

## Catalog of elective disciplines for the 2022-2023 academic year

**1. Department:** Chemical disciplines

**2. Level of preparation:** bachelor's degree

**3. Specialty:** 6B10101 - General medicine, 6B10102 - Pediatrics, 6B10103 - Dentistry  
**4. Course:** 1

**5. Name of the elective discipline:** Chemistry

**6. Number of credits:** 3

**7. Purpose:** The purpose of the discipline is to form a holistic physicochemical, natural science approach to the study of the human body and its environment in students, as well as to substantiate the chemical and physicochemical aspects of the most important biochemical processes and various types of equilibria occurring in a living organism. Formation of a student - dentist of systemic knowledge about the basic physical and chemical laws of the course of biochemical processes (normal and pathological) at the molecular and cellular levels; about the structure and mechanisms of functioning of biologically active compounds; the formation of the natural scientific thinking of specialists in the medical dental profile, as well as the competence and professionally significant personality traits.

### **8. Tasks**

- to form an understanding of equilibria in aqueous solutions of strong and weak electrolytes;
- to teach to apply physical and chemical laws to the description of biochemical processes in the body;
- to give an understanding of the basic principles of qualitative and quantitative analysis;
- to teach the use of chemical and physicochemical methods of analysis;
- to study the most important laws of electrochemistry that allow predicting corrosion resistance and optimizing the search for new structural dental materials;
- to form the concept of the relationship between the chemical composition, structure, properties and biological activity of substances;

### **9. Rationale for the choice of discipline**

It is well known that in modern conditions the key task of higher education is the fundamental nature of education. Chemistry is a fundamental science and a powerful tool for research and knowledge of processes in living systems. Therefore, students of medical specialties should master well the basic ideas, laws and methods of this science. The program is supposed to consider the basics of the most important topics of the course of inorganic, analytical and physical chemistry. The discipline "Chemistry" prepares a theoretical basis for the development of some sections of biochemistry, molecular biology, physiology, pharmacology, hygiene and provides a broader involvement of the scientific approach and the latest research methods, gleaned from the fundamental sciences, in the study of biomedical, clinical disciplines. The task of profiling the course is an in-depth study of such topics as the composition of bone tissue, the composition of saliva and its mineralizing function, the processes occurring in the oral cavity. The knowledge gained by students during the passage of the topics "Phase equilibria", "Corrosion of metals and alloys", "Surface phenomena. Adsorption" are the physicochemical basis for the subsequent study of orthopedic and therapeutic dentistry. An important task of optimizing higher medical education is the expansion of interdisciplinary connections and the integration of fundamental, biomedical and clinical disciplines.

### **10. Outcomes of learning**

	Knowledge (cognitive domain)	Skills and experiences (psychomotor sphere)	Personal and professional competencies (relationships)
	Demonstrates knowledge and understanding: - chemical processes (main types of reactions) in the	- uses calculation formulas (mass fraction, molar concentration, molar concentration equivalent,	- formulates the general theoretical foundations of chemistry for the application of the acquired knowledge,

<p>body, obeying the general laws and laws of chemistry;</p> <ul style="list-style-type: none"> <li>- general energy and kinetic patterns of chemical processes;</li> <li>- the possibility of using titrimetric analysis to determine the quantitative content of substances in the systems under study, including biological fluids;</li> <li>- possible methods for preparing solutions, their quantitative characteristics;</li> <li>- classification, properties and application in medicine of the main classes of organic compounds.</li> </ul>	<p>molar concentration, molar fraction, titer) to determine the quantitative content of substances in a solution, including biological fluids;</p> <ul style="list-style-type: none"> <li>- prepares the solution by the dilution method;</li> <li>- uses a certain set of chemical utensils, reagents, basic instruments and methods of physicochemical measurements used in medicine;</li> <li>- complies with the rules of labor protection and safety measures, has the skills of safe work in a chemical laboratory, knows how to provide first aid.</li> </ul>	<p>skills and abilities in their subsequent professional activities. - analyzes, systematizes information on the laws and experimental research in the field of chemistry, using computer technology and an information database of medical sources. - informs and explains the observed patterns in the field of chemistry on the issues of their application in medicine;</p>
--	--	---

**11. Prerequisites:** disciplines of secondary general education: chemistry, biology, physics and mathematics.

**12. Post requisites:** medical biochemistry, morphology and physiology.

**13. Literature In Kazakh language:**

**Main:**

1. Сейте́мбетов, Т. С. Химия: оқулық / Т. С. Сейте́мбетов. - Алматы : Эверо, 2010.
2. Ә.Қ. Патсаев, С.А. Шитыбаев, Қ.Н. Дауренбеков. Бейорганикалық және физколлоидтық химия: оқулық/– Алматы: Эверо, 2011. -392б.
3. Ә.Қ. Патсаев, Т.С.Сейте́мбетов, С.А. Шитыбаев, Қ.Н. Дауренбеков. Биоорганикалық химия: оқулық/– Алматы: Эверо, 2012. -449 б.
4. Патсаев Ә.Қ., Дәуренбеков Қ.Н. Биоорганикалық химия пәнінен тәжірибелік-зертханалық сабақтарына қолданба: оқу құралы. Алматы, Эверо, 2012.-324б.
5. Патсаев Ә.Қ. Бейорганикалық және физколлоидтық химия пәнінен тәжірибелік-зертханалық сабақтарына қолданба: оқу құралы. Алматы, Эверо, 2013.-316б.
6. Л.М. Түгелбаева, Р.Г. Рысқалиева, Р.К. Ашкеева. Жалпы химия 2013 ж. 6. Тюкавкина Н.А., Бауков Ю.И., Зурабян С.Э., қазақ тіліне аударған ж/е жауапты редакторы С.Т.Сейте́мбетов. Биоорганикалық химия: оқулық / – М : ГЭОТАР – Медиа, 2014. – 400 б.
7. Веренцова Л.Г., Нечепуренко Е.В., Батырбаева А.Ә., Карлова Э.К. Бейорганикалық коллоидты және физикалық химия (студенттердің өзіндік жұмысына арналған оқу құралы) - Алматы, Эверо, 2014. -212 б.
8. Дәуренбеков Қ.Н. Органикалық химия: оқулық 1,2том, Ш: Әлем. 2016, 1т.- 500б., 2т.- 432б.
9. Қуатбеков Ә.М., Патсаев Ә.Қ., Бақтыбаев Ә.Б. Биоорганикалық химия практикумы: оқу құралы. Алматы, Эверо, 2013.-593б.

**Additional:**

1. Нұрсейітов Ш.Ш., Баймағанбетов Қ.Б. Бейорганикалық химия. Оқу құралы – Алматы: Эверо, 2014. -188 б.
2. Құлажанов Қ.С., Сулейменова М.Ш., Қ.И.Иманбеков Бейорганикалық химия Алматы: Дәуір, 2011. – 256 б.
3. Патсаев Ә.Қ., Туребекова Г.А. Физколлоидтық химия пәнінен зертханалық-тәжірибелік сабақтарының материалдары: оқу-әдістемелік құралы. Алматы, Эверо, 2014.-96б.

4. Патсаев Ә.К. Химия пәні бойынша тестілері. 1-бөлім. Бейорганикалық, физколлоидтық химия пәні бойынша тестілері. II-бөлім. Биоорганикалық химия пәні бойынша тестілер : тестілер. - Шымкент : Б. ж., 2010.

5. Химия пәнінен электронды оқу құралы [Электронный ресурс] : медициналық колледждерге арналған оқу құралы. - Түркістан : ОҚО, 2012.

6. Усманова, М. Б. Жалпы химия [Электронный ресурс] : оқу құралы . - Электрон. текстовые дан. (19,1 МБ). - Гскемен : "Мультимедия зертханасы", 2007. - эл. опт. диск (CD-ROM).

#### **Literature In Russian language:**

##### **Main:**

1. Глинка, Н. Л. Общая химия. Т.1: учеб. пособие для вузов - Алматы : Эверо, 2014
2. Глинка, Н. Л. Общая химия. т. 2 : учеб. пособие для вузов - Алматы : Эверо, 2014
3. Глинка, Н. Л. Общая химия. Т. 3. : учеб. пособие для вузов - Алматы : Эверо, 2014
4. Глинка, Н. Л. Общая химия. т. 4 : учеб. пособие для вузов. - Алматы : Эверо, 2014
5. Жолнин А. В. Общая химия: учебник / А. В. Жолнин ; под ред. В. А. Попкова.- М. : ГЭОТАР - Медиа, 2012
6. Попков В. А. Общая химия : учебник. –М.: ГЭОТАР – Медиа, 2009.

##### **Additional:**

1. Патсаев, А. К. Тесты по дисциплине "химия". Ч. 1. Тесты по неорганической, физколлоидной химии. Ч. 2. Тесты по биоорганической химии : тесты . - Шымкент : Б. и., 2010
2. 1000 тестов по общей химии для студентов медицинских вузов / Т. И. Литвинова[и др.]. - 2-е изд., испр. и доп. - Ростов н/Д : Феникс, 2007
3. Глинка Н. Л. Задачи и упражнения по общей химии : М.: Интергал-Пресс, 2007.
4. Бабков, А. В. Химия: учебник для мед. училищ и колледжей. - М. : ГЭОТАР - Медиа, 2015. - 352 с. -
5. Жолнин, А. В. Общая химия [Электронный ресурс] : учебник / А. В. Жолнин. - Электрон. текстовые дан. ( 40,9Мб). - М. : ГЭОТАР - Медиа, 2017. - эл. опт. диск
6. Попков, В. А. Жалпы химия [Электронный ресурс] : оқулық Электрон. текстовые дан. (54.1Мб). - М. : ГЭОТАР - Медиа, 2014. - 992 б. С

#### **Literature In English language:**

1. Glinka, N. L. General chemistry. Volum 1. : manual for graduate students / N. L. Glinka, S. S. Babkina. - 27th ed. - Almaty : "Evero" , 2017. - 232 p.
2. Glinka, N. L. General chemistry. Volume 2.: manual for graduate students / N. L. Glinka, S. S. Babkina. - 27th ed. - Almaty : "Evero" , 2017. - 176 p.
3. Glinka, N. L. General chemistry. Volum 3.: manual for graduate students / N. L. Glinka, S. S. Babkina. - 27th ed. - Almaty : "Evero" , 2017. - 248 p.
4. Glinka, N. L. General chemistry. Volum 4.: manual for graduate students / N. L. Glinka, S. S. Babkina. - 27 th ed. - Almaty : "Evero" , 2017. - 176 p.
5. Nazarbekova, S. P. Chemistry: textbook / S. P. Nazarbekova, A. Tukibayeva, U. Nazarbek. - Almaty : Association of higher educational institutions of Kazakhstan, 2016. - 304 p.
6. Shokybayev, Sh. A. Teaching methods on chemistry: textbook / Sh. A. Shokybayev, Z. O. Onerbayeva, G. U. Ilyassova. - Almaty : [s. n.], 2016. - 271 p.
7. Манаров, N. T. Computer chemistry: textbook / N. T. Manarov. - Almaty : Association of higher educational institutions of Kazakhstan, 2016. - 312 p.

**1. Department:** "Department of History of Kazakhstan and Social and Social disciplines»  
**2. Level of training:** Bachelor's degree  
**3. Bilim bagdarlamalary:** "General Medicine", "Dentistry", "Pharmacy", "Pediatrics", "Nursing»

**4. Course:** 1,2

**5. Name of elective discipline:** Fundamentals of Law and Economics

**6. Number of credits :** 5 credits

**7. Objective:** to form a system of knowledge about the economic and legal laws of the development of society and the problems of its effective functioning.

**8. Tasks:**

- mastering the basics of the theory of state and law;
  - consideration of the principles and motives of human economic behavior in conditions of limited resources;
  - identification of the specifics of economic and legal relations in the Republic of Kazakhstan;
  - clarification of the functions and limits of the effectiveness of the market system, as well as the main forms of economic regulation;
  - disclosure of political and legal ways to improve Kazakhstan's state-legal mechanism;
  - determination of the specifics of the regulatory framework in the field of economics and law.
- 9.Содержание дисциплины:

The study of the patterns of development of economic and legal relations that arise between market entities at the micro, macro, and mega levels, between the state and market entities, the state and societies, features and priorities of the socially - oriented model of the market economy in Kazakhstan. The system of law and legislation. The Law of the Republic of Kazakhstan "On the health of the people and the health care system". The legal status of pharmaceutical and medical workers, their social security. Market equilibrium. Competition in the medical services market. Development of entrepreneurship of medical services in Kazakhstan. The structure of the national economy. Moral and ethical responsibility for acts of corruption in various spheres. Kazakhstan's participation in global integration processes and international economic organizations. WorldHealthOrganization.

- **10. Justification of the choice of discipline:** This program is designed to provide students with the necessary knowledge, skills and abilities in the discipline, to achieve learning outcomes. In the context of distance learning, the Program is implemented through the automated information system Platonus (hereinafter-AIS Platonus), Zoom, Webex, etc.. For the development of the discipline, the materials that are included in the "Task" module of the Platonus AIS are used.
- **11. Learning outcomes:**
- 1) demonstrate knowledge of the main theoretical views accumulated in the scientific heritage on legal and economic problems;
- 2) conduct research to identify state-legal and economic problems in the professional field and present the results for discussion;
- 3) Demonstrate basic economic and legal knowledge through special terminology in medical practice
- 4) apply and use the acquired knowledge in the field of economics and law in practical classes, professional activities
- 5) analyze the features of legal and economic processes in the context of their role in the modernization of Kazakhstan's society;
- 6) Knows the methods of scientific research and academic writing and applies them in the field of study:

knows and applies the methods of scientific research, develops ideas and develops critical thinking and skills in writing various written works, taking into account the requirements for the structure of the construction and layout of the text, the choice of the style of presentation

(journalistic or scientific); is able to make references, quote, paraphrase, build arguments, structure the text, stylistically competently build sentences, correctly design literary sources.

#### **10. Prerequisites: Modern history of Kazakhstan**

#### **11. Post-requirements: Philosophy**

#### **12. Literature:**

##### **In Russian:**

##### **Main:**

1. Альжанова, А. Н. Основы права учеб. пособие / А. Н. Альжанова, К. К. Райханова. - ; Алматы : Эверо, 2014. - 134 с
2. Правоведение: учеб. пособие. - М. : ГЭОТАР - Медиа, 2013
3. Какимова М. Основы теории государства и права: учебник. 2010. - 256 с
4. Айдарханов М.Х. Основы экономической теории. Учебник. 2012.
5. Липсиц, И. В. Основы экономики: учеб. для медицинских училищ и колледжей . - М. : ГЭОТАР - Медиа, 2010. - 336 с.+эл. опт.диск (CD-ROM).
6. Рахимжанова Н.И. Основы рыночной экономики: учебник. 2010.168 стр.
7. Таскымбаева С. М., Каратаева Ф.М. Основы экономической теории: учеб.пособие / - Караганда: АҚНҰР, 2017.

##### **Additional information:**

- 1.Жанысбеков, М. А. Основы антикоррупционной культуры: учебно-методическое пособие / - Караганда: АҚНҰР, 2016. – 198
- 2.Шоу М.Н. Международное право = International LAW : т.2 учебник / М.Н. Шоу. - 8-е изд. - [б. м.] : Ұлттық аудармалық басылым, 2019. - 716 стр.

##### **Electronic resource:**

1. Основы антикоррупционной культуры [Электронный ресурс] : учебное пособие / под ред. Б. С. Абдрасилова. - Электрон. текстовые дан. ( 702Мб). - Астана : Акад. Гос. упр. при Президенте РК, 2016. - 176 с
2. Экономическая теория (Электронный ресурс): Учебник. Под ред. И.Л.Николаева, 2011.
3. Липсиц И.В. Основы экономики (Электронный ресурс): учебник.-М.: Издательская группа «ГЭОТАР- Медиа», 2010
4. Мами К.А., Рогов И.И., Малиновский В.А. РЕСПУБЛИКА КАЗАХСТАН: хроника утверждения конституционализма. – Алматы: Қазақ университеті, 2019. – 728 с.

##### **Electronic source databases:**

<http://lib.ukma.kz>

- Electronic catalog
- for internal users <http://10.10.202.52>
- for external users <http://89.218.155.74>
- Republican Interuniversity Electronic Library <http://rmebrk.kz/>
- Electronic source of Legal Information" Law" <https://zan.kz>
- Scientific Electronic Library <https://elibrary.ru/>
- «Web of science» (Thomson Reuters)<http://apps.webofknowledge.com>
- «Science Direct» (Elsevier)<https://www.sciencedirect.com>
- «Scopus» (Elsevier)[www.scopus.com](http://www.scopus.com)
- The UMKD is posted on the educational portal ukma.kz

Electronic library "Student Consultant". Access link: <http://www.studmedlib.ru>, USERNAME ibragim123, PASSWORD Libukma123

**1. Department:** "Department of History of Kazakhstan and Social and Social disciplines»

**2. Level of training:** Bachelor's degree

**3. Bilim bagdarlamalary:** "Pediatrics"

**4. Course:** 1

**5. Name of elective discipline:** Fundamentals of Law and Economics

**6. Number of credits : 5 credits**

**7. Objective:** to form a system of knowledge about the economic and legal laws of the development of society and the problems of its effective functioning.

**8. Tasks:**

- mastering the basics of the theory of state and law;
  - consideration of the principles and motives of human economic behavior in conditions of limited resources;
  - identification of the specifics of economic and legal relations in the Republic of Kazakhstan;
  - clarification of the functions and limits of the effectiveness of the market system, as well as the main forms of economic regulation;
  - disclosure of political and legal ways to improve Kazakhstan's state-legal mechanism;
  - determination of the specifics of the regulatory framework in the field of economics and law.
9. Содержание дисциплины:

The study of the patterns of development of economic and legal relations that arise between market entities at the micro, macro, and mega levels, between the state and market entities, the state and societies, features and priorities of the socially - oriented model of the market economy in Kazakhstan. The system of law and legislation. The Law of the Republic of Kazakhstan "On the health of the people and the health care system". The legal status of pharmaceutical and medical workers, their social security. Market equilibrium. Competition in the medical services market. Development of entrepreneurship of medical services in Kazakhstan. The structure of the national economy. Moral and ethical responsibility for acts of corruption in various spheres. Kazakhstan's participation in global integration processes and international economic organizations. WorldHealthOrganization.

- **10. Justification of the choice of discipline:** This program is designed to provide students with the necessary knowledge, skills and abilities in the discipline, to achieve learning outcomes. In the context of distance learning, the Program is implemented through the automated information system Platonus (hereinafter-AIS Platonus), Zoom, Webex, etc.. For the development of the discipline, the materials that are included in the "Task" module of the Platonus AIS are used.
- **11. Learning outcomes:**
- 1) demonstrate knowledge of the main theoretical views accumulated in the scientific heritage on legal and economic problems;
- 2) conduct research to identify state-legal and economic problems in the professional field and present the results for discussion;
- 3) Demonstrate basic economic and legal knowledge through special terminology in medical practice
- 4) apply and use the acquired knowledge in the field of economics and law in practical classes, professional activities
- 5) analyze the features of legal and economic processes in the context of their role in the modernization of Kazakhstan's society;
- 6) Knows the methods of scientific research and academic writing and applies them in the field of study:

knows and applies the methods of scientific research, develops ideas and develops critical thinking and skills in writing various written works, taking into account the requirements for the structure of the construction and layout of the text, the choice of the style of presentation (journalistic or scientific); is able to make references, quote, paraphrase, build arguments, structure the text, stylistically competently build sentences, correctly design literary sources.

**10. Prerequisites: Modern history of Kazakhstan**

**11. Post-requirements: Philosophy**

**12. Literature:**

**In Russian:**

**Main:**

1. Альжанова, А. Н. Основы права учеб. пособие / А. Н. Альжанова, К. К. Райханова. - ; Алматы : Эверо, 2014. - 134 с
2. Правоведение: учеб. пособие. - М. : ГЭОТАР - Медиа, 2013
3. Какимова М. Основы теории государства и права: учебник. 2010. - 256 с
4. Айдарханов М.Х. Основы экономической теории. Учебник. 2012.
5. Липсиц, И. В. Основы экономики: учеб. для медицинских училищ и колледжей . - М. : ГЭОТАР - Медиа, 2010. - 336 с.+эл. опт. диск (CD-ROM) .
6. Рахимжанова Н.И. Основы рыночной экономики: учебник. 2010. – 168 стр.
7. Таскымбаева С. М., Каратаева Ф.М. Основы экономической теории: учеб. пособие / - Караганда: АҚНҰР, 2017.

**Additional information:**

1. Жанысбеков, М. А. Основы антикоррупционной культуры: учебно-методическое пособие / - Караганда: АҚНҰР, 2016. – 198
2. Шоу М.Н. Международное право = International LAW : т.2 учебник / М.Н. Шоу. - 8-е изд. - [б. м.] : Ұлттық аудармалық басылым, 2019. - 716 стр.

**Electronic resource:**

1. Основы антикоррупционной культуры [Электронный ресурс] : учебное пособие / под ред. Б. С. Абдрасилова. - Электрон. текстовые дан. ( 702Мб). - Астана : Акад. Гос. упр. при Президенте РК, 2016. - 176 с
2. Экономическая теория (Электронный ресурс): Учебник. Под ред. И.Л. Николаева, 2011.
3. Липсиц И.В. Основы экономики (Электронный ресурс): учебник.-М.: Издательская группа «ГЭОТАР- Медиа», 2010
4. Мамаи К.А., Рогов И.И., Малиновский В.А. РЕСПУБЛИКА КАЗАХСТАН: хроника утверждения конституционализма. – Алматы: Қазақ университеті, 2019. – 728 с.

**Electronic source databases:**

<http://lib.ukma.kz>

- Electronic catalog
- for internal users <http://10.10.202.52>
- for external users <http://89.218.155.74>
- Republican Interuniversity Electronic Library <http://rmebrk.kz/>
- Electronic source of Legal Information " Law" <https://zan.kz>
- Scientific Electronic Library <https://elibrary.ru/>
- «Web of science» (Thomson Reuters) <http://apps.webofknowledge.com>
- «Science Direct» (Elsevier) <https://www.sciencedirect.com>
- «Scopus» (Elsevier) [www.scopus.com](http://www.scopus.com)
- The UMKD is posted on the educational portal ukma.kz

Electronic library "Student Consultant". Access link: <http://www.studmedlib.ru>, USERNAME ibragim123, PASSWORD Libukma123

**1. Department of "Microbiology, Virology and Immunology"**

**2. Level of education:** Bachelor's degree

**3. Educational program:** 6B10101 "General Medicine "

**4. Course:** 3

**5. The name of the elective discipline:** "General immunology"

**6. Number of credits:** 3

**7. Purpose:** the formation of students' modern ideas about the structure and function of the immune system, the nature of immunopathology in adult patients and children, etiology, pathogenesis, methods of clinical, instrumental and laboratory diagnostics, as well as treatment and prevention of immunodeficiency states and allergic pathology.

**8. Content:** Adaptive mechanisms of cellular immunity. Hypersensitivity mechanisms. Autoimmune diseases. Immunodeficiency diseases. Fundamentals of immuno-oncology,

modern immunodiagnostics. Possibilities of immunocorrection. Vaccines and vaccine prophylaxis. Opportunities for the prevention of COVID -19.

#### **9. Learning objectives:**

- Formation of knowledge about the structure and function of the human immune system, its age characteristics, cellular and molecular mechanisms of development and functioning of the immune system, main stages, types, genetic control of the immune response, methods of immunodiagnostics.
- Formation of knowledge and skills in the application and evaluation of the results of laboratory research methods in immunodeficiency states, allergic and other immune-mediated diseases.
- Formation of knowledge about primary immunodeficiency, HIV infection, AIDS and other secondary immunodeficiency conditions.
- Formation of knowledge about blood groups and methods for determining the group affiliation of ABO and Rh.
- Formation of knowledge about hypersensitivity, its classification according to Coombs-Jell, etiology and pathogenesis of I-V types of hypersensitivity, principles of laboratory diagnostics.
- Formation of knowledge about transplant immunity, principles of donor and recipient selection, transplant rejection reactions.
- Formation of knowledge about tolerance and autoimmunity.
- Formation of knowledge about antitumor immunity.
- Formation of knowledge about vaccines and vaccine prevention.

#### **10. Learning outcomes:**

Knows and understands:

- structure and functions of the human immune system, its age characteristics,
- cellular and molecular mechanisms of the development and functioning of the immune system, the main stages, types, genetic control of the immune response,
- methods of immunodiagnostics,
- methods for assessing the immune status, indications and principles of its assessment,
- normal values of immunogram indices
- immunopathogenesis, methods of diagnostics of the main diseases of the human immune system,
- indications for the use of immunotropic therapy,
- safety regulations and work in the immunological laboratory with the test material, reagents, devices.

Is able to:

- comply with safety regulations and work in the immunological laboratory with the test material, reagents, devices.
- substantiate the need for clinical and immunological examination of the patient
- carry out immunological diagnostics;
- to distinguish by markers the main cellular elements of the immune system
- to evaluate the immunogram in the diagnosis of secondary immunodeficiency
- to determine the group affiliation of the patient's blood (ABO, Rh), as well as the compatibility of the donor's and recipient's blood.

**11. Prerequisites:** physiology, molecular biology and medical genetics, microbiology and immunology.

**12. Postrequisites:** Infectious diseases, childhood infectious diseases.

#### **13. Literature:**

##### **In Russian:**

##### **Основная :**

1. Микробиология: учебник / под ред. В. В. Зверева, М. Н. Бойченко. - М. : ГЭОТАР - Медиа, 2012. - 608 с. : ил.



2. Микробиология, вирусология: руководство к практическим занятиям: учебное пособие / под ред. В. В. Зверева. - ; Мин. образования и науки РФ. Рекомендовано ГБОУ ДПО "Росская мед. акад. последипломного образования" Мин. здравоохранения РФ. - М. : ГЭОТАР - Медиа, 2015. - 360 с.
3. Сейтханова Б.Т. Учебное пособие к лабораторным занятиям по частной микробиологии (кишечные инфекции): учеб. Пособие. – Шымкент, 2012 г

#### **In Kazakh language:**

##### **Основная:**

1. Жеке микробиология. 1 бөлім. Медициналық бактериология : оқу құралы / Ғ. Т. Алимжанова [ж/б.]. - Алматы : Эверо, 2016. - 380 бет. с.
2. Жеке микробиология. 2 бөлім. Медициналық протозоология, микология және вирусология : оқу құралы / Ғ. Т. Алимжанова [ж/б.]. - Алматы : Эверо, 2016. - 272 бет. с.
3. Медициналық микробиология, вирусология және иммунология : оқулық. 2 томдық. 1 том / қазақ тіліне ауд. Қ. Құдайбергелұлы ; ред. В. В. Зверев. - М. : ГЭОТАР - Медиа, 2016. - 416бет с.
4. Медициналық микробиология, вирусология және иммунология: оқулық. 2 томдық. 2 том / қаз. тіл. ауд. Қ. Құдайбергелұлы. - М. : ГЭОТАР - Медиа, 2016. - 480 бет. с.
5. Нуржанова, А. У. Микробиология және вирусология: оқу құралы / А. У. Нуржанова, М. Ш. Сералиева, Н. У. Абдукасымова. - ; Шымкент мед. колледж. оқу-әдіст. кеңесінде талқыланып, баспаға ұсынған. - Шымкент : "Нұрлы Бейне", 2012. - 272 бет. с.

##### **Дополнительная :**

1. Микробиология, вирусология: руководство к практическим занятиям : учебное пособие / под ред. В. В. Зверева. - ; Мин. образования и науки РФ. Рекомендовано ГБОУ ДПО "Росская мед. акад. последипломного образования" Мин. здравоохранения РФ. - М. : ГЭОТАР - Медиа, 2015. - 360 с.

#### **In English:**

1. Murray P. R., Rosenthal K. S., Pfaller M. A. Medical Microbiology. - Mosby, 2015
2. W. Levinson McGraw-Hill. Review of Medical Microbiology and Immunology, 2014

##### **Электронные ресурсы:**

1. Алимжанова, Ғ. Т. Жеке микробиология. 1-2 бөлім [Электронный ресурс] : оқу құралы / Ғ. Т. Алимжанова. - Электрон. текстовые дан. ( 60.9Мб). - Алматы : Эверо, 2016. - 380 бет. эл. опт. диск (CD-ROM).

##### **Electronic base.**

<b>№</b>	<b>Наименование</b>	<b>Ссылка</b>
1	Электронная библиотека ЮКМА	<a href="http://lib.ukma.kz/repository/">http://lib.ukma.kz/repository/</a>
2	Электронный каталог - Для внутреннего пользования - Для внешнего пользования	<a href="http://10.10.202.52">http://10.10.202.52</a> <a href="http://89.218.155.74">http://89.218.155.74</a>
3	Республиканская межвузовская электронная библиотека	<a href="http://rmebrk.kz/">http://rmebrk.kz/</a>
4	Консультант студента	<a href="http://www.studmedlib.ru">http://www.studmedlib.ru</a>
5	«Параграф Медицина» информационная система	<a href="https://online.zakon.kz/Medicine">https://online.zakon.kz/Medicine</a>
6	Закон (доступ в справочно-информационном секторе)	<a href="https://zan.kz">https://zan.kz</a>
7	Научная электронная библиотека	<a href="https://elibrary.ru/">https://elibrary.ru/</a>
8	«BooksMed» электронды кітапханасы	<a href="http://www.booksmed.com">http://www.booksmed.com</a>
9	«Web of science» (Thomson Reuters)	<a href="http://apps.webofknowledge.com">http://apps.webofknowledge.com</a>

10	«Science Direct» (Elsevier)	<a href="https://www.sciencedirect.com">https://www.sciencedirect.com</a>
11	«Scopus» (Elsevier)	<a href="http://www.scopus.com">www.scopus.com</a>
12	PubMed	<a href="https://www.ncbi.nlm.nih.gov/pubmed">https://www.ncbi.nlm.nih.gov/pubmed</a>
13	«Аknurpress» библиотека	Цифровая <a href="https://aknurpress.kz/login">https://aknurpress.kz/login</a>

**1. Department «Microbiology, virology and immunology»**

**2. Level of education: Bachelor**

**3. Educational program: 6B10102 «Pediatrics».**

**4. Course : 4**

**5. Name of elective discipline : «Clinical microbiology»**

**6. Number of credits: 5**

**7. Purpose:** formation of students ' knowledge about the role of opportunistic microorganisms in human pathology, the importance of immunity and the normal microflora of the body, as well as obtaining practical skills in the diagnosis, prevention and treatment of diseases caused by opportunistic microorganisms.

**Contents:** Clinical microbiology. Regulatory documents regulating bacteriological research methods in clinical microbiology. Modern research methods in clinical microbiology, development prospects. Features of equipping a modern microbiological laboratory at a health care facility. Laboratory diagnostics of infections caused by opportunistic microorganisms.

**9. Learning objectives:**

- students acquire knowledge in the field of clinical microbiology.
- acquisition of knowledge about the biological features of conditionally pathogenic microorganisms;
- acquisition of knowledge about the distinctive features of opportunistic microbes and classical pathogens in the development of infections;
- teaching students the features of epidemiology of opportunistic infection pathogens, the importance of individual microbiological methods in the diagnosis of opportunistic infection, depending on its origin and biological properties of the pathogen;
- formation of students ' skills in collecting and transporting clinical material for microbiological research;
- formation of students ' motivated attitude to the prevention of morbidity, sanitary and educational work, carrying out preventive and anti-epidemic measures, the basics of medical thinking, medical ethics, corporate culture, expanding scientific and cultural horizons;

**10. Learning outcomes:**

**Know and understand:**

- basic concepts of clinical microbiology.
- the purpose, objectives and principles of clinical microbiology.
- principles of classification of conditionally pathogenic microorganisms.
- methods of conducting microbiological studies in clinical microbiology.
- basic principles for evaluating the results of microbiological studies;
- methods of conducting microbiological studies, depending on the biological material and the clinical diagnosis of the patient.
- the influence of microorganisms on human health and their participation in pathological processes, the principles of choosing methods of microbiological research.
- a list of the necessary equipment for conducting microbiological studies.
- safety rules when working with laboratory equipment, the principles of operation of laboratory equipment used for microbiological research.
- diagnostic value when using various laboratory equipment for microbiological studies.
- algorithms for conducting research when using laboratory equipment for microbiological research of various biological materials.

- the microflora of the human body in normal and pathological conditions and possible reactions of the body to its effects.
- algorithms for conducting preventive measures aimed at reducing the risk of developing opportunistic infections.
- the principles of evaluating the results obtained in microbiological studies of various biological materials in order to choose the means of influencing microorganisms.

**Able:**

- choose methods for conducting laboratory tests of various biological materials.
- develop an algorithm for conducting a laboratory study of various clinical materials.
- analyze the clinical significance of microorganisms isolated from various biological materials.
- use the basic laboratory equipment necessary for conducting the microbiological research,
- choose laboratory equipment depending on the biological material.
- analyze the obtained data when using laboratory equipment for conducting microbiological studies of various biological materials.
- make a conclusion about the significance of the selected microflora and determine additional research methods for its assessment.
- to assess the adverse effect of the microflora of the human body on health.
- analyze the results obtained in microbiological studies and their impact on human health.
- evaluate the results of antibiotic scans and make changes based on natural antibiotic resistance.

**11. Prerequisites:** physiology, microbiology and immunology, hygiene and epidemiology, infectious diseases, children's infectious diseases.

**12. Post-requisites:** Epidemiology with the basics of disinfection, the basics of surgical diseases, children's surgery.

**13. Literature:**

**Russian language:**

**Main :**

1. Microbiology: textbook / ed. by V. V. Zverev, M. N. Boichenko. - M.: GEOTAR-Media, 2012. - 608 p.: ill.
2. Microbiology, virology: a guide to practical classes: textbook / ed. by V. V. Zverev. - ; - ; Ministry of Education and Science of the Russian Federation. Recommended by SBOU DPO " Russian med. acad. postgraduate education" of the Ministry of Health of the Russian Federation. - Moscow: GEOTAR-Media, 2015. - 360 p.
3. Seitkhanova B. T. Textbook for laboratory classes in private microbiology (intestinal infections): studies. Stipend. - Shymkent, 2012

**Kazakh language:**

**Main:**

1. Zheke microbiology. 1 bolim. Meditsinalyk bacteriologiya : oku kuraly / G. T. Alimzhanova [w / b.]. - Almaty : Evero, 2016. - 380 bet. s.
2. Zheke microbiology. 2 bolim. Meditsinalyk protozoology, mycology zhane virology : oku kuraly / G. T. Alimzhanova [w / b.]. - Almaty : Evero, 2016. - 272 bet. p.
3. Meditsinalyk microbiology, virology zhane immunology: okulyk. 2 tomдық. Volume 1 / kazak til'ine aud. K. Kudaibergenuly; ed. V. V. Zverev. - M.: GEOTAR-Media, 2016. - 416bet p.
4. Meditsinalyk microbiology, virology zhane immunology: okulyk. 2 tomдық. 2 vol. / kaz. til. aud. K. Kudaibergenuly. - M.: GEOTAR-Media, 2016. - 480 bet. p.
5. Nurzhanova, A. U. Microbiology zhane virology: oku kuraly / A. U. Nurzhanova, M. Sh. Seralieva, N. U. Abdukasymova. - ; Shymkent medical college. oku-adist. kenesinde talkylanyp, baspaga usyngan. - Shymkent : "Nurly Beine", 2012. - 272 bet. p.

Additional information :

1. Microbiology, virology: a guide to practical classes : a textbook / ed. by V. V. Zverev. - ; Min. education and science of the Russian Federation. Recommended by SBOU DPO " Russian med. acad. postgraduate education" of the Ministry of Health of the Russian Federation. - Moscow: GEOTAR-Media, 2015. - 360 p.

**English language:**

1. Murray P. R., Rosenthal K. S., Pfaller M. A. Medical Microbiology. - Mosby, 2015  
2. W. Levinson McGraw-Hill. Review of Medical Microbiology and Immunology, 2014

**Electronic resources:**

1. Alimzhanova, G. T. Zheke microbiology. 1-2 bolim [Electronic resource]: oku kuraly / G. T. Alimzhanova. - Electron. text data. ( 60.9 Mb). - Almaty : Evero, 2016. - 380 bet. el. opt. disk (CD-ROM).

**Electronic database.**

№	Наименование	Ссылка
1	Электронная библиотека ЮКМА	<a href="http://lib.ukma.kz/repository/">http://lib.ukma.kz/repository/</a>
2	Электронный каталог - Для внутреннего пользования - Для внешнего пользования	http://10.10.202.52 http://89.218.155.74
3	Республиканская межвузовская электронная библиотека	http://rmebrk.kz/
4	Консультант студента	http://www.studmedlib.ru
5	«Параграф Медицина» информационная система	https://online.zakon.kz/Medicine
6	Закон (доступ в справочно-информационном секторе)	https://zan.kz
7	Научная электронная библиотека	<a href="https://elibrary.ru/">https://elibrary.ru/</a>
8	«BooksMed» электронды кітапханасы	http://www.booksmed.com
9	«Web of science» (Thomson Reuters)	http://apps.webofknowledge.com
10	«Science Direct» (Elsevier)	https://www.sciencedirect.com
11	«Scopus» (Elsevier)	www.scopus.com
12	PubMed	<a href="https://www.ncbi.nlm.nih.gov/pubmed">https://www.ncbi.nlm.nih.gov/pubmed</a>
13	«Aknurpress» Цифровая библиотека	<a href="https://aknurpress.kz/login">https://aknurpress.kz/login</a>

1. **Department:** "Social health insurance and public health»
2. **Level of training:** Bachelor
3. **Specialty:** "Pediatrics»
4. **Course:** 4, Term-8
5. **Name of elective discipline:** Basics of evidence medicine.
6. **Number of credits** – 3/90
7. **Purpose:** formation of students ' knowledge of the basics of evidence-based medicine, the formation of skills that will critically evaluate medical information for rational use in further practice.
8. **Tasks:**
  - to give students knowledge about the basic terms of evidence-based medicine (DM);
  - teach students to distinguish between types of clinical trials;
  - to teach the basic skills ispolzovaniya database pokazatelnoe medicine;
  - to teach critically evaluate medical information with the help of evidence-based medicine filters.

**9. Rationale for the choice of discipline:** evidence-Based medicine is the use of the results of the best clinical studies to choose the treatment of a particular patient, it is the integration of the best scientific evidence with the clinical experience and expectations of patients. The principles of evidence-based medicine are used primarily in clinical practice, but they are applicable to any field of medical science, including preventive medicine, public health, health organization.

**10. Learning outcomes (competencies):** Knowledge and understanding (demonstrate knowledge and understanding in the field of study, including elements of the most advanced knowledge in this area): knows the basic terms of evidence-based medicine; knows the types of research used in clinical epidemiology; knows the concept of clinical guidelines, including the standard, Protocol of diagnosis and treatment, prevention.

**Application of knowledge and understanding** (apply this knowledge and understanding at a professional level): uses the principles of search and evaluation of evidence obtained from different sources; applies different types of decision-making in preventive medicine; applies the principles of work in the search engine with the use of evidence-based medicine filters.

**Formation of judgments** (formulate arguments and solve problems in the study area): formulates the problem (question) using the PICO principle; formulates arguments for the analysis and critical evaluation of medical articles on preventive medicine; formulates arguments about the clinical guidelines, the stages of its preparation.

**Communication** skills (to communicate information, ideas, problems and solutions to both professionals and non-professionals): able to present a project of scientific work and present the results to the public; offers his ideas in the decision-making of medical issues on preventive medicine; able to make a rough plan of medical audit of their practice.

**Learning skills or ability to study** (to collect and interpret information to form judgments based on social, ethical and scientific considerations): able to present personal judgments, to issue in the form of an abstract, presentation, project and present at practical classes, meetings of the student club, student scientific conferences, etc.; collects material and interpretation using the database of evidence-based medicine, analyzes and critically evaluates medical articles, has personal judgments in practical classes when discussing the main issues of the topic.

**10. Prerequisites:** School subjects

**11. Post-requisites:** Public health, biostatistics.

**12. Literature:**

**Basic literature:**

1. General epidemiology with the basics of evidence-based medicine. Guide to practical training : studies. the allowance / under the editorship of V. I. Pokrovsky, N. I. Briko. - Moscow : GEOTAR - Media, 2010.

2. Greenhalgh, T. evidence-based medicine : textbook: translated from English. - 3rd ed. - Moscow : GEOTAR-Media, 2009.

3. Greenhalgh, T. evidence-based medicine : proc. benefit. - 3rd ed. - Moscow : GEOTAR - Media, 2008.

4. Klyushin D. A. Evidence-based medicine. Application of statistical methods.-M., 2008

5. Greenhalgh, T. Dled medicine negadon : owly: audarma Aylin tLAN / awpta the editorship of G. S. Kemelova ; Kazak tne RM. Because Saadetava. - Moscow : GEOTAR - Media, 2014. - 336 bet-

Additional literature:

1. Evidence-based medicine in questions and answers: studies.-methodical manual. - Karagandy : LCD "AK Nur", 2013.

2. Dled medicinebuy crater men HAPTER: excellent-distell al. - Karagandy : LCD "ANR", 2014. - 104 Beth.

3. Derbisalin G. Schwa. Dled medicine negadon : distell NSAU . - 2 bass., tolet. - Karagandy : LCD "AK Nur", 2013

Electronic resource:

1. Management plans. Version 1.1 [Electronic resource] : electronic ed. / under the editorship of O. Y. Atkov. - Electron. text Dan. ( 86.1 MB). - Moscow : GEOTAR - Media, 2009. - el. wholesale. disc (CD-ROM). - (Demonstrative medicine.)
2. Consultant doctor. Clinical guidelines. Version 2.1. Clinical guidelines based on evidence-based medicine. [Electronic resource] : practical work. - Electron. text Dan. ( 76.8 MB). - Moscow : GEOTAR - Media, 2008. - el. wholesale. disc (CD-ROM).
3. Greenhalgh, T. Dled medicine Neger [Electronic resource] : owly / Kazak til. AUD. T. K. Sagatova. - Electron. text Dan. ( 40.4 MB). - Moscow : GEOTAR - Media, 2017. - el. wholesale. disc (CD-ROM).