MINISTRY
OF EDUCATION AND SCIENCE AND INNOVATION OF KYRGYZ REPUBLIC
OSH STATE UNIVERSITY
INTERNATIONAL MEDICAL FACULTY

DEPARTMENT OF NATURAL SCIENCES AND MATHEMATICS

TRAINING PROGRAM **(Syllabus)**

Specialty (direction)	**General Medicine (GM)**	**Course code**	**N.1.1.1**
Language of instruction	**English**	**Discipline**	**Medical biology, parasitology and ecology**
Academic year	**2025-2026**	**Number of credits**	**4**
Teacher	**Mamatova R. Tairjanova M.**	**Semester**	**1**
E-Mail	rmamatova@oshsu.kg mtairjanova@oshsu.kg	**Schedule for the application "OshSU Student"**	
Consultations (time/room)	**Tuesday 13:00-14:00**	**Location (building/room)**	**IMF 108, 411**
Form of study (daytime/correspondence/evening/distance learning)	**Daytime**	**Course type: (compulsory/elective)**	**Compulsory**

Head of the Educational program "General medicine" M Bugubaeva,
Associate Professor

Osh 2025

Purpose of the course: formation of fundamental knowledge to study the biological mechanisms of cell biology, genetics, molecular biology, as well as to see the direct connection between the effects of environmental factors and the occurrence of a certain pathology, to prepare for the subsequent practical skills of a doctor using anthropogenetics methods.
- formation of knowledge about the variety of parasites that can infect organs and systems of the human body. Understanding the biology, life cycle, mechanisms of infection and methods of prevention and control of diseases caused by parasites.

Summary of the course:

1. Fundamentals of cell biology, its importance in medicine.
2. The molecular genetic level of the organization of life. Principles of inheritance of traits in the transition from genotype to phenotype. Prevention of hereditary diseases.
3. Methods of anthropogenetics. Population-specific level of organization of life. Genetic cargo, its medical value.
4. Medical ecology. The city as an ecosystem. Environment and life expectancy. Pathogenetic mechanisms of action of physical, chemical, biological factors on the human body.
5. Heredity and environment. DNA damage and mutations.
6. Environmental and medical factors of the lithosphere, hydrosphere, biosphere and atmosphere.
7. Environmental problems of nutrition. Biological resources. Assessment of the risk of environmental factors on human health.
8. The content of the subject of parasitology, its importance in medicine.
9. Basic concepts, terms and definitions of parasitology, the main groups of parasitic animals.
10. Basic concepts, terms and definitions of parasitology, the main groups of parasitic animals.
11. Regularities of the existence of the "parasite-host" system, the spread of parasitic infections, the life cycles of parasites.
12. To know the ecology, morphology and localization of helminths necessary for the clinical diagnosis, treatment and prevention of diseases caused.

Prerequisites	Biology, chemistry	
Post requisites	Normal physiology, microbiology	
Co-requisities	histology, anatomy	
learning outcomes		
In the course of mastering the discipline, the student will achieve the following:		
Code of the results of the general education curriculum and its formulation	***Learning outcome of course and its code***	***Code and formulation of competencies***
LO-1 Able to use knowledge of the humanities, natural sciences, and economics.	**LOc-1:** analyze the role of biological factors in the development of diseases, genotypic and phenotypic manifestations of hereditary diseases, master modern	GC-1 able and ready to analyze socially significant problems and processes, use methods of natural sciences, mathematics and

	methods of studying human genetics.	humanities in various types of professional and social activities.
LO-6 Able to apply basic knowledge in the field of preventive activities to solve professional problems.	LOc-2 able and ready to learn the basics of parasitology, the manifestations and course of the most common parasitic forms of diseases	PC-10 able and ready to carry out preventive measures to prevent infectious, parasitic and non-infectious diseases. PC-25 able and ready to train the population in basic hygiene measures and educational activities to develop healthy lifestyle skills.

4.Chart of Collection Points

discipline	**credit**	**In-class hours**	**ISW**	**Module 1(25 points)**				**Module 2 (25 points)**				**Exam (50 points)**	
		40%	60%	In-class hours		ISW/IWST	SC(r)	In-class hours		ISW/IWST	SC(r)	(E)	
				Lec.	Pr.			Lec.	Pr.				
Medical biology, parasitology and ecology	4	48	72	10	16	30/6		10	12	30/6			
Cumulative Points Chart				4	4	8	9	4	4	8	9		
Module and Exam Results				(M=tcp.+r+s) до 25 / 25				(M=tcp.+r+s) до 25 / 25				50	
				Rдоп. = M1 + M2 (30-50)									
Final Grade				I = Rдоп. + E								100	

Topics of the lectures.

№	**Distributions of the week**	**Topic occupations**	**The number of hours**	**Points**
1	22/10-25/10	Introduction. Cellular life organization level. https://www.youtube.com/watch?v=URUJD5NEXC8	2	4
2	27/11-1/11	Cell cycle and cell division. External and internal regulation of cell cycle. https://www.youtube.com/watch?v=5bq1To_RKEo	2	4
3	3/11-8/11	Heredity and environment. DNA damage and mutations. https://www.youtube.com/watch?v=vP8-5Bhd2ag	2	4

4	10/11-15/11	Human genetics. https://www.youtube.com/watch?v=Jsuu1KR_hho	2	4
5	17/11-22/11	Ecology and environment. Organisms and environment. https://www.youtube.com/watch?v=9dAcEBXAFoo	2	4
6	24/11-29/11	Introduction to Medical parasitology. Protists as human parasites. Parasitic amoeboid and flagellate protozoa. https://www.youtube.com/watch?v=V4iSB0_7opM	2	4
7	1/12-6/12	Apicomplexa parasites. Parasitic Ciliates.	2	4
8	8/12-13/12	Medical Helminthology. Phylum Plathelminthes. Cestoidea infections. Human as intermediate and final host of tape worms. https://www.youtube.com/watch?v=1kvwOQisQxI	2	4
Modul 1				
9		General characteristics of flat worms. Flukes (Trematodes). Blood, intestinal and liver flukes. **https://www.youtube.com/watch?v=pX_ChP8kru8**	2	4
10		Class Nematoda. Roundworms (Geohelminthes, biohelminthes). Filarial nematodes. Hookworms. Threadworms. Methods of laboratory diagnosis of helminthoses. https://www.youtube.com/watch?v=bWj_raWn6RY	2	4
			20	4
Modul 2				

Topics of the practical classes.

№	Distributions of the week	Topic occupations	The number of hour		Points
				Pract class	
Модуль - 1					
1	22-25.10.2025	The microscope in cell studies. Types of microscopes. The cytology as a science. Diseases associated with specific cell-organelles. https://www.youtube.com/watch?v=URUJD5NEXC8		2	4
2	27.10-1.11.25	Molecular genetic life organization level. Expression of genes. Protein biosynthesis. https://www.youtube.com/watch?v=LCIkd-WwC7o		2	4
3	3.11-8.11.25	Cell cycle. Cell division. Mitosis. Amitosis.		2	4

		https://www.youtube.com/watch?v=5bq1To_RKEo			
4	10 -15.11.25	Cell division. Meiosis. Gametogenesis. Disorder caused by errors in cell division. https://www.youtube.com/watch?v=VzDMG7ke69g		2	4
5	17- 22.11.25	Mendelian inheritance. Genetic terminology. https://www.youtube.com/watch?v=NR3779ef9yQ		2	4
6	24-29.11.25	Methods of human genetics. Peculiarities of human genetics. Pedigree analysis (genealogic method). https://www.youtube.com/watch?v=v5vlcc1Fml8		2	4
7	1.-6.12.25	Heredity and environment. DNA damage and mutations. https://www.youtube.com/watch?v=Jl1Aa7Iq4tc		2	4
		Module 1			
8		Medical ecology. Environmental issues. https://www.youtube.com/watch?v=kMONRrLd-NU		2	4
9		Basic concepts of parasitology. Medical protozoology. General characteristic of protists. Parasitic amoeboid protozoa. https://www.youtube.com/watch?v=V4iSB0_7opM		2	4
10		Parasitic Flagellates. Intestinal, oral and genital flagellates. https://www.youtube.com/watch?v=Rjw6kWiRX8Y https://www.youtube.com/watch?v=wUShvU9XuM0		2	4
11		Apicomplexa parasites. Parasitic Ciliates.		2	4
12		Medical Helminthology. Phylum Plathelminthes. Cestoidea infections. Human as intermediate and final host of tape worms. https://www.youtube.com/watch?v=nOFDqiCNcwo		2	4
13		General characteristics of flat worms. Flukes (Trematodes). Blood, intestinal and liver flukes. https://www.youtube.com/watch?v=pX_ChP8kru8		2	4
14		Class Nematoda. Roundworms (Geohelminthes, biohelminthes). Filarial nematodes. Hookworms. Threadworms. https://www.youtube.com/watch?v=Y61wwcXnpF8		2	4
		Module 2		28	4

Plan of IWST (independent work under the supervision of a teacher)

№	Тема	Задание для СРС	Лек	Прак	Оценочные средства	Баллы	Литература	Срок сдачи
	Модуль 1							
1.	Organisms reproduction.	1.Asexual reproduction.	2		MCQ,	3	1,2,3,4	2nd week

		2.Sexual reproduction.: gametogenesis, features of gametes structure, insemination, fertilization, 3.Hermaphroditism, formation of sex dimorphism			PPTpresentation Crossword			
2	Chromosomal disorders.	Down syndrome (Trisomy 21). Klinefelter syndrome. Triple-X syndrome. Turner syndrome. Trisomy 18. Trisomy 13.		3	MCQ, PPTpresentation Crossword	4	1,2,3,4	4th week
	Модуль 2							
3	Ecology. Organism and its environment	1. Organism and its environment 2.Environmental problems of nutrition. Nitrates, nitrites and nitrogen commissure in the pathology of the person.	3		PPTpresentation	4	2,5,6	8 th week
4	City as an ecosystem.	Environment and life expectancy. How do cities affect the ecosystem?	,	2	PPTpresentation, Crosswords, Filling the table MCQ	4	1,3,4	9th week
5	Human as intermediate and final host of tape worms.	-General characteristics of cestodes - Life cycle - Pathogenicity - Laboratory diagnosis - Prophylaxis -Classification		2	PPTpresentation, Crosswords, Filling the table MCQ	4	1,2,5	10th week
			5	7		4		

Plan of organization ISW

№	Topic	Task for ISW	Hours	Assessment tools	Marks	Reference	Dead line
1.	Chemical composition of the cell. Synthetic biology.	PPT presentation	7	Oral survey	4	Main 1,2,3,4	1-week
2.	Chromosome and karyotypes.	Paper(essay)	7	Testing	4	Main 1,2,4	2-week
3.	Biology of the organism. Characteristics of a multicellular organism.	Creative work	6	OS	4	Main 1,2,3,4 Add 1	3-week
4.	Linked genes.	Creative work	7	T	4	Main 1,2,3, Add 1	4-week
5.	Malaria parasites	Literature review	7	OS	4	Main 1,2,3,4	5-week
6.	Strongyloides stercoralis. Morphology, life cycle, prevention.	PPT presentation	6	T	4	Main 1,2,3,4 Add 1	6-week
7.	Schistosoma. Morphology, life cycle, prevention.	Creative work	7	SGD-small groups discussion	4	Main 1,2,3,4 Add 1	6-week
8.	Filarial nematodes	PPT presentation	7	SGD	4	Main 1,2,3,4 Add 1	7-week
9.	Medically Important Arthropods	PPT presentation	6	OS	4	Main 1,2,3,4 Add 1	8-week

Chart of collection points for Current control(CC)

$$\frac{\textbf{sum of marks} \text{ of each class}}{\text{Number of classes}}$$

Chart of collection points of IWST

$$\frac{\textbf{sum of marks} \text{ of IWST}}{\text{Number of IWST}}$$

$$\textbf{Exsample: ISW} = \frac{\textit{Top.№1(4m)} + \textit{Top.№2(4m)} + \textit{Top.№3(4m)}}{\textbf{sum of marks of ISW}} = \textit{4 marks}$$

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1. **Chart of collection points for Module**

- 4marks for practical classes,
- 4marks for lecture classes ,

- 4marks for ISW,
- 4marks for IWST
- 9marks for summary control

Exsample: M1 =Pc(4m)+Lec(4m)+ISW(4m)+IWST(4m)+SC(9)=25marks

The organization of the educational process is carried out on the basis of a credit-modular system according to the requirements, with the use of a modular rating system for assessing the progress of students using the AVN information system.

Requirements:

a) Mandatory attendance;
b) Activity during lectures and practical classes;
C) Preparation for classes, homework.

Unacceptably:

a) being Late;
b) Untimely delivery of tasks.

Bonus points consist of activity in the classroom, performing extracurricular independent work by students, scientific work, attendance of lectures.

Penalty points consist of points received for dishonesty, inactivity, absenteeism, etc.

Bonus points.

1. Preparation of presentations – 2 points.
2. Production of tables, crossword puzzle: -1 point.
3..Systematic active work during the semester in practical classes and in lectures - 3 points.
4. 100% attendance-2 points
5.Preparation of the report and presentation at student conferences - 5 points

Penalty point.

1. Regular lateness to classes – 1 point.
2. Missed lectures and classes - 2 points
3. Disrespectful attitude to teacher-3 points.
5. Smoking on the territory of the medical institution – 3 points.
6. Damage to the Cathedral property - 3 points
8. A systematic lack of preparation for practical classes – 2 points.
9. Violation of discipline classes - 1 point

Note: a student can score a maximum of 10 bonus points and penalty points not more than 10 (per semester).

Table of scoring of discipline «Medical biology, parasitology and ecology»

Rating (points)	Gradebased on letter system	The numeralequivalent evaluation	Traditional system assessment
87 – 100	A	4,0	Excellent
80 – 86	B	3,33	Good
74 – 79	C	3,0	
68 -73	Д	2,33	Satisfactorily
61 – 67	E	2,0	
31-60	FX	0	Unsatisfactory

Электрондук ресурстар	https://www.youtube.com/watch?v=URUJD5NEXC8 https://www.youtube.com/watch?v=5bq1To_RKEo https://www.youtube.com/watch?v=vP8-5Bhd2ag https://www.youtube.com/watch?v=VzDMG7ke69g
Электрондук окуулуктар	P.S. Verma Cell biology, genetics, molecular biology, evolution and ecology 2005 file:///D:/%D1%80%D0%B0%D0%B1%D0%BE%D1%87%D0%B8%D0%B9%20%D1%81%D1%82%D0%BE%D0%BB%202017/%D0%BA%D0%BD%D0%B8%D0%B3%D0%B8/Cell%20Biology,%20Genetics,%20Molecular%20Biology,%20Evolution%20and%20Ecology%20(%20PDFDrive.com%20).pdf Atlas of medical parasitology 1996 file:///D:/%D1%80%D0%B0%D0%B1%D0%BE%D1%87%D0%B8%D0%B9%20%D1%81%D1%82%D0%BE%D0%BB%202017/%D0%BA%D0%BD%D0%B8%D0%B3%D0%B8/Atlas%20de%20parasitolog%C3%ADa%20m%C3%A9dica.pdf V.J. Bekish, V.V. Zorina MEDICAL BIOLOGY AND GENERAL GENETICS 2019 *file:///D:/%D1%80%D0%B0%D0%B1%D0%BE%D1%87%D0%B8%D0%B9%20%D1%81%D1%82%D0%BE%D0%BB%202017/%D0%BA%D0%BD%D0%B8%D0%B3%D0%B8/_Medical_biology_and_general_genetics_2019.pdf*
Лабораториялык физикалык ресурстар	*Кабинет 108, 411, микроскопы, микропрепараты.*
Атайын программалык камсыздоолор	
Укуктук ченемдик актылар	*https://drive.google.com/drive/home*
Окуу китептери (китепкана)	**1.Molecular Biology of the cell,** Bruce Alberts, Alexander Johnson, Julian Lewis, David Morgan, Martin Raff, Keith Roberts, Peter Walter, sixth edition, **2.Medical biology** "O.-Y.L. Bekish" 2003 **3.Biology** "Campbell N.A." 2019 12th edition **4.Medical biology** "Bazhora Yu. I.,Bulyk R. Ye.,Chesnokova M. M.,Shevelenkova A. V.,Smetyuk O. O.,Lomakina Yu. V." 2019 **5.Molecular Biology of the gene,** 7th edition, 2013, Watson J.**Genetics** B.D. Singh 2010 **6.Medical Anthropology in Ecological Perspective** "Ann McElroy and Patricia K. Townsend" 5th edition 2009 **7.Medical Parasitology** 4th edition D.R. Arora 2014 **8.Medical Parasitology** A. Panikers 2019