 Tasks of the discipline:

To study - innovative technologies of keeping, feeding, breeding animals;
To master - technology that will ensure good health high ability with economical use of feed;
To know - innovative technologies in animal husbandry;

To have - skills in conducting research work on innovative technologies in animal husbandry to widely use many modern methods, correctly interpret the results of research.

After studying the discipline students must:
Descriptor A - know and understand

- ensure the rational maintenance, feeding and breeding of all types of animals;
- plan the selection and breeding work of the herd, production;;
- ensure the reproduction of the herd, the rearing of young animals;
- make the selection of progressive, cost-effective livestock production technologies;
- plan the production of livestock products, evaluate the quantity and quality of products
- collect, process, analyze and synthesize scientific and technical information, advanced domestic and foreign experience in the field of animal science;
- make reports (sections of the report) on the topic or its section (stage, task);
- participate in the implementation of research and development results;
- advise on issues of breeding, feeding, keeping animals and livestock production technology;
- to know about the experience of state and commercial combined or individual structures and services on issues of innovative animal feeding technologies and feed technologies;
- plan the organization and application of innovative technologies for animal feeding, depending on the chemical composition and properties of feed and additives;
- apply new trends in the field of improvement (modernization) of innovative animal feeding technologies and feed technologies.

Be able to (Descriptor B):

- apply modern methods of feeding, breeding, stock breeding in scientific work.

the ability to determine the effectiveness of growing farm animals at the enterprise;
Possess (Descriptor C, D, E):

the ability to determine the effectiveness of growing farm animals at the enterprise;

the ability to provide rational maintenance, feeding and breeding of all types of animals in the conditions of innovative technology.
Acquire practical skills (Descriptor C, D, E):

To acquire practical skills in the basics of breeding and daily ration, assessing the productivity of farm animals.

6. COURSE CONTENT

1 List of lecture classes

№	Title and theme summary	Amount,	Week	Literature
	1 trimestr			
1	The value of innovative technologies in animal husbandry.	2	1	1-6

2	Improving innovative technologies in the production of milk.	4	2-3	1-6
3	The use of innovative technologies in various sectors of livestock.	2	4	1-6
4	The use of new technologies in various systems and methods of keeping animals	2	5	1-6
5	The use of innovative technologies in various methods of growing young farm animals	2	6	1-6
6	Features of the reproduction of farm animals using innovative technologies.	2	7	1-6
7	Innovative technologies for the production of lamb and wool.	2	8	1-6
8	Innovative technologies for the production of horse meat and koumiss.	2	9	1-6
9	Innovative technologies for the production of eggs and poultry meat.	2	10	1-6
2 trimestr				
1	Condition and Prospects of Precision agriculture	2	1	1-6
2	The development of smart agriculture and livestock	2	2	1-6
3	The economic effect of the introduction of digital technologies in livestock	2	3	1-6
4	Observation of the animal and its location	2	4	1-6
5	Electronic identification of animals	2	5	1-6
6	Computerization of processes in precision animal husbandry	2	6	1-6
7	Electronic database of the production process	2	7	1-6
8	Programming and automatic assignment of animal care.	2	8	1-6
9	Collection and removal of statistics for all monitored indicators;	2	9	1-6
10	Feed, water, their dosage	2	10	1-6

6.2 List of practical classes

Module	Title and theme summary	Tasks, purpose and content	Amount, hours	Literature	Week	Current control %
1 trimestr						
Innovative technologies in animal husbandry	Innovative technologies in cattle breeding	The value of resource-saving technologies. Features of the development of dairy and beef cattle breeding in foreign countries. Intensification of cattle breeding abroad.	2	1-6	1	50/100
	The importance of interior and exterior when applying innovative technologies in cattle breeding.	The concept of interior and exterior. The effect of interior and exterior on productivity. Types of higher nervous activity and their significance in livestock ethology.	2	1-6	2	50/100

	Innovative technologies in dairy cattle breeding	Technological basis of milk productivity. Factors affecting milk yield and milk composition: breed, age, stage of lactation, live weight, age and live weight at the first hotel, duration of the dry period and service period, food, milking rate, milking technique,etc	2	1-6	3	50/100
	The technology of growing young stock using innovative technologies	The value of the colostrum for calves. Methods of growing calves and young animals in dairy and beef cattle breeding. Planning for rearing young stock. Age and live weight of heifers at the first fertilization. Technologies use of pastures while growing young stock.	2	1-6	4	50/100
	Systems and methods for keeping cattle with resource-saving technologies	Systems and methods for keeping dairy cows in winter and summer. Determination of feed requirements. Preparation and distribution of them, the use of natural and artificial pastures and crops of the green conveyor.	2	1-6	5	50/100
	Innovative technologies For milk production and herd reproduction.	Technology for the formation of animal groups with tethered and loose housing. The structure of the herd and its justification in farms of various specializations.	2	1-6	6	50/100
	Modern meat production technologies in farms of various ownership forms	Features of feeding and keeping cows and young stock in beef cattle breeding. Various technologies of intensive beef cattle breeding. Cow-calf technology in specialized beef cattle breeding.			7	
	Innovative technologies for the production of lamb and sheep wool	Rational use of pastures in sheep breeding, methods of fattening and feeding. Productivity Level Planning.	2	1-6	8	50/100
	Innovative technologies for the production of horse meat and koumiss	Innovative technologies of keeping and feeding are applied in horse breeding abroad. Productive horse breeding Kazakhstan, ways to increase horse productivity.	2	1-6	9	50/100
	Technologies for	Innovative methods of keeping birds. Rational feeding of poultry	2	1-6	10	50/100

	improving the quality of livestock and poultry products	and feed additives. Productivity Level Planning.				
2 trimestr						
Precision livestock farming	Precision dairy farming	Automated calf feeders robotization of the milking process	2	1-6	1	50/100
	Precision dairy farming	Smart technologies for dairy cattle	2	1-6	2	50/100
	Precision dairy farming	Robotization of the milking process	2	1-6	3	50/100
	Identification and monitoring of individuals, meeting their individual needs	Identification, registration and registration of farm animals Identification and monitoring of cattle	2	1-6	4	50/100
	Monitoring the health state of the herd	Monitoring the health state of the cattle. Monitoring the health state of the sheep. Monitoring the health state of the poultry	2	1-6	5	50/100
	Monitoring the quality of livestock products	Monitoring the quality of dairy products	2	1-6	6	50/100
	Monitoring the quality of livestock products	Monitoring the quality of meat products	2	1-6	7	50/100
	Monitoring the quality of livestock products	Monitoring the quality of poultry products	2	1-6	8	50/100
	Precision poultry farming	Eggs, aimed at improving the quality indicators of products	2	1-6	9	50/100
		Control of lighting, ventilation and temperature of the farm;	2	1-6	10	50/100

6.3 The criterion for assessing the knowledge of students in practical classes

Based on letter system	The digital equivalent of points	% content	Traditional system of assessment	Criteria for assessing students' knowledge
A	4,0	95-100	excellent	**The student demonstrates excellent knowledge in the topics of practical classes:** - Innovative technologies in cattle breeding - The importance of interior and exterior when applying innovative technologies in cattle breeding - Innovative technologies in dairy cattle breeding

				- The technology of rearing young animals using innovative technologies - Systems and methods for keeping cattle with resource-saving technologies - Innovative technologies for milk production and herd reproduction. - Modern meat production technologies in farms of various forms of ownership - Technologies for improving the quality of livestock and poultry products - Innovative technologies for the production of lamb and sheep wool - Innovative technologies for the production of horse meat and koumiss
A-	3,67	90-94	excellent	**The student demonstrates excellent knowledge in the topics of practical classes:** - Innovative technologies in cattle breeding - The importance of interior and exterior when applying innovative technologies in cattle breeding - Innovative technologies in dairy cattle breeding - The technology of rearing young animals using innovative technologies - Systems and methods for keeping cattle with resource-saving technologies - Innovative technologies for milk production and herd reproduction. -Modern meat production technologies in farms of various forms of ownership - Technologies for improving the quality of livestock and poultry products - Innovative technologies for the production of mutton - Innovative horse meat production technology
B+	3,33	85-89	good	**The student demonstrates high knowledge in the topics of practical classes:** - Innovative technologies in cattle breeding - The importance of interior and exterior when applying innovative technologies in cattle breeding - Innovative technologies in dairy cattle breeding - The technology of rearing young animals using innovative technologies - Systems and methods for keeping cattle with resource-saving technologies - Innovative technologies for milk production and herd reproduction. - Modern production technologies - Technologies for improving the quality of livestock and poultry products

				- Innovative technologies for the production of mutton - Innovative horse meat production technology
B	3,0	80-84	good	**The student demonstrates high knowledge in the topics of practical classes:** - Innovative technologies in cattle breeding - Innovative technologies in dairy cattle breeding - Technology for growing young animals - Systems and methods for keeping cattle with resource-saving technologies - Innovative technologies for milk production and herd reproduction. - Modern production technologies - Technologies for improving the quality of livestock and poultry products - Innovative technologies for the production of mutton - Innovative horse meat production technology
B-	2,67	75-79	good	**The student demonstrates high knowledge in the topics of practical classes:** - Innovative technologies in cattle breeding - Innovative technologies in dairy cattle breeding - Technology for growing young animals - Systems and methods for keeping cattle with resource-saving technologies - Modern production technologies - Technologies for improving the quality of livestock and poultry products - Innovative technologies for the production of mutton -Innovative horse meat production technology
C+	2,33	70-74	satisfactory	**The student demonstrates satisfactory knowledge in the topics of practical classes:** - Innovative technologies in cattle breeding - Innovative technologies in dairy cattle breeding - Technology for growing young animals - Systems and methods for keeping cattle with resource-saving technologies - Modern production technologies - Technologies for improving the quality of livestock and poultry products - Innovative technologies for the production of mutton - Innovative horse meat production technology
C	2,0	65-69	satisfactory	**The student demonstrates satisfactory knowledge in the topics of practical classes:** - Innovative technologies in cattle - Innovative technologies in dairy cattle - Technology for growing young animals

				- Modern production technologies - Technologies for improving the quality of livestock and poultry products - Innovative technologies for the production of mutton - - Innovative horse meat production technology
C-	1,67	60-64	satisfactory	**- The student demonstrates satisfactory knowledge in the topics of practical classes:** - Innovative technologies in cattle breeding - Innovative technologies in dairy cattle breeding - Technology for growing young animals - Modern production technologies - Technologies for improving the quality of livestock and poultry products - Innovative technologies for the production of mutton
D+	1,33	55-59	unsatisfactory	**- The student demonstrates satisfactory knowledge in the topics of practical classes:** - Innovative technologies in cattle breeding - Innovative technologies in dairy cattle breeding - Technology for growing young animals - Modern production technologies- Technologies for improving the quality of livestock and poultry products
D	1,0	50-54		**The student demonstrates satisfactory knowledge in the topics of practical classes:** - - Innovative technologies in cattle breeding - - Innovative technologies in dairy cattle breeding - - Technology for growing young animals - - Modern production technologies
D-	0	0-49		**The student demonstrates:** - not knowledge of program material, - gross mistakes are made when performing all types of tasks; - lack of skills in the application of individual techniques for completing tasks; - non-fulfillment of certain types of tasks stipulated by the forms of current, intermediate and final control.

6.4. DISCIPLINE SCHEDULE OF TASKS IMPLEMENTATION AND PASSING (SIW)

Module	Classes theme	Tasks, purpose and content	Recom-mended litera-ture	Control form	Dead-line	Mark assess-ment

Innovative technologies in animal husbandry	Innovative technologies in dairy cattle breeding	Resource-saving technologies used in the industry. Features of feeding and keeping in the innovative technology of the industry.Innovative ways to increase productivity in the industry, rearing young stock, new trends in breeding in the industry.	Internet resources	Presentation	2	50/100
	Scientific-research establishments of agrarian profile in the Republic of Kazakhstan.	Resource-saving technologies used in the industry. Features of feeding and keeping in the innovative technology of the industry.Innovative ways to increase productivity in the industry, rearing young stock, new trends in breeding in the industry.	Internet resources	Presentation	3	50/100
	Innovative technologies in poultry farming	Resource-saving technologies used in the industry. Features of feeding and keeping in the innovative technology of the industry.Innovative ways to increase productivity in the industry, rearing young stock, new trends in breeding in the industry.	Internet resources	Presentation	4	50/100
	Innovative technologies in horse breeding	Resource-saving technologies used in the industry. Features of feeding and keeping in the innovative technology of the industry.Innovative ways to increase productivity in the industry, rearing young stock, new trends in breeding in the industry.	Internet resources	Presentation	5	50/100
	Innovative technologies in sheep farming	Resource-saving technologies used in the industry. Features of feeding and keeping in the innovative technology of the industry.Innovative ways to increase productivity in the industry, rearing young stock, new trends in breeding in the industry.	Internet resources	Presentation	6	50/100
Innovative technologies in animal husbandry	Innovative feeding technology	Innovative technologies in feeding in different species of animals	Internet resources	Presentation	7	50/100
	Innovative technologies in reproduction	Innovative technologies to increase reproductive ability in different species of animals.	Internet resources	Presentation	8	50/100

	Creating an innovative model farm	The project plan for creating a model farm that meets modern requirements for the production of milk and meat products.	Internet resources	Situational game in groups	9	50/100
2 trimestr						
Precision livestock farming	Precision Livestock Farming technologies	The economic effect of the implementation of the RFID system in animal husbandry	Internet resources	Presentation	2-3	50/100
	Animal production	Precision Livestock Farming Use of technologies to optimize animal production	Internet resources	Presentation	4-5	50/100
	Animal welfare	Precision livestock farming technologies for welfare management in intensive livestock systems	Internet resources	Presentation	6-7	50/100
	Precision Livestock Farming in KZ	A strategic research and innovation agenda for a sustainable livestock sector in KZ	Internet resources	Presentation	8	50/100
	Precision dairy farming	The importance of using smart technologies for dairy cattle	Internet resources	Presentation	9	50/100
	Identification and Monitoring of farm animals	Future trends in the use of innovation technologies for animal health management and monitoring	Internet resources	Presentation	10	50/100

6.5 Criterion for assessing the knowledge of students in (SIW)

Based on letter system	The digital equivalent of points	% content	Traditional system of assessment	Criteria for assessing students' knowledge
A	4,0	95-100	excellent	**The student demonstrates excellent knowledge in SIW topics:** Resource-saving technologies used in the industry. Features of feeding and keeping in the innovative technology of the industry. Innovative ways to increase productivity in the industry, rearing young animals, new trends in breeding in the industry. Innovative technologies in feeding in different species of animals. - Innovative technologies in increasing reproductive ability in different species of animals.
A-	3,67	90-94	excellent	**- The student demonstrates excellent knowledge in SIW topics:** - Resource-saving technologies used in the industry. Features of feeding and keeping in the innovative technology of the industry. Innovative

				ways to increase productivity in the industry, rearing young animals, new trends in breeding in the industry. - Innovative technologies in feeding in different species of animals. - Innovative technologies in increasing reproductive ability in different species of animals.
B+	3,33	85-89	good	**The student demonstrates high knowledge in SIW topics:** - Features of feeding and keeping in the innovative technology of the industry. Innovative ways to increase productivity in the industry, rearing young animals, new trends in breeding in the industry.
B	3,0	80-84		**- The student demonstrates high knowledge in SIW topics:** - Features of feeding and keeping in the innovative technology of the industry. Innovative ways to increase productivity in the industry, rearing young animals, new trends in breeding in the industry. - Innovative technologies in feeding in different species of animals.
B-	2,67	75-79		**- The student demonstrates high knowledge in SIW topics:** - Features of feeding and keeping in the innovative technology of the industry. Innovative ways to increase productivity in the industry, rearing young animals, new trends in breeding in the industry.
C+	2,33	70-74	satisfactory	**- The student demonstrates satisfactory knowledge in SIW topics:** - Features of feeding and keeping in the innovative technology of the industry. Innovative ways to increase productivity in the industry, rearing young animals, new trends in breeding in the industry.
C	2,0	65-69		**The student demonstrates satisfactory knowledge in SIW topics**: - Features of feeding and keeping in the innovative technology of the industry. Innovative ways to increase productivity in the industry, rearing young animals, new trends in breeding in the industry.
C-	1,67	60-64	satisfactory	**- The student demonstrates satisfactory knowledge in SIW topics:** - Features of feeding and keeping in the innovative technology of the industry. Innovative ways to increase productivity in the industry, rearing young animals, new trends in breeding in the industry.

D+	1,33	55-59	unsatisfactory	- **The student demonstrates satisfactory knowledge in SIW topics:** - Innovative ways to increase productivity in the industry, rearing young animals, new trends in breeding in the industry.
D	1,0	50-54		- **The student demonstrates satisfactory knowledge in SIW topics:** - Innovative ways to increase productivity in the industry, rearing young animals, new trends in breeding in the industry.
F	0	0-49		**Student demonstrates**: - not knowledge of program material, - gross mistakes are made when performing all types of tasks; - lack of skills in the application of individual techniques for completing tasks; - non-fulfillment of certain types of tasks stipulated by the forms of current, intermediate and final control.

7. MAIN FORMS AND METHODS OF TRAINING

Forms of teaching: lectures, laboratory and practical work, independent work of students, independent work of the student and teacher

Methods of teaching: lecture, illustrations, performance of laboratory and practical works, independent work with directories and literature (regular and electronic), independent written exercises, independent work at the computer, individual interview, computer testing, control work; control laboratory and practical work; work with monitoring programs.

8. LIST OF LITERATURE

8.1. Basic:

1. Alipbeki O.A. Precision Agriculture/ Astana- 2018
2. Kuznecov A.F., Mihajlov N.A., Karcev P.S. Modern production technologies for keeping farm animals. -Krasnodar, 2013, -445 p.
3. Lyashchenko V.V., Delyan A.S. Livestock. -Krasnodar, 2014, -635p.
4. Livestock Technical Support: Textbook, 1st ed. Doe-2018, - 516 s.
5. Nechaev V.I., Artemova E.I. Problems of innovative development of animal husbandry. –Krasnodar, 2009. - 159 p.
6. Nechaev V.I., Artemova E.I. Problems of innovative development of livestock.. – Krasnodar, 2009. – 159 p.
7. http://www.eaplf.eu/wp-content/uploads/Precision-livestock-farming-2015_CD-DEF.pdf
8. https://hal.inrae.fr/hal-02566414/document
9. https://www.wageningenacademic.com/doi/epdf/10.3920/978-90-8686-815-5_8.5
10. https://www.wageningenacademic.com/doi/book/10.3920/978-90-8686-815-5

8.2. Additional:

1.Torekhanov A.A. Modern aspects in cattle breeding / Astana 2012, 204 p.
2.Satygul S.SH. Large-scale selection in cattle breeding / Astana 2008, 116 p.
3.Truflyak. E.V. Precision animal husbandry: state and prospects / - Krasnodar: KubGAU, 2018 .- 46 p.

9. COURSE POLITICS

1. When organizing the educational process with the use of distance learning technologies, training sessions are conducted in the online and offline modes and are carried out in accordance with the established training load, educational programs, with a working curriculum and lesson schedule; Training sessions in the "offline" mode provide for the process of educational interaction in which the teacher and student communicate asynchronously, ie through their own AIS platform "PLATONUS", SDO "MOODLE", and their internal chat and forum communication services. Training sessions in the "online" mode include the process of training interaction in real time: video conferencing (ZOOM, Hangouts, etc.)

2. Master students the educational material of courses of disciplines (lectures, laboratory, practical, seminar and other types of classes) using the university's automated information systems (Platonus, moodle, Unihab automated written verification system) and online platforms, including Zoom, or using other publicly accessible platforms through the Internet, while being outside the university.

3. Before the start of the trimester, Master students should learn how to use distance learning technologies and when registering for an online lesson, it is necessary to fill out all sections: last name, first name, group, course, specialty, put their photo in profile. Students are required to provide a workplace with access to Internet resources. Create a workplace in advance for training (turn off extraneous sounds, unauthorized participation is not allowed). Observe the dress code and look neat

4. Classes are held strictly on schedule, being late, skipping, leaving online classes is not allowed. Class attendance is recorded and monitored daily. During classes, the sound can be muted (turned on) by the organizer, if the teacher asks a question, you can answer by raising your hand using a special function on the computer. Questions that arise during classes can be asked in the chat.

5. Current control of students is carried out in accordance with the working curriculum of the discipline (syllabus) and grades are put in electronic journals in AIS Platonus via online resources in online mode in accordance with the QMS "Control of knowledge and conducting final certification" and instructions for filling out the electronic journal and performance in AIS Platonus "- placed in the EDMS" Arta ".

6. Responsibility for the timely completion of teachers' tasks in disciplinary courses using DOT in online mode is held by students. In the absence of the possibility of training using DOT, the student is obliged to inform his curator / adviser / head of the department / dean of the faculty through any means of communication.

7. Instructions for the use of DOT at NAO "S. Seifullin KATU"are placed in AIS" Platonus "and SDO" Moodle "in the" Announcements "section, in the" Arta "EDMS in the" DOT "section.

10. Information on knowledge assessment

Assessing the level of students knowledge is carried by the following control types:

The current control - attending lectures and note-taking, visiting practical classes and tasks implementation; implementation and passing tasks of students independent work.

Final control - passing of computer-test examination.

11. Grading Politics

Based on a 100 (100%) point system and provides for the following distribution of points.

The total score for the discipline in percentage is determined by the formula: And% = TKsr * 0.6 + E * 0.4Knowledge assessment scheme by the discipline

	Classes and student works types	**Points min/max**
I	**Current control:** Tasks completed during the trimester (laboratory and practical classes, independent work of the student).	50 / 100
	Total (amount):	50 / 100
III	**Final control** **Examination**	50 / 100
	Total (amount):	50 / 100

Scheme of students knowledge assessment at examination

	Exam mark	Assessment in points
1.	**Current control:**	50 / 100
2.	**Final control**	50 / 100
	Total (amount):	50 - 100

Scale of students knowledge assessment

Literal assessment	Digital equivalent	% of mastering of educational discipline content	Traditional system
A	4,0	95-100	Excellent
A-	3,67	90-94	
B+	3,33	85-89	Good
B	3,0	80-84	
B-	2,67	75-79	
C			
C	2,0	65-69	Satisfactory
C-	1,67	60-64	
D+	1,33	55-59	
D-	1,0	50-54	
FX	0,5	25-49	Unsatisfactory
F	0	0-24	

The syllabus is compiled by the lecturers: Saltanat Amantay
Saltanat Issabekova