

AL-FARABI KAZAKH NATIONAL UNIVERSITY
Medicine and Health Care Faculty
Higher School of Medicine
Department of Fundamental Medicine



EDUCATIONAL AND METHODOLOGICAL COMPLEX OF DISCIPLINE

MOLECULAR BASES OF PATHOLOGY

BM086 «Medicine»

Educational program "6B10114 – Medicine"

Course – 2

Semester – 4

Number of credits – 10 (10 ECTS)

Almaty, 2023

Educational and methodical complex of discipline was compiled by PhD Akhayeva Tamila, Candidate of Medical Sciences Aida Seitliyeva, Master of Medical Sciences Akbota Targynova.

Based on the educational program BM086 Medicine

Considered and recommended at a meeting of the fundamental medicine department from "30"
08 2023, protocol No. 1

Head of the department  Sarsenova L. K.

Recommended by the Methodological Council of the Higher School of Medicine

"10" "10" 2023, protocol No. 1

Chairman of the Academic Committee of M&HCF



Sarsenova L. K.

SYLLABUS
Molecular basis of pathology
(Medical genetics, general pharmacology)

Part A:			
1. Academic course information			
1.1	Faculty/school: Faculty of Medicine and Healthcare Higher School of Medicine Department of Fundamental Medicine	1.6	Credits number (ECTS): – 10 lectures - 5 credits / practical lessons 5 credits
1.2	Educational program: 6B10114 Medicine	1.7	Prerequisites: Molecular, Cellular and Genetic Basis of Medicine
1.3	The Agency and the year of accreditation of the educational program: NU "INDEPENDENT AGENCY OF ACCREDITATION AND RATING" 2021	1.8	IWS: 3.3 credits
1.4	Name of the course: Molecular basis of pathology	1.9	IWST: 1.7 credits
1.5	Course ID: 103323	1.10	Essential -yes, Elective - no
2. Course type:			
core discipline of university component of module Biomedicine essentials. The discipline considers the integration of the body's defense mechanisms in the development of pathological processes from the point of view of medical genetics and pharmacology.			
3 The aim of the course:			
to form knowledge about dysregulation of the transformation of substances, energy, genetic information. Modern ideas about the molecular genetic mechanisms of the development of genetically determined human pathology; methods of molecular and genetic diagnostics and interpretation of their results. Genomics, pharmacogenomics, metabolomics. General pharmacology: patterns and mechanisms of action of medicinal substances on the body, depending on the nature of distribution, biotransformation, routes of administration and excretion; conditions that determine their action in the body, etc.			
4. Learning outcomes of discipline:			
Learning outcomes of discipline			
1. to apply knowledge about molecular and genetic aspects of genetically determined diseases (chromosomal, monogenic, polygenic); understand the principles of genetic diagnostics and medical genetic counseling.		1. to apply detailed knowledge of the typical structure and functions of the human body at the level - from molecules, cells, to organs and systems, the body as a whole	
2. to apply knowledge of molecular-genetic, biochemical mechanisms of the body's response to drugs and biologically active compounds.		2. to apply detailed knowledge of the typical structure and functions of the human body at the level - from molecules, cells, to organs and systems, the body as a whole	
3. to understand the biochemical processes in the main pathological conditions and genetically determined diseases.		3. to identify and solve problems that affect human health based on the application of knowledge about the main pathological processes and the biological damage they cause	

	4. to understand the role of relevant risk factors of diseases for decision-making with a view to their prevention.		4. to apply knowledge of the principles and methods of forming a healthy lifestyle for a person and family, population health; apply knowledge of a complex of factors that determine health and disease for the purpose of prevention.
	5. to integrate knowledge on human genetics, biochemical processes and the interaction of micro and macro-organism for the purposes of diagnosis and personalized treatment of human pathology		5. to apply detailed knowledge of the typical structure and functions of the human body at the level - from molecules, cells, to organs and systems, the body as a whole
	6. to know the pharmacokinetic parameters, mechanisms of absorption and biotransformation of drugs.		6. to apply detailed knowledge of the typical structure and functions of the human body at the level - from molecules, cells, to organs and systems, the body as a whole.
	7. to apply knowledge of pharmacodynamics and mechanisms of action of drugs in the main pathological processes (affecting the acid-base state, hemostasis and hematopoiesis, inflammation, infectious process, allergies, autoimmunity, onco-process). To know the types of undesirable side reactions and understand the possibilities of their correction.		7. to identify and solve problems affecting human health based on the application of knowledge about the underlying pathological processes and the biological damage they cause. Integrate clinical knowledge and skills to provide an individual approach to the treatment of a particular patient and the promotion of his health in accordance with his needs; make professional decisions based on the analysis of the rationality of diagnostics and applying the principles of evidence-based and personalized medicine.
	8. to demonstrate the ability to identify learning gaps and create strategies to enhance one's own knowledge and skills.		8. to participate in scientific research aimed at advancing knowledge in the field of human health and improving the quality of life; strive for new knowledge, generate new knowledge; be capable of effective learning and transferring knowledge to others throughout their careers.
	9. effectively communicate with other students and teachers regarding medical and scientific information, articulate their opinions clearly when discussing and work effectively as a member of the team		9. to work effectively in an interprofessional / multidisciplinary team with other healthcare professionals in organizing and managing the diagnostic and treatment process; collect and communicate medical information, orally and in writing, to provide safe and effective patient care.
5.	Summative assessment methods (mark (yes – no) / specify your own):		
5.1	MCQ testing for understanding and application	5.5	Essay
5.2	Case study	5.6	Paper work
5.3	Project (individual/group)	5.7	Curriculum control: written
5.4	Discussion	5.8	The exam: written

Part B			
6.	Academic course information		
6.1	Academic year: 2023-2024	6.3	Schedule (days of classes, time): days of the week: Mon-Sat Time: 8.00-20.00

6.2	Semester: 4 semester	6.4	Location (building, office, platform and link to the meeting of learning with the use of distance learning technologies): Adrees : st. Tole bi 96		
7.	Teachers				
Position	Name	Department	Contact information (tel., e-mail)	Time for consultations or by appointment	
Teacher of Medical Genetics	Akbota Targynova	DFM	87011508580 targynova.akbota@med-kaznu.com		
Teacher of Medical Genetics	Zaure Dushimova	DFM	87017992330 Dushimova.zaure@med-kaznu.com		
Teacher of Pharmacology	Tamila Akhayeva	DFM	87773060445 akhayeva.tamila@med-kaznu.com		
Teacher of Pharmacology	Aida Seitliyeva	DFM	87002246495 seitliyeva.aida@med-kaznu.com		
8.	Content of the discipline				
Medical genetics					
Week	Topics and tasks				Hours
1-2.	Lecture Introduction to Medical Genetics. Chromosomal disorders				4
	Practical lesson Introduction to Medical Genetics. Chromosomal disorders				6
	Tasks (if available)				
	Literature Robert L. Nussbaum, Roderick R. McInnes, Huntington F. Willard // Genetics in medicine 8th edition: Elsevier – 2016, p 65-87.				
3	Lecture Sex Chromosome disorders.				2
	Practical lesson Sex Chromosome disorders.				3
	Tasks (if available)				
	Literature				

	Robert L. Nussbaum, Roderick R. McInnes, Huntington F. Willard // Genetics in medicine 8th edition: Elsevier – 2016, p 87-105	
	IWST: consultation for the implementation of the IWS	2
4-5.	Lecture Mendelian classic disorders: autosomal inheritance	4
	Practical lesson Mendelian classic disorders: autosomal inheritance	6
	Tasks (if available)	
	Literature Robert L. Nussbaum, Roderick R. McInnes, Huntington F. Willard // Genetics in medicine 8th edition: Elsevier – 2016, p 106-117, 195-214, 230-233	
	IWST: consultation for the implementation of the IWS	2
6.	Lecture Mendelian classic disorders: sex-linked inheritance	2
	Practical lesson Mendelian classic disorders: sex-linked inheritance	3
	Tasks (if available)	
	Literature Robert L. Nussbaum, Roderick R. McInnes, Huntington F. Willard // Genetics in medicine 8th edition: Elsevier – 2016, p 118-124, 233-238	
	IWST: consultation for the implementation of the IWS	2
7.	Lecture Biochemical bases of hereditary metabolic disorders	2
	Practical lesson Biochemical bases of hereditary metabolic disorders	3
	Tasks (if available)	
	Literature Lehninger Principles of Biochemistry 8th edition David L. Nelson/ Michael M. Cox 2021, 2017, 2013, 2008 by W. H. Freeman and Company Macmillan Learning One New York Plaza Suite 4600 New York, NY 10004-1562/ P.240,523-540,875-890	
	IWST: consultation for the implementation of the IWS	2
8.	Lecture Biochemical disorders in lipid metabolism enzymopathy	2
	Practical lesson Biochemical disorders in lipid metabolism enzymopathy	3
	Tasks (if available)	
	Literature Lehninger Principles of Biochemistry 8th edition David L. Nelson/ Michael M. Cox 2021, 2017, 2013, 2008 by W. H. Freeman and Company Macmillan	

	Learning One New York Plaza Suite 4600 New York, NY 10004-1562/ P.618,633-650,833-835	
	IWST: consultation for the implementation of the IWS	2
9.	Lecture Non-mendelian genetic disorders	2
	Practical lesson Non-mendelian genetic disorders	3
	Tasks (if available)	
	Literature Robert L. Nussbaum, Roderick R. McInnes, Huntington F. Willard // Genetics in medicine 8th edition: Elsevier – 2016, p 124-132, 246-255	
	IWST: consultation for the implementation of the IWS	2
	Colloquium 1 Topics 1-9	
Interim examination 1		
10.	Lecture Fundamentals of population genetics	2
	Practical lesson Fundamentals of population genetics	2
	Tasks (if available)	
	Literature Robert L. Nussbaum, Roderick R. McInnes, Huntington F. Willard // Genetics in medicine 8th edition: Elsevier – 2016, p 155-170	
	IWST: consultation for the implementation of the IWS	2
11.	Lecture Pharmacogenetics	2
	Practical lesson Pharmacogenetics	2
	Tasks (if available)	
	Literature Robert L. Nussbaum, Roderick R. McInnes, Huntington F. Willard // Genetics in medicine 8th edition: Elsevier – 2016, p 224-225, 372-375, 392-393, 428-429, 480-481	
	IWST: consultation for the implementation of the IWS	2
12-13.	Lecture Polygenic multifactorial disorders	3
	Practical lesson Polygenic multifactorial disorders	4
	Tasks (if available)	
	Literature	

	Robert L. Nussbaum, Roderick R. McInnes, Huntington F. Willard // Genetics in medicine 8th edition: Elsevier – 2016, p 133-154	
	IWST: consultation for the implementation of the IWS	4
14.	Lecture Cancer Genetics and Genomics	1
	Practical lesson Cancer Genetics and Genomics	2
	Tasks (if available)	
	Literature Robert L. Nussbaum, Roderick R. McInnes, Huntington F. Willard // Genetics in medicine 8th edition: Elsevier – 2016, p 309-332	
	IWST: consultation for the implementation of the IWS	2
15	Lecture Metabolic aspects of cancer	1
	Practical lesson Metabolic aspects of cancer	2
	Tasks (if available)	
	Literature Lehninger Principles of Biochemistry 8th edition David L. Nelson/ Michael M. Cox 2021, 2017, 2013, 2008 by W. H. Freeman and Company Macmillan Learning One New York Plaza Suite 4600 New York, NY 10004-1562/ P.451-455,1083-1084,1654-1687	
16.	Lecture Polygenic disorders: developmental malformation	1
	Practical lesson Polygenic disorders: developmental malformation	2
	Tasks (if available)	
	Literature Robert L. Nussbaum, Roderick R. McInnes, Huntington F. Willard // Genetics in medicine 8th edition: Elsevier – 2016, p 283-308	
	IWST: delivery of IWS	3
17-18.	Lecture Genetic counseling. Genetic testing, prevention and treatment.	2
	Practical lesson Genetic counseling. Genetic testing, prevention and treatment.	4
	Tasks (if available)	
	Literature Robert L. Nussbaum, Roderick R. McInnes, Huntington F. Willard // Genetics in medicine 8th edition: Elsevier – 2016, p 171-193, 257-282, 333-390	
	Colloquium 2 Topics 10-18	

Interim examination 2

General pharmacology

1.	Lecture Introduction to Pharmacology. The value of the subject. Dosage Forms. INN, trade names. Drug prescription.	3
	Practical lesson Introduction to Pharmacology. The value of the subject. Dosage Forms. INN, trade names. Drug prescription.	2
	Tasks (if available)	
	Literature: B. Katzung &. Basic and clinic pharmacology 2018 LANGE, P.1-88	
	IWST: consultation for the implementation of the IWS	1
2.	Lecture Pharmacokinetics. Principles of interaction between human bodies and drugs. Absorption, distribution, biotransformation and excretion of chemicals. Effects of impaired organ functions on pharmacokinetics.	3
	Practical lesson Pharmacokinetics. Principles of interaction between human bodies and drugs. Absorption, distribution, biotransformation and excretion of chemicals. Effects of impaired organ functions on pharmacokinetics.	2
	Tasks (if available)	
	Literature: B. Katzung &. Basic and clinic pharmacology 2018 LANGE P.1-88	
	IWST: consultation for the implementation of the IWS	1
3.	Lecture Pharmacodynamics. Receptors. Principles of interaction between human bodies and drugs. Different mechanisms of action – agonism and antagonism to different types and subtypes of receptors, inhibition of enzymes, blocking or opening of channels.	3
	Practical lesson Pharmacodynamics. Principles of interaction between human bodies and drugs. Different mechanisms of action – agonism and antagonism to different types and subtypes of receptors, inhibition of enzymes, blocking or opening of channels.	2
	Tasks (if available)	
	Literature: B. Katzung &. Basic and clinic pharmacology 2018 LANGE P.1-88	
	IWST: consultation for the implementation of the IWS	1
4.	Lecture PNS. Cholinergic drugs. Acetylcholine, it's effects on healthy human body. M and N cholinoreceptors, different subtypes. cholinomimetics. Cholinesterase inhibitors.	3
	Practical lesson	2

	PNS. Cholinergic drugs. Acetylcholine, its effects on healthy human body. M and N cholinoreceptors, different subtypes. cholinomimetics. Cholinesterase inhibitors.	
	Tasks (if available)	
	Literature: B. Katzung &. Basic and clinic pharmacology 2018 LANGE P.89-172	
	IWST: consultation for the implementation of the IWS	1
5.	Lecture PNS. Cholinergic drugs. Cholinoblockers. Cholinesterase reactivators	3
	Practical lesson Cholinergic drugs. Cholinoblockers, Cholinesterase reactivators	2
	Tasks (if available)	
	Literature: B. Katzung &. Basic and clinic pharmacology 2018 LANGE P.89-172	
	IWST: consultation for the implementation of the IWS	1
6.	Lecture PNS. Adrenergic drugs. Noradrenaline and adrenaline (Norepinephrine and epinephrine), their functions in healthy human body. Alfa and beta adrenoceptors, different subtypes. Adrenomimetics. Sympathomimetics	3
	Practical lesson PNS. Adrenergic drugs. Noradrenaline and adrenaline (Norepinephrine and epinephrine), their functions in healthy human body. Alfa and beta adrenoceptors, different subtypes. adrenomimetics.	2
	Tasks (if available)	
	Literature: B. Katzung &. Basic and clinic pharmacology 2018 LANGE P.89-172	
	IWST: consultation for the implementation of the IWS	1
7.	Lecture Adrenoblockers. Alfa beta adrenoceptor antagonists, Sympatholytics	3
	Practical lesson Adrenoblockers. Alfa beta adrenoceptor antagonists, Sympatholytics	2
	Tasks (if available)	
	Literature: B. Katzung &. Basic and clinic pharmacology 2018 LANGE P.89-172	
	IWST: delivery of IWS	1
8.	Lecture Hypnotics	3
	Practical lesson Hypnotics	
	Tasks (if available)	

	Literature: B. Katzung &. Basic and clinic pharmacology 2018 LANGE P.89-172	
	IWST: delivery of IWS	1
9.	Lecture Local Anesthetics	3
	Practical lesson Local Anesthetics	2
	Tasks (if available)	
	Literature: B. Katzung &. Basic and clinic pharmacology 2018 LANGE P.89-172	
	IWST: delivery of IWS	1
	Interim examination 1	
10.	Lecture Antiallergics, SAIDS	2
	Practical lesson Antiallergics, SAIDS	2
	Tasks (if available)	
	Literature: B. Katzung &. Basic and clinic pharmacology 2018 LANGE P.89-172	
	IWST: delivery of IWS	1
11.	Lecture CVD, Diuretics, Ca blockers, Nitrates, ACEI	2
	Practical lesson CVD, Diuretics, Ca blockers, Nitrates, ACEI	2
	Tasks (if available)	
	Literature: B. Katzung &. Basic and clinical pharmacology 2018 LANGE P.173-275, P.591-625	
	IWST: consultation for the implementation of the IWS	1
12.	Lecture Pharmacology of the hematopoietic system and hemostasis. Preparations for the treatment of anemia. Coagulation disorders. Drugs, enhancing drugs and reducing coagulation. Drugs, increasing and reducing platelet aggregation.	2
	Practical lesson Pharmacology of the hematopoietic system and hemostasis. Preparations for the treatment of anemia. Coagulation disorders. Drugs, enhancing drugs and reducing coagulation. Drugs, increasing and reducing platelet aggregation. Colloquium 2	2
	Tasks (if available)	
	Literature: B. Katzung &. Basic and clinical pharmacology 2018 LANGE P.173-275, P.591-625	

	IWST: consultation for the implementation of the IWS	2
13.	Lecture Diabetes	2
	Practical lesson. Diabetes	1
	Tasks (if available)	
	Literature: B. Katzung &. Basic and clinical pharmacology 2018 LANGE P.747-771	
	IWST: consultation for the implementation of the IWS	2
14.	Lecture Anti-inflammatory drugs. Signs of inflammation. inflammatory mechanisms.	2
	Practical lesson Anti-inflammatory drugs. Signs of inflammation. inflammatory mechanisms.	1
	Tasks (if available)	
	Literature: B. Katzung &. Basic and clinic pharmacology 2018 LANGE P.642-666, P.553-590, P.703-719	
	IWST: consultation for the implementation of the IWS	2
15.	Lecture Opioid system. Opioid agonists and antagonists. addiction.	2
	Practical lesson Opioid system. Opioid agonists and antagonists. addiction.	1
	Tasks (if available)	
	Literature: B. Katzung &. Basic and clinic pharmacology 2018 LANGE P.642-666, P.553-590, P.703-719	
	IWST: consultation for the implementation of the IWS	2
16.	Lecture Antibiotics. Principles of antimicrobial therapy. Mechanisms of formation, prevention and overcoming of resistance. beta-lactams, Macrolides, Tetracyclines, Aminoglycosides.	2
	Practical lesson Antibiotics. Principles of antimicrobial therapy. Mechanisms of formation, prevention and overcoming of resistance. beta-lactams, Macrolides, Tetracyclines, Aminoglycosides.	1
	Tasks (if available)	
	Literature: B. Katzung &. Basic and clinic pharmacology 2018 LANGE P.793-854, P.904-916, P.928-930	
	IWST: consultation for the implementation of the IWS	2
17.	Lecture Antibiotics. Peptide antibiotics. Nitroimidazoles and nitrofurans. fluoroquinolones. Linezolid. Sulfonamides. Trimethoprim.TB.	2

	Practical lesson Antibiotics. Peptide antibiotics. Nitroimidazoles and nitrofurans. fluoroquinolones. Linezolid. Sulfonamides. Trimethoprim.TB.	1
	Tasks (if available)	
	Literature: B. Katzung &. Basic and clinic pharmacology 2018 LANGE P.793-854, P.904-916, P.928-930	
	IWST: delivery of IWS	2
18.	Lecture Antiviral drugs. Treatment of HIV infection. Antifungals	2
	Practical lesson. Antiviral drugs. Treatment of HIV infection. Antifungals Colloquium 2	1
	Tasks (if available)	
	Literature: B. Katzung &. Basic and clinic pharmacology 2018 LANGE P.853-894	
	IWST: delivery of IWS	2
	Interim examination 2	
All		200
9.	Teaching methods in the discipline* Lecture, mini-lecture, case-based lecture, case based learning (CBL) - individual, group, project method (individual, group), discussion, solving typical/situational tasks.	
10.	Methods of formative assessment: quiz, test, interactive test, self-assessment test, reflexive essay, mutual assessment/reviewing/commenting.	
11.	Methods of summative assessment: The course is planned to hold 2 controls (interim examination 1, interim examination 2) in each discipline: medical genetics and pharmacology. For the semester, admission to the final exam rating points: $AR = (IE1 + IE2) / 2$, where $IE1 / IE2 =$ the sum of all points for classes + points for interim and IWS of the corresponding period*. $IE1 - 1-9$ weeks, $IE2- 10-18$ weeks. The final control (exam) is carried out by written examination. The final grade for the discipline = $AR * 0.6 + Exam * 0.4$ *AR – admission rating, IE – interim examination, IWS – independent work of students	
10.	Summative assessment (specify the estimates)	

Nº	Type of educational activity	Date	Score	%
	Lecture	According to the schedule	-	Not evaluated by points
1	Practical lesson 1. Discussion 2. solving typical/situational tasks.	According to the schedule	Assessment by checklist* 5 points each week (2.5 Pharm, 2.5 Genetics) - 45	13.5%

2	IWS1	According to the schedule	Assessment by checklist - 10 points	3% of the CC1 score
3	CC1	9 th week	Assessment by checklist - 45 points (Pharmacology 22.5, Genetics 22.5)*	13.5% of the final score
	Total		100	30
1	Practical lesson 3. Discussion 4. solving typical/situational tasks.	According to the schedule	Assessment by checklist* 5 points each week (2.5 Pharm, 2.5 Genetics.) - 45	13.5%
2	IWS2	According to the schedule	Assessment by checklist - 10 points	3% of the CC2 score
3	CC2	18 th week	Assessment by checklist - 45 points (Pharmacology 22.5, Genetics 22.5)*	13.5% of the final score
	Total		100	30
1	Exam	According to the session schedule	100 points: 1 part - 50 points 2 part - 50 points	40% of the final score
Final mark: AVG 60% + Exam 40%				

*Assessment by checklist (Genetics 50%, Pharmacology 50%)

Evaluation of practical lesson Pharmacology;

1. Written work, Protocol

	%
prescription	20
pharmacological group, classification	20
mechanism of action (molecular , and on tissue level)	20
Administration, Clinical use, Side effects	20
contraindication, interaction	20
	100%

2. Group work (Team based learning – TBL)

	%
Individual -- (IRAT)	30
Team -- (GRAT)	10

Appellation	10
Case assessment -	20
Group assessment (bonus)	10
	100%

3. Solving Case

Criteria	Level (point)					
	Out of program	At the level of the Programm	Not complete answer	Need correction	need to study more	no pass
answer for 1 question, related to the determining medicine	30	30	20	15	10	0
Mechanism of action of the drug (some effect)	30	25	20	15	10	0
Comparison the drug with other medicines	40	35	25	20	15	0
	100	90	65	50	35	0
Prescription	40	35	25	20	15	0
Prescription	30	27	20	15	10	0
Prescription	30	28	20	15	10	0
final	100	90	65	50	35	0

Evaluation of cases of Genetics

Question	Criteria	Level (point)					
		Out of program	At the level of the Programm	Not complete answer	Need correction	need to study more	no pass
1	Describe the mechanism of mutation	20	18	14	10	6	0
2	Explain diagnostic methods	15	13	9	5	1	0
3	Propose methods of treatment	15	13	9	5	1	0
Total		50	44	32	20	8	0

10.	Score		
Rating by letter system	Digital equivalent	Scores (%)	Description of the score
A	4,0	95-100	Great. Exceeds the highest task standards.
A-	3,67	90-94	Great. Meets the highest standards of the assignment.
B+	3,33	85-89	Good. Very good. Meets the high standards of the assignment.
B	3,0	80-84	Good. Meets most of the job standards.
B-	2,67	75-79	Good. More than enough. Shows some reasonable ownership of the material.
C+	2,33	70-74	Good. Acceptable. Meets the basic standards of the task.
C	2,0	65-69	Satisfactory. Acceptable. Meets some basic job standards.
C-	1,67	60-64	Satisfactory. Acceptable. Meets some basic job standards.
D+	1,33	55-59	Satisfactory. Minimally acceptable.
D	1,0	50-54	Satisfactory. Minimally acceptable. The lowest level of knowledge and completion of the task.
FX	0,5	25-49	Unsatisfactory. Minimally acceptable.
F	0	0-24	Unsatisfactory. Very low productivity.
11.	Information resources		
Literature	Basic literature: 1. Thompson & Thompson genetics in medicine (2016) Robert L. Nussbaum, Roderick R. McInnes, Huntington F. Willard, Ada Hamosh. <u>Philadelphia, PA: Elsevier</u>		

	<p>2. Basic & Clinical Pharmacology [Electronic resource]: collection / ed.: B. G. Katzung, A. J. Trevor. - 13th ed. - New York; Chicago; San Francisco: McGraw-Hill Education, 2015. - 1837 p. - ISBN 978-0-07-182641-9: 0.00</p> <p>Additional literature:</p> <ol style="list-style-type: none"> Jorde, L.B. et al. (2016) Medical Genetics. Philadelphia, PA: Elsevier Emery's Elements of Medical Genetics (2017) Turpenney, P.D., Ellard S. 15th Edition, Elsevier Hartwell, L. et al (2017) Genetics: from genes to genomes, 6th edition. New York, NY: McGrawHill Education USMLE Step 1 Lecture Notes (2017): Biochemistry and Medical Genetics. Kaplan Publishing
<p>Electronic resources (including, but not limited to: electronic library catalog, databases of scientific literature, databases, animation, modeling, professional blogs, websites, other electronic reference materials (for example, video, audio, digests))</p>	<p>WWW resources:</p> <ol style="list-style-type: none"> OMIM® Online Mendelian Inheritance in Man® An Online Catalog of Human Genes and Genetic Disorders https://www.omim.org/ The Genetic Testing Registry (GTR®) https://www.ncbi.nlm.nih.gov/gtr/ Genetics Home Reference. https://ghr.nlm.nih.gov/resources ClinGen: Clinical Genome Resource https://www.clinicalgenome.org/ Learn.Genetics https://learn.genetics.utah.edu/content/basics/ Clinical Genetic Education Resources (Courses and Lectures) https://www.kumc.edu/gec/prof/genecour.html Genomics Education Program. https://www.genomiceseducation.hee.nhs.uk ELSEVIER "Clinical learning" training program, 2018 https://www.msmanuals.com/professional/clinical-pharmacology
Laboratory physical resources	-
Special software	<ol style="list-style-type: none"> 1)Google Classroom 2)Kahoot Quiz
12.	Teacher's expectations from students
<p>Student</p> <ul style="list-style-type: none"> - attends all classes and lectures - actively participates in classroom classes during formative assessment, in group work - performs tasks on time - shows respect to teachers, university staff and students - carefully handles the property of the Higher School of Medicine (dummies, desks, chairs, etc.) - keeps the campus and classrooms clean and tidy - uses gadgets in class only with the permission of the teacher - for all questions within the discipline, he addresses the teacher of this discipline, for general academic issues – to his supervisor - the correspondence is carried out only through a messenger approved by the teacher, at the time regulated by the teacher 	
13.	Discipline policy

	<p>Discipline policy is determined by the University's Academic Policy and the University's Academic Integrity Policy. If the links do not open, then you can find the relevant documents in IS Univer.</p> <p>Discipline:</p> <ol style="list-style-type: none"> 1. It is not allowed to be late for classes or the morning conference. In case of being late, the decision on admission to the lesson is made by the teacher leading the lesson. If there is a good reason, inform the teacher about the delay and the reason by message or by phone. After the third delay, the student writes an explanatory note addressed to the head of the department indicating the reasons for being late and is sent to the dean's office to obtain admission to the lesson. If you are late without a valid reason, the teacher has the right to deduct points from the current grade (1 point for each minute of delay) 2. Religious events, holidays, etc. are not a valid reason for skipping, being late and distracting the teacher and the group from work during classes. 3. If you are late for a good reason - do not distract the group and the teacher from the lesson and quietly go to your place. 4. Leaving the class before the scheduled time, being outside the workplace during school hours is regarded as absenteeism. 5. Additional work of students during study hours (during practical classes and shifts) is not allowed. 6. For students who have more than 3 passes without notifying the curator and a good reason, a report is issued with a recommendation for expulsion. 7. Missed classes are not made up. 8. Students are fully subject to the internal regulations of the clinical bases of the department 9. Greet the teacher and any older person by standing up (in class) 10. Smoking (including the use of vapes, electronic cigarettes) is strictly prohibited on the territory of the medical institution (out-doors) and the university. Punishment - up to the annulment of boundary control, in case of repeated violation - the decision on admission to classes is made by the head of the department 11. Respectful attitude towards colleagues regardless of gender, age, nationality, religion, sexual orientation. 12. Have a laptop / laptop / tab / tablet with you for training and passing MCQ tests for TBL, boundary and final controls. 13. Taking MCQ tests on phones and smartphones is strictly prohibited. <p>The behavior of the student at the exams is regulated by the "Rules for the final control", "Instructions for the final control of the autumn/spring semester of the current academic year" (the current documents are uploaded to the Univer IS and are updated before the start of the session); "Regulations on checking text documents of students for the presence of borrowings."</p>
14.	Principles of inclusive learning

	<p>1. Constantly prepares for classes: For example, supports statements with appropriate links, makes short summaries Demonstrates effective learning skills, helps in teaching others</p> <p>2. Take responsibility for your training: For example, manages your training plan, actively tries to improve, critically evaluates information resources</p> <p>3. Actively participate in the group's training: For example, actively participates in the discussion, willingly takes assignments</p> <p>4. Demonstrate effective group skills For example, he takes the initiative, shows respect and correctness towards others, helps to resolve misunderstandings and conflicts</p> <p>5. Skillful communication skills with peers: For example, he listens actively, is receptive to nonverbal and emotional signals Respectful attitude</p> <p>6. Highly developed professional skills: Strives to complete tasks, looking for opportunities for more training, confident and qualified Compliance with ethics and deontology in relation to patients and medical staff Insubordination.</p> <p>7. High introspection: For example, he recognizes the limitations of his knowledge or abilities, without becoming defensive or reproaching others</p> <p>8. Highly developed critical thinking: For example, accordingly demonstrates skills in performing key tasks, such as generating hypotheses, applying knowledge to cases from practice, critically evaluating information, making conclusions aloud, explaining the process of reflection</p> <p>9. Fully complies with the rules of academic behavior with understanding, offers improvements in order to increase efficiency. Observes the ethics of communication – both oral and written (in chats and appeals)</p> <p>10. Fully complies with the rules with full understanding of them, encourages other members of the group to adhere to the rules. Strictly adheres to the principles of medical ethics and PRIMUM NON NOCER</p>	
15.	<p>Distance / online learning</p> <p>Distance / online learning is implemented at the University in accordance with the order of the Minister of Education and Science of the Republic of Kazakhstan dated March 20, 2015 No. 137 "On approval of requirements for educational organizations to provide distance learning and the rules for organizing the educational process for distance learning and in the form of online learning in educational programs of higher and (or) postgraduate education"; in accordance with the Rules for organizing training with the use of DOT at the University; Instructions for the final control of the autumn / spring semester of the current academic year (the current document is in the Univer IS); "Regulations on checking text documents of students for the presence of borrowings."</p>	
16.	<p>Approval and review</p>	
Head of the department		Sarsenova L.K.
Academic Committee of M&HF	Protocol № 1	Date of approval
Chairman of the Academic Committee of M&HF		Sarsenova L.K.

