

MINISTRY OF HIGHER AND SECONDARY SPECIAL EDUCATION OF THE
REPUBLIC OF UZBEKISTAN

MINISTRY OF HEALTH OF THE REPUBLIC OF UZBEKISTAN

TASHKENT MEDICAL ACADEMY



CLINICAL LABORATORY DIAGNOSTICS

Educational programm

Sphere of education: 510000 - Public Health

Direction of education: 5510900 - Medical Biology

Total hours of study are 252 hours

Including:

Lecture 20 hours (5 semesters - 8 hours, 6 semesters - 12 hours)

Practical training 122 hours (5 semesters - 54 hours, 6 semesters - 68 hours)

Laboratory work 20 hours (5 semesters - 6 hours, 6 semesters - 14 hours)

Independent learning 90 hours (5 semesters - 40 hours, 6 semesters - 50 hours)

Tashkent -2019

The educational program of the subject is based on the program "Clinical Laboratory Diagnostics", approved by the Order of the Ministry of Higher and Secondary Special Education of the Republic of Uzbekistan dated 25.04.13, Appendix 104

The educational program is approved by the Protocol of the Tashkent Medical Academy Board H dated 26.06.19

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2019 "11" 06

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1. Methodical instructions on teaching the subject

The subject "Clinical Laboratory Diagnostics" is devoted to the study of the interconnection of physiological and pathological conditions in the human body, its cellular structure and changes. The changes identified will help to make a correct diagnosis and control the treatment. Modern medicine is concerned with detecting many biological changes taking place in the human body. Clinical laboratory diagnostic science is important in shaping the basis of medical knowledge. It, together with other earth sciences, provides comprehensive information about the organism, as well as the development of clinical thinking in the student.

The importance of laboratory tests in clinical laboratory diagnosis, laboratory diagnostics, laboratory types, urinary tract, feces, spinal fluid, exudate and transudate, sputum, sexually transmitted diseases, anemia, leukemia, hemostasis pathology.

"Clinical Laboratory Diagnostics" is designed to meet the requirements of certification and licensing in modern laboratory services and to train highly qualified specialists with sufficient knowledge and practical skills, to study modern diagnostic methods, to interpret analyzes, to diagnose various diseases, to diagnose clinical laboratory and experimental medicine, development of existing knowledge, clinical diagnostic and diagnostic measures used in the practice of experimental medicine, development of independent diagnostics, performing necessary diagnostic procedures for patients with various diseases in inpatient and outpatient settings, development of clinical laboratory diagnostics and analysis of the results of modern laboratory and instrumental tests used in daily practice in experimental medicine, advanced diagnostic care in various diseases the development of broadcasting, the promotion of healthy lifestyles among the population will do.

Requirements for the knowledge and skills of science students

Student:

- management of diagnostic laboratory management, quality control of laboratory tests, quality assurance systems in Uzbekistan, new laboratory technologies, analyzers, urinary system, kidney function in the human body, urine formation, focal analysis, common features of healthy human and children's feces. Methods of examination of cerebrospinal fluid, exudates and transudates, physical and chemical properties of sputum, physical and chemical properties of sputum characteristics, sexual diagnosis of sexually transmitted diseases, physical and chemical characteristics of ejaculate and prostate secretion, general characteristics of blood and blood cells, hemoglobin, erythrocytes, erythrocyte index, platelets, leukocytes, agranulocytes, granulocytes, anemia, and right, leukocytosis, leukopenia, agranulocytosis, laboratory indications of acute leukemia, laboratory indications of chronic leukemia, mbozitar - have a vision of vascular hemostasis, plasma hemostasis, laboratory diagnostics of infectious diseases, bases of immunofluorescent analysis, IFA conjunctive and nonconjugating methods, IFA stages, laboratory diagnosis of autoimmune diseases, acute phase proteins.

Laboratory quality control, hematologic analyzer, coagulometry, new laboratory techniques, analyzers, urinary examination, urinary physicochemical properties, urinary sediment microscopy, macroscopic, microscopic and chemical testing of urine, methods of macroscopic, microscopic and chemical examination

of spinal fluid, methods of detection of exudates and transudates, macroscopic and microscope screening, sputum dyeing, macroscopic and microscopic examination, sexually transmitted diseases, preparation, fixation and dyeing, hemoglobin, erythrocyte count methods, platelet count, morphology, platelet count leucocyte formulation, erythrocyte resistance, erythrocyte sedimentation rate, morphological examination of blood-forming elements, laboratory diagnosis of anemia, Laboratory diagnosis of acute leukemia, laboratory diagnosis of chronic leukemia, Laboratory diagnosis of benign and malignant tumors, platelet activity, role of endothelium in vascular hemostasis, capillary resistance, blood clot retraction, coagulase indexes and their role, Laboratory diagnostics of infectious diseases, bases of immunofluorescence analysis, IFA principle, IFA conjuncture and knock-out stages of the IFA, the immune methods of analysis interpretation, hepatitis A, B, C, D, E, laboratory diagnostics, human immunodeficiency virus woc's laboratory diagnostics, PCR-diagnostics knowledge and access to;

Has the skills of general urine analysis, exudate and transudate microscopy, sputum analysis, fecal analysis, vaginal fluid analysis, general blood count, leukocyte formula count, blood clotting time, coagulogram checking, rheumatoid test, should be.

2. Lecture classes

Table 1

№	Theme of lectures	
		hours
5 semester		
1	General urine analysis. Microscopy of the urine sediment. Urine formation, general analysis of urine. Physical and chemical properties of urine. Microscopy of the urine sediment. Nieheporenko test. Adiss-Kakowski Sample. Reberg test. Zmitskiy test.	2
2	Fecal laboratory analysis. Laboratory diagnosis of helminthiasis and simple animals. Fecal laboratory analysis, physical properties of feces. Chemical properties of feces, covert blood in feces. Fecal microscopy. Laboratory diagnosis of helminthiasis. Laboratory diagnosis of nematodes, trematodes, cestodes. Laboratory diagnosis of simple animals.	2
3	Exudate and transudate analysis. Analysis of sputum. Physical properties of exudates and transudates. Chemical examination of exudates and transudates, determination of protein content. Microscopy of exudate and transudates. Analysis of sputum. Physical and chemical properties of sputum: amount, color, odor, consistency, sputum microscopy.	2
4	Diagnosis of sexually transmitted diseases. Laboratory diagnosis of sexually transmitted diseases, bacterial flora of the vagina, degree of vaginal purity.	2
Total		8 hour

6 semester

5	Methods of hematological examination. General characteristics of blood and blood cells. Types of hemoglobin and hemoglobin. Erythrocytes, red blood cells. Reticulocytes and their types. Pathological forms of red blood cells, erythrocytometry, osmotic resistance of erythrocytes. Index of red blood cells, hematocrit index. The rate of erythrocyte deposition. Platelets, platelet volume, platelet morphology. Leukocytes, leukocytes.	2
6	Laboratory diagnosis of chronic leukemia. Laboratory diagnosis of chronic myeloidosis. Laboratory diagnosis of chronic lymphocytosis. Laboratory diagnosis of erythema. Laboratory diagnosis of myeloma.	2
7	Laboratory diagnostics of coagulation diseases. Laboratory diagnosis of thrombocytopenia. Laboratory diagnosis of thrombocytopenias. Laboratory diagnosis of coagulopathies.	2
8	Laboratory diagnosis of acute and chronic viral hepatitis. Laboratory diagnosis of markers of hepatitis viruses. Laboratory diagnosis of acute and chronic hepatitis A, B, C, D, E	2
9	Laboratory diagnosis of human immunodeficiency virus. Laboratory diagnosis of human immunodeficiency virus. Express tests. Immunofluorescence analysis. Methods of immunoblot testing.	2
10	Laboratory diagnostics of emergency situations. Acid-alkaline balance. Express tests. Laboratory diagnosis of acute myocardial infarction. Laboratory diagnosis of acute pancreatitis.	2
Total		20 hours

Lectures will be held in an auditorium equipped with multimedia devices to stream academic groups.

3. Practical classes

Table 2

№	Theme of practical classes	
		Hours
5 semester		
1	Quality control of laboratory tests.	4
2	Laboratory diagnosis of kidney disease. Urine formation, general analysis of urine. Physical properties of urine.	4
3	Chemical properties of urine.	4
4	Microscopy of the urine sediment. Nieheporenko test. Adiss-	4

5	Nakowski Sample.		
5	Reberg test, Zimnitsky test.		4
6	Fecal analysis, physical and chemical properties of feces. Focal microscopy.		4
7	Laboratory diagnosis of helminthiasis.		4
8	Laboratory diagnosis of simple animals.		4
9	Physical and chemical properties of spinal fluid, microscopy.		4
10	Physical and chemical properties, microscopy of exudates and transudates.		4
11	Analysis of sputum, sputum microscopy.		4
12	Vaginal excretory bacterial flora, degree of purity.		4
13	Diagnosis of sexually transmitted diseases.		4
14	Laboratory diagnostics of connective tissue diseases.		4
15	Hemoglobin and its types, Erythrocytes, erythrocyte count and methods of their determination.		4
16	Pathological forms of red blood cells, erythrocytometry, hematocrit index.		4
The 5 semester total is 64 hours			
6th semester.			
17	Index of red blood cells. The rate of erythrocyte deposition.		3
18	Leukocytes, leukocytes, Leucocyte formula.		5
19	Platelets, platelet count, morphology of platelets.		5
20	Laboratory diagnosis of anemia. Laboratory diagnosis of iron deficiency anemia.		5
21	Laboratory diagnosis of vitamin B12 and folic acid deficiency anemia.		5
22	Laboratory diagnosis of hemolytic anemia.		5
23	Laboratory diagnosis in hypo- - aplastic anemia.		3
24	Laboratory diagnosis of hemoblastoses, identification of blast cells.		5
25	Laboratory diagnosis of chronic myeloidosis.		5
26	Laboratory diagnosis of chronic lymphocytosis.		5
27	Laboratory diagnosis of chronic monocytic and myelomonocytic leukemia.		5
28	Laboratory diagnosis of erythema. Laboratory diagnosis of myeloma.		5
29	Laboratory diagnostics of coagulation diseases. Laboratory diagnosis of thrombocytopenia and thrombocytopathies.		5
30	Laboratory diagnosis of coagulopathies.		3
31	Laboratory diagnosis of acute and chronic viral hepatitis.		3
32	Laboratory diagnosis of human immunodeficiency virus.		5
33	Basics of immunological diagnostics of diseases, Immunofluorescent analysis.		3

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34	Molecular-genetic diagnosis. Laboratory diagnostics of emergency situations.	3
Total		142 hours

Practical classes are held separately for each academic group in classrooms equipped with multimedia equipment and laboratory equipment. Active and interactive methods are used during the sessions. Handouts and information are transmitted using multimedia devices.

4. Independent education

Table 3

No	Theme of independent education	Hours
5-semester		
1	Laboratory diagnosis of renal stone disease.	4
2	Metnigitis laboratory diagnostics.	4
3	Syphilis laboratory diagnostics.	4
4	Laboratory diagnosis of gonorrhea.	4
5	Vaginal microscopy.	4
6	Spermiogram.	4
7	Laboratory diagnostics of infertility. 4	4
8	Laboratory diagnosis of skin mites.	4
9	Methods of preparation of koprological grease.	4
10	Diagnostic Test Traps.	4
Total		40 hours
6- semester		
11	Inspection of a Drop.	3
12	Laboratory diagnosis of leukemoid reaction of neutrophils.	3
13	Laboratory diagnosis of leukemoid reaction of the eosinophilic type.	3
14	Laboratory diagnosis of lymphocytic leukemoid reaction.	3
15	Laboratory diagnosis of leukemoid reaction of monocytic species.	3
16	Laboratory diagnosis of thrombosis.	3
17	Laboratory diagnostics of dehydration, hyperhydration.	4
18	Microrganism and their types.	4
19	Laboratory Diagnosis of Bowel Sticks.	4
20	Septis Lab Diagnosis.	4
21	Lab Diagnosis of pneumonia	4
22	Laboratory diagnosis of bacterial vaginosis.	4
23	Infection agents.	4
24	Laboratory diagnosis of rheumatoid arthritis.	4
Total		90

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Students will be able to choose their own topics, make abstracts and present their presentations.

4. Course work on science.
Course work on the subject is not planned in the standard curriculum.

5. List of practical skills

1. Conduct a general urine analysis.
2. Microscopy of exudate and transudate.
3. Sputum analysis.
4. Fecal analysis.
5. Vaginal fluid examination
6. General blood test.
7. Count the leukocyte formula.
8. Determination of bleeding time.
9. Determination of clotting time.
10. Checking the coagulogram.
11. Revamporba testing.

6. Assessment of students' knowledge in science and control criteria

Current Evaluation of Practical Disciplines in the Department of Hematology, Transfusiology and Laboratory Studies

Table 4

No	Theoretical knowledge evaluation	Maximum score,%	Laboratory evaluation	Maximum score,%
1.	Write a summary of the topic 5 5	5	Defining Practical Skills	5
2.	Evaluation of theoretical knowledge on the subject	20	Determining the scope of practical skills	5
3.	Correctly solving test tasks	5	Selecting laboratory equipment and tools required for practical skills	5
4.	Correctly addressing situational issues	10	Describe step-by-step practical skills	25
5.	5. Performing TFI Tasks on the Subject	10	Evaluation of the Outcome	10
	Total	50	100	50

Table 5

Evaluation methods	Quick tests, written work, oral survey, presentations
Evaluation Criteria	<p>1. Full disclosure of the topic in the exercise summary - maximum - 5 points.</p> <p>The following criteria were used to control the performance of the student's workbook writing and presentations:</p> <p>a) The student's summary for 5 points should answer:</p> <ul style="list-style-type: none"> - Use of new sources of content (internet, use of foreign literature, etc.); - Practical skills in the content are fully covered; - independent observation on graphic organizers and presentations; - Explain the essence of the content; - have a clear vision <p>b) For a score of 4-3 students should have the following answers:</p> <ul style="list-style-type: none"> - coverage of the topic using new sources of content (internet, etc.); - independent observation on graphic organizers and presentations; - independent observation on the subject; - to explain the essence of the subject <p>c) For the score 2-1 the student's answer should be:</p> <ul style="list-style-type: none"> - Lack of presentations and organizers of the lecture materials on the content; - did not use resources; - has no idea about the homework submitted, the task has not been completed. <p>d) Score 0 is assigned to students who have not completed homework assignments and homework assignments.</p> <p>2. Assessment of the theoretical knowledge of students in the course</p> <p>Theoretical knowledge evaluation - maximum score - 20 points</p> <p>a) Theoretical knowledge of the student for 15-20 "excellent" points should correspond to:</p> <ul style="list-style-type: none"> - The student's response to the topic of the lesson is complete, with additional information from a variety of sources, and the amount of knowledge goes beyond the program. He has fully mastered the basic literature recommended in the program and is familiar with additional literature. - Think creatively when answering questions on the topic, answer clearly, and logically answer. - student actively participates in discussions, discusses, defends his / her own ideas. Actively and creatively participates in interactive games - the student can know, tell different ideas and have an

- imagination.
- b) Theoretical knowledge of the student for 10-14 score is good:
- the student has the ability to relate the studied topics and the ability to describe the material, to answer the questions, revealing their relevance to each other, to be able to relate the theoretical knowledge to practice and to think independently;
 - The ability to apply knowledge and skills content, to write and remember activities, to apply knowledge in practice;
 - the student knows the material, prepares for lessons, understands the essence and imagination.
- c) Theoretical knowledge of the student for the 5-9 score is satisfactory:
- not able to think in full, understand the essence of the program, but not fully orally or in writing.
 - Makes mistakes when answering questions on the topic, is not able to answer clearly and cannot logically answer the answer.
- d) Theoretical knowledge of the student for 1-4 "unsatisfactory" points should correspond to:
- has no clear idea of the subject, can not respond verbally or in writing.
 - No explanation on the topic.
- 3. Evaluation of test tasks - maximum score - 5 points**
1. For 5 "excellent" marks the student solves test tasks by 86-100%;
 2. For a 3-4 "good" score, the student handles the test tasks 71-77, 78-85%;
 3. For 2 "satisfactory" marks the student solves test tasks 55-71%;
 4. For a 0-1 "unsatisfactory" score, a student solves test tasks by 54%.
- 4. Assessment of priority tasks: maximum score - 10 points**
- a) For the "best" score of 10-8, the student must answer the following:
- the student performs timely, qualitatively the task presented in the lesson. Think creatively, answer clearly, and logically answer the problem.
 - student actively participates in discussions, discussions and discussions, participates in discussions, defends his or her ideas and creativity - the student seeks ways to solve the presented learning issues, can know and tell different materials and have an idea.
- b) For a good score of 7-6, the student must answer the following:
- the student will complete the task in a timely manner. He is creative in solving problems and is clearly responsible.
 - the student discusses situational issues, participates in discussions,

		seeks ways to solve the presented learning issues, is able to know and tell different materials and have an idea, to solve, record and remember problems of the same type;	
		c) For a satisfactory score of 5-4, the student must answer the following:	
		- the student does the given task in the lesson, but cannot logically answer the answer. It allows for some ambiguity in solving situational issues.	
		- the student is not fully involved in discussion of situational issues, discussions, seeks ways to solve the presented learning problems, knows and can relate to various materials, solves typical problems, but does not give a verbal or written answer.	
		d) To solve the problem for 1-3 marks "unsatisfactory" the student should answer:	
		- does not participate in discussions, controversial issues, does not solve the same issues.	
		- does not understand the essence of the article, does not respond verbally or in writing.	
	Types of rating	Maximum points	Time to pass
	Current control	50 (100)	
	Active during lectures, regular lectures	5	During semester
	Timely preparation and delivery of independent learning tasks	10	
	Theoretical preparation, full participation and correct answers to practical exercises, correct test tasks and situational problems	35	
	Interval control	20	In the middle of the cycle
	First Intermediate Control	10	
	Second Intermediate Control	10	
	Final control	30	At the end of cycles
	OSKE	15	
	Test	15	
	Total	100	

7. Basic and additional literature and sources of information

The basic literature:

1. Aripov A.N., Fyosenko L.M, Aripov O.A., Ismailova N.I. Klinik laborator diagnostika b'yyicha ?yllanma. Toshkent, 2006.
2. 2. Aripov A.N., Fyosenko L.M, Aripov O.A., Ismailova N.I., Muxamediyarova R.G. Rukovodstvo po klinicheskoy laboratornoy diagnostike. Tashkent, 2007.

Additional literature:

1. Mirziyoyev Sh.M. Erkin va farovon demokratik O'zbekiston davlatini birgalikda barpo etamiz. Toshkent, "O'zbekiston" NMIU, 2017. - 29 b.
2. Mirziyoyev Sh.M. Qonun ustuvorligi va inson manfaatlarini ta'minlash yurt taraqqiyoti va xalq farovonligining garovi. "O'zbekiston" NMIU, 2017. - 47 b.
3. Mirziyoyev Sh.M. Buyuk kelajagimizni mard va olijanob xalqimiz bilan birga quramiz. "O'zbekiston" NMIU, 2017. - 485 b.
4. O'zbekiston Respublikasi Prezidentining 2017 yil 7 fevraldagi "O'zbekiston Respublikasini yanada rivojlantirish bo'yicha harakatlar strategiyasi to'g'risida" gi PF-4947-sonli Farmoni. O'zbekiston Respublikasi qonun hujjatlari to'plami, 2017 y., 6-son, 70-modda.
5. Lugovskaya S.A., Pochtar M.Y. Gematologicheskiy atlas. Triada-Tver, 2014.6. Titmush E., Adams K. Shyeyka matki.

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13. ru.wikipedia.org/wiki/Анализ_мочи - 51k
14. www.analisi.ru/urine.html
15. lechebnik.info/med-4/90.htm
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17. www.gabrich.com/urine_analysis.html