

Catalog of elective disciplines

1. Department: “History of Kazakhstan and social disciplines”
2. Level of training master's degree
3. Educational program: “Public Health”, Medicine, Nursing, Pharmaceutical Ecology, Pharmacy.
4. Course-1
5. Name of the elective discipline - “Pedagogy in higher education”
6. Number of credits (at least 5 credits) - 5 credits
7. Goal: Formation of theoretical and practical knowledge, skills and abilities of undergraduates in the implementation of teaching activities in the field of medical education.
8. Contents of the discipline (30-50 words) – General fundamentals of pedagogy: methodology, history of development. Higher education in the Republic of Kazakhstan: integration into the global educational space. The meaning and structure of pedagogical activity. Personality, professional abilities and qualifications of the teacher. Organization of the educational process in higher education based on credit technology. Theory of scientific activity of higher education. The meaning and directions of educational work in higher education. Management of the education quality system. Pedagogy in medicine.
9. Objectives - directing undergraduates to become familiar with the theory and technology of their future profession;
10. Justification for choosing a discipline - This program is designed to provide undergraduates with the necessary knowledge, qualifications and skills in the subject to achieve learning outcomes.
11. Learning outcomes (4-6 learning outcomes according to Dublin descriptors):
 - 1LO-Analyzes the connection between pedagogical conclusions and the world-historical development of mankind.
 - 2 LO - Analyzes current problems of education and upbringing and through them analyzes the laws of personality formation.
 - 3 LO – uses educational technologies in the learning process and presents its own opinion to the scientific community and society on ways to improve it.
 - 4 LO - Ability for self-analysis and self-improvement, pedagogical competence in teaching medical subjects.
12. Prerequisites - no
13. Postrequisites - teaching practice
14. Literature:
 1. Педагогика в медицине. Ч. 1. [Текст] : учебное пособие / под ред. Н. В. Кудрявой. - 3-е изд., испр. и доп. - Алматы : CyberSmith, 2017. - 192 с.
 2. Педагогика в медицине. Ч. 2. [Текст] : учебное пособие / под ред. Н. В. Кудрявой. - 3-е изд., испр. и доп. - Алматы : CyberSmith, 2017. - 244 с.
 3. Психология и педагогика для студентов медицинских вузов. 1 ч. : учебник / под ред. Н. В. Кудрявой. - Алматы : Эверо, 2017. - 196 с.
 4. Психология и педагогика для студентов медицинских вузов. 2 ч.: учебник / под ред. Н. В. Кудрявой. - Алматы : Эверо, 2017. – 192
 5. Жұмабекова, Ф. Н. Педагогикалық мамандыққа кіріспе [Мәтін] : оқулық / Ф. Н. Жұмабекова. - ; Л. Н. Гумилев атындағы Еуразия ұлттық ун- тінің ғыл. кеңесі ұсынған. - Алматы : Эверо, 2014. - 274 бет.
 6. Мирза, Н. В. Кәсіби-педагогикалық қарым-қатынас [Мәтін] : оқу құралы / Н. В. Мирза, Р. К. Маженова ; ҚР БҒМ; Акад. Е. А. Бөкетов атындағы ҚарМУ. - Алматы : Эверо, 2014. - 160 бет.
 7. Шунк, Дейл Х. Оқыту теориясы: білім беру көкжиегі = Learning theories an educational perspective : оқулық / Дейл Х. Шунк ; Қаз. тіл ауд. Б. М. Мизамхан [және т.б.]. - 7-ші бас. - Алматы : Ұлттық аударма бюросы, 2019. - 608 бет.

8. Pedagogy [Текст] : textbook / K. K. Zhampeisova [and etc.]. - Almaty : Association of higher educational institutions of Kazakhstan, 2016. - 390 p.

1. Department: Pharmacology, Pharmacotherapy and Clinical Pharmacology

2. Level of training: master

3. Specialty: "Medicine", scientific and pedagogical

4. Course: 1

5. Name of elective discipline: "Interaction and interchangeability of drugs"

6. Number of loans: 5

7. Purpose: to teach undergraduates in the OP "Medicine" to conduct rational pharmacotherapy of various diseases in their practical activities, taking into account the interaction of drugs and to conduct the optimal selection and replacement of a drug.

8. Tasks:

- To teach to predict and evaluate the side effects of drugs, taking into account the individual characteristics of the patient;

- To teach the optimal selection and replacement of a drug if necessary in order to improve the rationality of pharmacotherapy.

9. The content of the discipline: Interaction of drugs - a change in the pharmacological action or strength of one drug while prescribing another drug. This can lead to either an increase or a weakening of the action of the drug, the appearance of toxicity of one or both drugs. Drug Interaction Mechanisms .

The main types of interaction: pharmacokinetic (changes in drug absorption, changes in distribution, metabolic disturbances, drug interactions during metabolism, induction and inhibition of metabolic enzymes) and pharmacodynamic (addiction, superraddition, antagonism).

10. Justification of the choice of discipline: The elective discipline "Interaction and interchangeability of medicines" is the final link in the chain of study of biomedical disciplines at the Faculty of Medicine. As an integrative subject, "Interaction and Interchangeability of Medicines," it combines a number of logically related, harmoniously complementary disciplines: pharmacology, biochemistry, clinical pharmacology, evidence-based medicine, genetics, pharmacogenetics, pharmaceutical chemistry and biochemistry.

11. Learning outcomes (competency):

Knowledge (cognitive sphere)	Skills (psychomotor sphere)	Personalities and professional competencies (relationships)
<ul style="list-style-type: none"> - Knows the features of the pharmacokinetics and pharmacodynamics of drugs and methods for assessing the quality of life of a particular patient - Knows risk factors and clinical manifestations of major adverse drug reactions. - Knows methods for assessing the quality of life, 	<ul style="list-style-type: none"> - Able to make the choice of the most effective and safe and affordable medicines, for the rational use of drugs, taking into account age-related aspects and the condition of patients, determine the optimal dosage regimen; - Able to choose methods of monitoring the safety of treatment and predict the risk of side effects of drugs; 	<ul style="list-style-type: none"> - Competent in determining the causes and consequences of irrational use of drugs; - Understands the strengths and weaknesses of various strategies to improve drug use; - Advises doctors on the rational use of drugs. - Conduct a consultation of doctors and patients;

<p>the basic principles of dosage of drugs, depending on the pathological and physiological parameters of the human body.</p> <ul style="list-style-type: none"> - Knows the main types of drug interactions. - Knows methods for assessing the clinical efficacy and safety of drugs, and methods of working with doctors to increase their knowledge of personalized medicine. 	<ul style="list-style-type: none"> - Able to provide informational and advisory assistance to doctors in choosing the dosage form of the drug, dose, frequency and duration of drug administration. - Able to use types of literature (educational, scientific, reference) and computer databases on clinical pharmacology and evidence-based medicine. - Is able to control and make a forecast of the risk of side effects of drugs; - Able to prevent and apply correction methods when they occur; - Able to apply clinical protocol diagnostics and treatment of diseases. 	<ul style="list-style-type: none"> - Formulates the problems of rational use of medicines. - He argues the formulary list based on the protocol of treatment.
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12. Prerequisites: pharmacology, biochemistry, clinical pharmacology, evidence-based medicine, genetics, pharmacogenetics, molecular biology.

13. Post requisites: professional development.

14. Literature:

Primary:

1. Kalieva, S. S. Clinical pharmacology and rational pharmacotherapy. Volume 1: textbook / Sh. S. Kaliev., N. A. Minakova. - Almaty: Evero, 2016 .-- 460

2. Kalieva, C. S. Clinical pharmacology and rational pharmacotherapy. Volume 2: textbook / S. S. Kaliev, N. A. Simokhin. - Almaty: Evero, 2016 .-- 288 p.

3. Greenhalh T. Fundamentals of evidence-based medicine: textbook: translation from English / ed. G.S. Kemelov; Audit in the Kazakh language. Sagatova TK –M .: GEOTAR-Media, 2014

4. Kulmaganbetov, I. R. Pharmacology Clinic. Line 1: About Uralsk / I.R. Kulmaganbetov. - Almaty: Euro, 2014 .-- 320 p.

5. Kulmaganbetov, I. R. Pharmacology Clinic. Part II: reading Uralsk / I.R. Kulmaganbetov. - Almaty: Euro, 2014 .-- 392 p.

6. Petrov VI Medicine, based on evidence: textbook. allowance / VI Petrov, SV Недогода.-; Пек. Educational-methodical unit. on med. and farm. education of Russian universities. - M .: ГЭОТАР- Медиа, 2012

Additional:

1. Rational pharmacotherapy in oncology: hand, for practicing physicians / ed. MI Davydova, VA Gorbunova. - M .: GEOTAR- Media, 2015. -844p.

2. Petrov VI Clinical pharmacology and pharmacotherapy in real medical practice: master class: textbook / VI Petrov.-; Пек. GOU DPO "Russian Med. acad. postgraduate education. - M .: - M.: GEOTAR-Media, 2011 .-- 880 p.: Ill.

3. Lecture complex - the subject of using the results of the lesson: lecture complex / pharmacology, pharmacotherapy, clinic wife, pharmacology of the department. - Shymkent: SKSPhA, 2016. - 65 p.

4. Rakhimov K.D. Guidelines for the safe use of medicines: a guide / K.D. Rakhimov, K.A. Zordinova; Ministry of Health of the Republic of Kazakhstan; Almaty state Institute of Advanced Doctors Research Institute of Pharmacology and Toxicology; National Acad. Sciences of the Republic of Kazakhstan .- Almaty: B. and., 2009.- 244s.

Electronic editions:

1. Petrov, V. I. Clinical pharmacology and pharmacotherapy in real medical practice, master class [Electronic resource]: textbook / V. I. Petrov. - The electron. text data (63.5 MB). - M.: Publishing Group "GEOTAR-Media", 2011. - 880 p. email opt. disk (CD-ROM).

2 .. Doctor's consultant. Clinical Pharmacology. Version 1.1 [Electronic resource]: manual. - The electron. text data (132 Mb). - M.: Publishing Group "GEOTAR-Media", 2010. - Email. opt. disk (CD-ROM).

1. Department: Pharmacology, Pharmacotherapy and Clinical Pharmacology

2. Level of training: master

3. OP: "Medicine", scientific and pedagogical direction

4. Course: 1

5. Name of elective discipline: “Methodology of rational use of medicines”

6. Number of loans: 5

7. Purpose: to teach undergraduates in the OP “Medicine” the methodology of rational pharmacotherapy of various diseases in their practical activities, taking into account the optimization and personalization of prevention and treatment, to avoid unwanted side effects through the identification of individual characteristics of the body.

8. Tasks:

- teach methodologies for rational prescribing of drugs taking into account the individual characteristics of the patient;
- teach the methodology to predict and evaluate the side effects of drugs, taking into account the individual characteristics of the patient;
- teach to evaluate the possible interactions of drugs taking into account the individual characteristics of the patient;

9. The content of the discipline: Methodology for the rational use of drugs. Methods for assessing the use of drugs, in accordance with clinical need, in doses that meet individual needs, for an adequate period of time and at the lowest cost for the patient and medical treatment.

10. Justification of the choice of discipline: The elective discipline "Methodology for the rational use of medicines" is the final link in the chain of study of biomedical disciplines at the Faculty of Medicine. As an integrative subject, the Methodology for the Rational Use of Medicines combines a number of logically related, harmoniously complementary disciplines: pharmacology, biochemistry, clinical pharmacology, evidence-based medicine, genetics, pharmacogenetics, molecular biology and OMICS technologies.

11. Learning outcomes (competency):

Knowledge (cognitive sphere)	Skills (psychomotor sphere)	Personalities and professional
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		competencies (relationships)
<ul style="list-style-type: none"> - Knows the features of the pharmacokinetics and pharmacodynamics of drugs and methods for assessing the quality of life of a particular patient - Knows risk factors and clinical manifestations of major adverse drug reactions. - Knows methods for assessing the quality of life, the basic principles of dosage of drugs, depending on the pathological and physiological parameters of the human body. - Knows the main types of drug interactions. - Knows methods for assessing the clinical efficacy and safety of drugs, and methods of working with doctors to increase their knowledge of personalized medicine. - Knows about the tasks, place, methodology, achievements and problems of pharmacogenetics and pharmacogenomics, the basics of using the results of pharmacogenetics studies in the formation of the principles of personalized medicine and standardization in healthcare - in the field of rational pharmacotherapy; 	<ul style="list-style-type: none"> - Able to make the choice of the most effective and safe and affordable medicines for the rational use of drugs, taking into account age-related aspects and the condition of patients, determine the optimal dosage regimen; - Able to choose methods of monitoring the safety of treatment and predict the risk of side effects of drugs; - Able to provide informational and advisory assistance to doctors in choosing the dosage form of the drug, dose, frequency and duration of drug administration. - Able to use types of literature (educational, scientific, reference) and computer databases on clinical pharmacology and evidence-based medicine. - Is able to control and make a forecast of the risk of side effects of drugs; - Able to prevent and apply correction methods when they occur; - Able to apply clinical protocols for diagnosis and treatment of diseases. - Able to independently acquire new knowledge in this discipline, analyze it, apply the knowledge gained in practice and in the study of other disciplines, as well as to solve urgent practical problems in the field of pharmaceuticals; describe the various techniques and methods of pharmacogenetics; - Able to discuss the benefits and limitations of 	<ul style="list-style-type: none"> - Competent in determining the causes and consequences of irrational use of drugs; - Understands the strengths and weaknesses of various strategies to improve drug use; - Advises doctors on the rational use of drugs. - Consult doctors and patients; - Formulates the problems of rational use of medicines. - He argues the formulary list based on the protocol of treatment. - Understands the essence and internal nature of pharmacogenetics and the main pharmacokinetic processes that determine the possibility of population analysis;

	pharmacogenetics and pharmacogenomics; - Able to identify the key problems of the widespread introduction of the principles of pharmacogenetics in health systems; - Able to critically evaluate publications on the results of research in the field of pharmacogenetics.	
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12. Prerequisites: pharmacology, biochemistry, clinical pharmacology, evidence-based medicine, genetics, pharmacogenetics, molecular biology.

13. Post requisites: professional development.

14. Literature:

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1. Kalieva, S. S. Clinical pharmacology and rational pharmacotherapy. Volume 1: textbook / Sh. S. Kaliev., N. A. Minakova. - Almaty: Evero, 2016 .-- 460

2. Kalieva, C. S. Clinical pharmacology and rational pharmacotherapy. Volume 2: textbook / S. S. Kaliev, N. A. Simokhin. - Almaty: Evero, 2016 .-- 288 p.

3. Greenhalh T. Fundamentals of evidence-based medicine: textbook: translation from English / ed. G.S. Kemelov; Audit in the Kazakh language. Sagadatova TK –M .: GEOTAR-Media, 2014

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5. Kulmaganbetov, I. R. Pharmacology Clinic. Part II: reading Uralsk / I.R. Kulmaganbetov. - Almaty: Euro, 2014 .-- 392 p.

6. Petrov VI Medicine, based on evidence: textbook. allowance / VI Petrov, SV Недогода.-; Рек. Educational-methodical unit. on med. and farm. education of Russian universities. - M .: ГЭОТАР- Медиа, 2012

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2. Doctor's consultant. Clinical Pharmacology. Version 1.1 [Electronic resource]: manual. - The electron. text data (132 Mb). - M.: Publishing Group "GEOTAR-Media", 2010. - Email. opt. disk (CD-ROM).

1. Department: pharmacology, pharmacotherapy and clinical pharmacology

2. Level of training: master

3. OP: "Medicine", scientific and pedagogical direction

4. Course: 1

5. Name of elective discipline: Personalized pharmacotherapy

6. Number of credits: 5

7. Purpose: to teach undergraduates in the OP "Medicine" to conduct rational pharmacotherapy of various diseases in their practical activities, taking into account the optimization and personalization of prevention and treatment, to avoid unwanted side effects by identifying the individual characteristics of the body.

8. Tasks:

- teach methodologies for rational prescribing of drugs taking into account the individual characteristics of the patient;
- teach to predict and evaluate side effects of drugs, taking into account the individual characteristics of the patient;
- teach to evaluate the possible interactions of drugs taking into account the individual characteristics of the patient;

9. The content of the discipline: Issues of rational pharmacotherapy, personalized approaches to pharmacotherapy, which involves the use of clinical and pharmacological technologies (determination of biomarkers, pharmacogenetic and pharmacotranscriptome tests), identifying individual characteristics of patients for effective and safe pharmacotherapy, which require monitoring of drug efficacy and safety, the principle of rationality of pharmacotherapy, the choice of the most appropriate drugs (combination of drugs), medicine hydrochloric forms, doses and routes of administration and duration of pharmacotherapy forecast, reduce the risk of adverse drug reactions.

10. Justification of the choice of discipline: The elective discipline "Personalized Pharmacotherapy" is the final link in the chain of study of biomedical disciplines at the Faculty of Medicine. As an integrative subject, "Personalized Pharmacotherapy" combines a number of logically related, harmoniously complementary disciplines: pharmacology, biochemistry, clinical pharmacology, evidence-based medicine, genetics, pharmacogenetics, molecular biology and OMICS technologies.

11. Learning outcomes (competency):

Knowledge (cognitive sphere)	Skills (psychomotor sphere)	Personalities and professional competencies (relationships)
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<ul style="list-style-type: none"> - Knows the features of the pharmacokinetics and pharmacodynamics of drugs and methods for assessing the quality of life of a particular patient - Knows risk factors and clinical manifestations of major adverse drug reactions. - Knows methods for assessing the quality of life, the basic principles of dosage of drugs, depending on the pathological and physiological parameters of the human body. - Knows the main types of drug interactions. - Knows methods for assessing the clinical efficacy and safety of drugs, and methods of working with doctors to increase their knowledge of personalized medicine. - Knows about the tasks, place, methodology, achievements and problems of pharmacogenetics and pharmacogenomics, the basics of using the results of pharmacogenetics studies in the formation of the principles of personalized medicine and standardization in healthcare - in the field of rational pharmacotherapy; 	<ul style="list-style-type: none"> - Able to make the choice of the most effective and safe and affordable medicines for the rational use of drugs, taking into account age-related aspects and the condition of patients, determine the optimal dosage regimen; - Able to choose methods of monitoring the safety of treatment and predict the risk of side effects of drugs; - Able to provide informational and advisory assistance to doctors in choosing the dosage form of the drug, dose, frequency and duration of drug administration. - Able to use types of literature (educational, scientific, reference) and computer databases on clinical pharmacology and evidence-based medicine. - Is able to control and make a forecast of the risk of side effects of drugs; - Able to prevent and apply correction methods when they occur; - Able to apply clinical protocols for diagnosis and treatment of diseases. - Able to independently acquire new knowledge in this discipline, analyze it, apply the knowledge gained in practice and in the study of other disciplines, as well as to solve urgent practical problems in the field of pharmaceuticals; describe the various techniques and methods of pharmacogenetics; - Able to discuss the benefits and limitations of pharmacogenetics and pharmacogenomics; 	<ul style="list-style-type: none"> - Competent in determining the causes and consequences of irrational use of drugs; - Understands the strengths and weaknesses of various strategies to improve drug use; - Advises doctors on the rational use of drugs. - Consult doctors and patients; - Formulates the problems of rational use of medicines. - He argues the formulary list based on the protocol of treatment. - Understands the essence and internal nature of pharmacogenetics and the main pharmacokinetic processes that determine the possibility of population analysis;
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	<ul style="list-style-type: none"> - Able to identify the key problems of the widespread introduction of the principles of pharmacogenetics in health systems; - Able to critically evaluate publications on the results of research in the field of pharmacogenetics. 	
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12. Prerequisites: pharmacology, biochemistry, clinical pharmacology, evidence-based medicine, genetics, pharmacogenetics, molecular biology.

13. Post requisites: professional development.

14. Literature:

Primary:

1. Kalieva, S. S. Clinical pharmacology and rational pharmacotherapy. Volume 1: textbook / Sh. S. Kaliev., N. A. Minakova. - Almaty: Evero, 2016 .-- 460

2. Kalieva, C. S. Clinical pharmacology and rational pharmacotherapy. Volume 2: textbook / S. S. Kaliev, N. A. Simokhin. - Almaty: Evero, 2016 .-- 288 p.

3. Greenhalh T. Fundamentals of evidence-based medicine: textbook: translation from English / ed. G.S. Kemelov; Audit in the Kazakh language. Sagatova TK –M .: GEOTAR-Media, 2014

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Additional:

1. Rational pharmacotherapy in oncology: hand, for practicing physicians / ed. MI Davydova, VA Gorbunova. - M .: GEOTAR- Media, 2015. -844p.

2. Petrov VI Clinical pharmacology and pharmacotherapy in real medical practice: master class: textbook / VI Petrov.-; Рек. GOU DPO "Russian Med. acad. postgraduate education. - M .: - M.: GEOTAR-Media, 2011 .-- 880 p.: Ill.

3. Lecture complex - the subject of using the results of the lesson: lecture complex / pharmacology, pharmacotherapy, clinic wife, pharmacology of the department. - Shymkent: SKSPhA, 2016. - 65 p.

4. Rakhimov K.D. Guidelines for the safe use of medicines: a guide / K.D. Rakhimov, K.A. Zordinova; Ministry of Health of the Republic of Kazakhstan; Almaty state Institute of Advanced Doctors Research Institute of Pharmacology and Toxicology; National Acad. Sciences of the Republic of Kazakhstan .- Almaty: B. and., 2009.- 244s.

Electronic editions:

1. Petrov, V. I. Clinical pharmacology and pharmacotherapy in real medical practice, master class [Electronic resource]: textbook / V. I. Petrov. - The electron. text data (63.5 MB). - M.: Publishing Group "GEOTAR-Media", 2011. - 880 p. email opt. disk (CD-ROM).

2 .. Doctor's consultant. Clinical Pharmacology. Version 1.1 [Electronic resource]: manual. - The electron. text data (132 Mb). - M.: Publishing Group "GEOTAR-Media", 2010. - Email. opt. disk (CD-ROM).

1. Department: Pharmacology, Pharmacotherapy and Clinical Pharmacology

2. Level of training: master

3. OP: "Medicine", scientific and pedagogical direction

4. Course: 2

5. The name of the elective discipline: "Therapeutic drug monitoring"

6. Number of loans: 5

7. Purpose: to teach undergraduates in the OP “Medicine” the methodology of maintaining the optimal concentration of the drug at the site of action, especially for drugs that have a narrow therapeutic corridor to optimize pharmacotherapy.

8. Tasks:

- teach the methodology of therapeutic drug monitoring;
- teach to control the concentration of drugs in blood plasma in order to select an individual dosage regimen of the drug;
- Teach you how to evaluate potential drug interactions.

9. The content of the discipline: Therapeutic drug monitoring; determination of the concentration of a drug substance and its metabolites in body fluids in order to monitor the ongoing drug therapy.

Clarification of the reasons for the lack of effectiveness of pharmacotherapy, prevention or confirmation of toxic effects. Clarification of the causes of nonlinear kinetics of the drug (lack of a direct relationship between the dose of the drug and its concentration in the blood). The use of drugs in groups of patients with potential pharmacological variability (senile / childhood, pregnancy). Schemes of therapeutic drug monitoring.

10. Justification of the choice of discipline: The elective discipline "Therapeutic drug monitoring" is the final link in the chain of study of biomedical disciplines at the Faculty of Medicine. As an integrative subject, “Therapeutic Drug Monitoring” combines a number of logically related, harmoniously complementary disciplines: pharmacology, pharmacotherapy, clinical pharmacology, analytical chemistry, bio-chemistry, pharmacogenetics.

11. Learning outcomes (competency):

Knowledge (cognitive sphere)	Skills (psychomotor sphere)	Personalities and professional competencies (relationships)
<ul style="list-style-type: none"> - Knows the features of the pharmacokinetics and pharmacodynamics of drugs and methods for assessing the quality of life of a particular patient - Knows risk factors and clinical manifestations of major adverse drug reactions. - Knows methods for assessing the quality of life, 	<ul style="list-style-type: none"> - Able to make the choice of the most effective and safe and affordable medicines for the rational use of drugs, taking into account age-related aspects and the condition of patients, determine the optimal dosage regimen; - Able to choose methods of monitoring the safety of 	<ul style="list-style-type: none"> - Competent in determining the causes and consequences of irrational use of drugs; - Understands the strengths and weaknesses of various strategies to improve drug use; - Advises doctors on the rational use of drugs.

the basic principles of dosage of drugs, depending on the pathological and physiological parameters of the human body.

- Knows the main types of drug interactions.

- Knows methods for assessing the clinical efficacy and safety of drugs, and methods of working with doctors to increase their knowledge of personalized medicine.

- Knows about the tasks, place, methodology, achievements and problems of pharmacogenetics and pharmacogenomics, the basics of using the results of pharmacogenetics studies in the formation of the principles of personalized medicine and standardization in healthcare - in the field of rational pharmacotherapy;

treatment and predict the risk of side effects of drugs;

- Able to provide informational and advisory assistance to doctors in choosing the dosage form of the drug, dose, frequency and duration of drug administration.

- Able to use types of literature (educational, scientific, reference) and computer databases on clinical pharmacology and evidence-based medicine.

- Is able to control and make a forecast of the risk of side effects of drugs;

- Able to prevent and apply correction methods when they occur;

- Able to apply clinical protocols for diagnosis and treatment of diseases.

- Able to independently acquire new knowledge in this discipline, analyze it, apply the knowledge gained in practice and in the study of other disciplines, as well as to solve urgent practical problems in the field of pharmaceuticals; describe the various techniques and methods of pharmacogenetics;

- Able to discuss the benefits and limitations of pharmacogenetics and pharmacogenomics;

- Able to identify the key problems of the widespread introduction of the principles of pharmacogenetics in health systems;

- Able to critically evaluate publications on the results of research in the field of pharmacogenetics.

- Consult doctors and patients;

- Formulates the problems of rational use of medicines.

- He argues the formulary list based on the protocol of treatment.

- Understands the essence and internal nature of pharmacogenetics and the main pharmacokinetic processes that determine the possibility of population analysis;

12. Prerequisites: pharmacology, biochemistry, clinical pharmacology, evidence-based medicine, genetics, pharmacogenetics, molecular biology.

13. Post requisites: professional development.

14. Literature:

Primary:

1. Kalieva, S. S. Clinical pharmacology and rational pharmacotherapy. Volume 1: textbook / Sh. S. Kaliev., N. A. Minakova. - Almaty: Evero, 2016 .-- 460

2. Kalieva, C. S. Clinical pharmacology and rational pharmacotherapy. Volume 2: textbook / S. S. Kaliev, N. A. Simokhin. - Almaty: Evero, 2016 .-- 288 p.

3. Greenhalh T. Fundamentals of evidence-based medicine: textbook: translation from English / ed. G.S. Kemelov; Audit in the Kazakh language. Sagadatova TK –M .: GEOTAR-Media, 2014

4. Kulmaganbetov, I. R. Pharmacology Clinic. Line 1: About Uralsk / I.R. Kulmaganbetov. - Almaty: Euro, 2014 .-- 320 p.

5. Kulmaganbetov, I. R. Pharmacology Clinic. Part II: reading Uralsk / I.R. Kulmaganbetov. - Almaty: Euro, 2014 .-- 392 p.

6. Petrov VI Medicine, based on evidence: textbook. allowance / VI Petrov, SV Недогода.-; Рек. Educational-methodical unit. on med. and farm. education of Russian universities. - М .: ГЭОТАР- Медиа, 2012

Additional:

1. Rational pharmacotherapy in oncology: hand, for practicing physicians / ed. MI Davydova, VA Gorbunova. - М .: GEOTAR- Media, 2015. -844p.

2. Petrov VI Clinical pharmacology and pharmacotherapy in real medical practice: master class: textbook / VI Petrov.-; Рек. GOU DPO "Russian Med. acad. postgraduate education. - М .: - М.: GEOTAR-Media, 2011 .-- 880 p.: Ill.

3. Lecture complex - the subject of using the results of the lesson: lecture complex / pharmacology, pharmacotherapy, clinic wife, pharmacology of the department. - Shymkent: SKSPhA, 2016. - 65 p.

4. Rakhimov K.D. Guidelines for the safe use of medicines: a guide / K.D. Rakhimov, K.A. Zordinova; Ministry of Health of the Republic of Kazakhstan; Almaty state Institute of Advanced Doctors Research Institute of Pharmacology and Toxicology; National Acad. Sciences of the Republic of Kazakhstan .- Almaty: B. and., 2009.- 244s.

Electronic editions:

1. Petrov, V. I. Clinical pharmacology and pharmacotherapy in real medical practice, master class [Electronic resource]: textbook / V. I. Petrov. - The electron. text data (63.5 MB). - М.: Publishing Group "GEOTAR-Media", 2011. - 880 p. email opt. disk (CD-ROM).

2 .. Doctor's consultant. Clinical Pharmacology. Version 1.1 [Electronic resource]: manual. - The electron. text data (132 Mb). - М.: Publishing Group "GEOTAR-Media", 2010. - Email. opt. disk (CD-ROM).

1. Department: Pharmacology, Pharmacotherapy and Clinical Pharmacology

2. Level of training: master

3. OP: "Medicine", scientific and pedagogical direction

4. Course: 2

5. Name of elective discipline: "Chemotherapy and toxic effects of chemotherapeutic drugs"

6. Number of loans: 5

7. Purpose:

- to teach undergraduates in the OP "Medicine" to conduct rational chemotherapy of various diseases in their practical activities, taking into account clinical efficacy and toxicity, depending on specific clinical situations and polymorbidity;
- teach methodologies for the rational use of chemotherapeutic drugs for the treatment of various diseases.

8. Tasks:

- teach methodologies for the rational use of chemotherapeutic drugs;
- teach to predict and evaluate the toxic effects of drugs;
- teach to evaluate the possible interactions of drugs taking into account pharmaceutical, pharmacokinetic and pharmacodynamic aspects.

9. The content of the discipline: The basic principles of chemotherapy. The choice of chemotherapeutic agents, dosage form, dose and frequency of administration of the drug. Duration of treatment, monitoring of treatment, the possibility of undesirable effects of chemotherapeutic agents on the human body, including the fetus in pregnant women, as well as in newborns and when breastfeeding.

The rational combination of chemotherapeutic agents. Use in children, taking into account their anatomical and physiological characteristics. Toxic effects. Measures to eliminate or reduce the adverse reactions of chemotherapeutic agents. Preventive chemotherapy. Combination chemotherapy.

10. Justification of the choice of discipline: The elective discipline "Chemotherapy and toxic effects of chemotherapeutic drugs" is the final link in the chain of study of biomedical disciplines at the Faculty of Pharmacy. As an integrative subject "Chemotherapy and toxic effects of chemotherapeutic drugs"

combines a number of logically connected, harmoniously complementary disciplines: pharmacology, pharmacotherapy, clinical pharmacology, biochemistry, pharmacogenetics and clinical toxicology.

11. Learning outcomes (competency):

Knowledge (cognitive sphere)	Skills (psychomotor sphere)	Personalities and professional competencies (relationships)
- Knows the features of the pharmacokinetics and pharmacodynamics of drugs and methods for assessing the quality of life of a particular patient	- Able to make the choice of the most effective and safe and affordable medicines for the rational use of drugs, taking into account age-related aspects and the condition of patients,	- Competent in determining the causes and consequences of irrational use of drugs; - Understands the strengths and weaknesses of various strategies to improve drug use;

- Knows risk factors and clinical manifestations of major adverse drug reactions.
- Knows methods for assessing the quality of life, the basic principles of dosage of drugs, depending on the pathological and physiological parameters of the human body.
- Knows the main types of drug interactions.
- Knows methods for assessing the clinical efficacy and safety of drugs, and methods of working with doctors to increase their knowledge of personalized medicine.
- Knows about the tasks, place, methodology, achievements and problems of pharmacogenetics and pharmacogenomics, the basics of using the results of pharmacogenetics studies in the formation of the principles of personalized medicine and standardization in healthcare - in the field of rational pharmacotherapy;

- determine the optimal dosage regimen;
- Able to choose methods of monitoring the safety of treatment and predict the risk of side effects of drugs;
- Able to provide informational and advisory assistance to doctors in choosing the dosage form of the drug, dose, frequency and duration of drug administration.
- Able to use types of literature (educational, scientific, reference) and computer databases on clinical pharmacology and evidence-based medicine.
- Is able to control and make a forecast of the risk of side effects of drugs;
- Able to prevent and apply correction methods when they occur;
- Able to apply clinical protocols for diagnosis and treatment of diseases.
- Able to independently acquire new knowledge in this discipline, analyze it, apply the knowledge gained in practice and in the study of other disciplines, as well as to solve urgent practical problems in the field of pharmaceuticals; describe the various techniques and methods of pharmacogenetics;
- Able to discuss the benefits and limitations of pharmacogenetics and pharmacogenomics;
- Able to identify the key problems of the widespread introduction of the principles of pharmacogenetics in health systems;
- Able to critically evaluate publications on the results of

- Advises doctors on the rational use of drugs.
- Consult doctors and patients;
- Formulates the problems of rational use of medicines.
- He argues the formulary list based on the protocol of treatment.
- Understands the essence and internal nature of pharmacogenetics and the main pharmacokinetic processes that determine the possibility of population analysis;

12. Prerequisites: pharmacology, biochemistry, clinical pharmacology, evidence-based medicine, genetics, pharmacogenetics, molecular biology.

13. Post requisites: professional development.

14. Literature:

Primary:

1. Kalieva, S. S. Clinical pharmacology and rational pharmacotherapy. Volume 1: textbook / Sh. S. Kaliev., N. A. Minakova. - Almaty: Evero, 2016 .-- 460

2. Kalieva, C. S. Clinical pharmacology and rational pharmacotherapy. Volume 2: textbook / S. S. Kaliev, N. A. Simokhin. - Almaty: Evero, 2016 .-- 288 p.

3. Greenhalh T. Fundamentals of evidence-based medicine: textbook: translation from English / ed. G.S. Kemelov; Audit in the Kazakh language. Sagadatova TK –M .: GEOTAR-Media, 2014

4. Kulmaganbetov, I. R. Pharmacology Clinic. Line 1: About Uralsk / I.R. Kulmaganbetov. - Almaty: Euro, 2014 .-- 320 p.

5. Kulmaganbetov, I. R. Pharmacology Clinic. Part II: reading Uralsk / I.R. Kulmaganbetov. - Almaty: Euro, 2014 .-- 392 p.

6. Petrov VI Medicine, based on evidence: textbook. allowance / VI Petrov, SV Недогода.-; Рек. Educational-methodical unit. on med. and farm. education of Russian universities. - M .: ГЭОТАР- Медиа, 2012

Additional:

1. Rational pharmacotherapy in oncology: hand, for practicing physicians / ed. MI Davydova, VA Gorbunova. - M .: GEOTAR- Media, 2015. -844p.

2. Petrov VI Clinical pharmacology and pharmacotherapy in real medical practice: master class: textbook / VI Petrov.-; Рек. GOU DPO "Russian Med. acad. postgraduate education. - M .: - M.: GEOTAR-Media, 2011 .-- 880 p.: Ill.

3. Lecture complex - the subject of using the results of the lesson: lecture complex / pharmacology, pharmacotherapy, clinic wife, pharmacology of the department. - Shymkent: SKSPhA, 2016. - 65 p.

4. Rakhimov K.D. Guidelines for the safe use of medicines: a guide / K.D. Rakhimov, K.A. Zordinova; Ministry of Health of the Republic of Kazakhstan; Almaty state Institute of Advanced Doctors Research Institute of Pharmacology and Toxicology; National Acad. Sciences of the Republic of Kazakhstan .- Almaty: B. and., 2009.- 244s.

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2 .. Doctor's consultant. Clinical Pharmacology. Version 1.1 [Electronic resource]: manual. - The electron. text data (132 Mb). - M.: Publishing Group "GEOTAR-Media", 2010. - Email. opt. disk (CD-ROM).

1. Department: “History of Kazakhstan and social disciplines”

2. Level of training master's degree

3. Educational program: “Public Health”, Medicine, Nursing, Pharmaceutical Ecology, Pharmacy.

4. Direction: scientific and pedagogical, 2 years.

5. Course-1

6. Name of the elective discipline - “Pedagogy in higher education”

7. Number of credits (at least 5 credits) - 5 credits

8. Goal: Formation of theoretical and practical knowledge, skills and abilities of undergraduates in the implementation of teaching activities in the field of medical education.

9. Contents of the discipline (30-50 words) – General fundamentals of pedagogy: methodology, history of development. Higher education in the Republic of Kazakhstan: integration into the global educational space. The meaning and structure of pedagogical activity. Personality, professional abilities and qualifications of the teacher. Organization of the educational process in higher education based on credit technology. Theory of scientific activity of higher education. The meaning and directions of educational work in higher education. Management of the education quality system. Pedagogy in medicine.

10. Objectives - directing undergraduates to become familiar with the theory and technology of their future profession;

11. Justification for choosing a discipline - This program is designed to provide undergraduates with the necessary knowledge, qualifications and skills in the subject to achieve learning outcomes.

12. Learning outcomes (4-6 learning outcomes according to Dublin descriptors):

1LO-Analyzes the connection between pedagogical conclusions and the world-historical development of mankind.

2 LO - Analyzes current problems of education and upbringing and through them analyzes the laws of personality formation.

3 LO – uses educational technologies in the learning process and presents its own opinion to the scientific community and society on ways to improve it.

4 LO - Ability for self-analysis and self-improvement, pedagogical competence in teaching medical subjects.

13. Prerequisites - no

14. Postrequisites - teaching practice

15. Literature:

1. Педагогика в медицине. Ч. 1. [Текст] : учебное пособие / под ред. Н. В. Кудрявой. - 3-е изд., испр. и доп. - Алматы : CyberSmith, 2017. - 192 с.

2. Педагогика в медицине. Ч. 2. [Текст] : учебное пособие / под ред. Н. В. Кудрявой. - 3-е изд., испр. и доп. - Алматы : CyberSmith, 2017. - 244 с.

3. Психология и педагогика для студентов медицинских вузов. 1 ч. : учебник / под ред. Н. В. Кудрявой. - Алматы : Эверо, 2017. - 196 с.

4. Психология и педагогика для студентов медицинских вузов. 2 ч.: учебник / под ред. Н. В. Кудрявой. - Алматы : Эверо, 2017. – 192

5. Жұмабекова, Ф. Н. Педагогикалық мамандыққа кіріспе [Мәтін] : оқулық / Ф. Н. Жұмабекова. - ; Л. Н. Гумилев атындағы Еуразия ұлттық ун- тінің ғыл. кеңесі ұсынған. - Алматы : Эверо, 2014. - 274 бет.

6. Мирза, Н. В. Кәсіби-педагогикалық қарым-қатынас [Мәтін] : оқу құралы / Н. В. Мирза, Р. К. Маженова ; ҚР БҒМ; Акад. Е. А. Бөкетов атындағы ҚарМУ. - Алматы : Эверо, 2014. - 160 бет.

7. Шунк, Дейл Х. Оқыту теориясы: білім беру көзқарысы = Learning theories an educational perspective : оқулық / Дейл Х. Шунк ; Қаз. тіл ауд. Б. М. Мизамхан [және т.б.]. - 7-ші бас. - Алматы : Ұлттық аударма бюросы, 2019. - 608 бет.

8. Pedagogy [Текст] : textbook / К. К. Zhampeisova [and etc.]. - Almaty : Association of higher educational institutions of Kazakhstan, 2016. - 390 p.

1. Department: Pharmacology, Pharmacotherapy and Clinical Pharmacology

2. Level of training: master

3. OP: "Medicine", scientific and pedagogical direction

4. Course: 1

5. Name of elective discipline: "Methodology of rational use of medicines"

6. Number of loans: 5

7. Purpose: to teach undergraduates in the OP "Medicine" the methodology of rational pharmacotherapy of various diseases in their practical activities, taking into account the optimization and personalization of prevention and treatment, to avoid unwanted side effects through the identification of individual characteristics of the body.

8. Tasks:

- teach methodologies for rational prescribing of drugs taking into account the individual characteristics of the patient;
- teach the methodology to predict and evaluate the side effects of drugs, taking into account the individual characteristics of the patient;
- teach to evaluate the possible interactions of drugs taking into account the individual characteristics of the patient;

9. The content of the discipline: Methodology for the rational use of drugs. Methods for assessing the use of drugs, in accordance with clinical need, in doses that meet individual needs, for an adequate period of time and at the lowest cost for the patient and medical treatment.

10. Justification of the choice of discipline: The elective discipline "Methodology for the rational use of medicines" is the final link in the chain of study of biomedical disciplines at the Faculty of Medicine. As an integrative subject, the Methodology for the Rational Use of Medicines combines a number of logically related, harmoniously complementary disciplines: pharmacology, biochemistry, clinical pharmacology, evidence-based medicine, genetics, pharmacogenetics, molecular biology and OMICS technologies.

11. Learning outcomes (competency):

Knowledge (cognitive sphere)	Skills (psychomotor sphere)	Personalities and professional competencies (relationships)
<ul style="list-style-type: none">- Knows the features of the pharmacokinetics and pharmacodynamics of drugs and methods for assessing the quality of life of a particular patient- Knows risk factors and clinical manifestations of major adverse drug reactions.- Knows methods for assessing the quality of life, the basic principles of dosage of drugs, depending on the pathological and	<ul style="list-style-type: none">- Able to make the choice of the most effective and safe and affordable medicines for the rational use of drugs, taking into account age-related aspects and the condition of patients, determine the optimal dosage regimen;- Able to choose methods of monitoring the safety of treatment and predict the risk of side effects of drugs;- Able to provide informational and advisory assistance to doctors in choosing the dosage form of the drug, dose,	<ul style="list-style-type: none">- Competent in determining the causes and consequences of irrational use of drugs;- Understands the strengths and weaknesses of various strategies to improve drug use;- Advises doctors on the rational use of drugs.- Consult doctors and patients;- Formulates the problems of rational use of medicines.

<p>physiological parameters of the human body.</p> <ul style="list-style-type: none"> - Knows the main types of drug interactions. - Knows methods for assessing the clinical efficacy and safety of drugs, and methods of working with doctors to increase their knowledge of personalized medicine. - Knows about the tasks, place, methodology, achievements and problems of pharmacogenetics and pharmacogenomics, the basics of using the results of pharmacogenetics studies in the formation of the principles of personalized medicine and standardization in healthcare - in the field of rational pharmacotherapy; 	<p>frequency and duration of drug administration.</p> <ul style="list-style-type: none"> - Able to use types of literature (educational, scientific, reference) and computer databases on clinical pharmacology and evidence-based medicine. - Is able to control and make a forecast of the risk of side effects of drugs; - Able to prevent and apply correction methods when they occur; - Able to apply clinical protocols for diagnosis and treatment of diseases. - Able to independently acquire new knowledge in this discipline, analyze it, apply the knowledge gained in practice and in the study of other disciplines, as well as to solve urgent practical problems in the field of pharmaceuticals; describe the various techniques and methods of pharmacogenetics; - Able to discuss the benefits and limitations of pharmacogenetics and pharmacogenomics; - Able to identify the key problems of the widespread introduction of the principles of pharmacogenetics in health systems; - Able to critically evaluate publications on the results of research in the field of pharmacogenetics. 	<ul style="list-style-type: none"> - He argues the formulary list based on the protocol of treatment. - Understands the essence and internal nature of pharmacogenetics and the main pharmacokinetic processes that determine the possibility of population analysis;
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12. Prerequisites: pharmacology, biochemistry, clinical pharmacology, evidence-based medicine, genetics, pharmacogenetics, molecular biology.

13. Post requisites: professional development.

14. Literature:

Primary:

1. Kalieva, S. S. Clinical pharmacology and rational pharmacotherapy. Volume 1: textbook / Sh. S. Kaliev., N. A. Minakova. - Almaty: Evero, 2016. -- 460

2. Kalieva, C. S. Clinical pharmacology and rational pharmacotherapy. Volume 2: textbook / S. S. Kaliev, N. A. Simokhin. - Almaty: Evero, 2016 .-- 288 p.
3. Greenhalh T. Fundamentals of evidence-based medicine: textbook: translation from English / ed. G.S. Kemelov; Audit in the Kazakh language. Sagadatova TK –M .: GEOTAR-Media, 2014
4. Kulmaganbetov, I. R. Pharmacology Clinic. Line 1: About Uralsk / I.R. Kulmaganbetov. - Almaty: Euro, 2014 .-- 320 p.
5. Kulmaganbetov, I. R. Pharmacology Clinic. Part II: reading Uralsk / I.R. Kulmaganbetov. - Almaty: Euro, 2014 .-- 392 p.
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Additional:

1. Rational pharmacotherapy in oncology: hand, for practicing physicians / ed. MI Davydova, VA Gorbunova. - М .: GEOTAR- Media, 2015. -844p.
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4. Rakhimov K.D. Guidelines for the safe use of medicines: a guide / K.D. Rakhimov, K.A. Zordinova; Ministry of Health of the Republic of Kazakhstan; Almaty state Institute of Advanced Doctors Research Institute of Pharmacology and Toxicology; National Acad. Sciences of the Republic of Kazakhstan .- Almaty: B. and., 2009.- 244s.

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- 2 .. Doctor's consultant. Clinical Pharmacology. Version 1.1 [Electronic resource]: manual. - The electron. text data (132 Mb). - М.: Publishing Group "GEOTAR-Media", 2010. - Email. opt. disk (CD-ROM).

1. Department: pharmacology, pharmacotherapy and clinical pharmacology

2. Level of training: master

3. OP: "Medicine", scientific and pedagogical direction

4. Course: 1

5. Name of elective discipline: Personalized pharmacotherapy

6. Number of credits: 5

7. Purpose: to teach undergraduates in the OP “Medicine” to conduct rational pharmacotherapy of various diseases in their practical activities, taking into account the optimization and personalization of prevention and treatment, to avoid unwanted side effects by identifying the individual characteristics of the body.

8. Tasks:

- teach methodologies for rational prescribing of drugs taking into account the individual characteristics of the patient;

- teach to predict and evaluate side effects of drugs, taking into account the individual characteristics of the patient;
- teach to evaluate the possible interactions of drugs taking into account the individual characteristics of the patient;

9. The content of the discipline: Issues of rational pharmacotherapy, personalized approaches to pharmacotherapy, which involves the use of clinical and pharmacological technologies (determination of biomarkers, pharmacogenetic and pharmacotranscriptome tests), identifying individual characteristics of patients for effective and safe pharmacotherapy, which require monitoring of drug efficacy and safety, the principle of rationality of pharmacotherapy, the choice of the most appropriate drugs (combination of drugs), medicine hydrochloric forms, doses and routes of administration and duration of pharmacotherapy forecast, reduce the risk of adverse drug reactions.

10. Justification of the choice of discipline: The elective discipline "Personalized Pharmacotherapy" is the final link in the chain of study of biomedical disciplines at the Faculty of Medicine. As an integrative subject, "Personalized Pharmacotherapy" combines a number of logically related, harmoniously complementary disciplines: pharmacology, biochemistry, clinical pharmacology, evidence-based medicine, genetics, pharmacogenetics, molecular biology and OMICS technologies.

11. Learning outcomes (competency):

Knowledge (cognitive sphere)	Skills (psychomotor sphere)	Personalities and professional competencies (relationships)
<ul style="list-style-type: none"> - Knows the features of the pharmacokinetics and pharmacodynamics of drugs and methods for assessing the quality of life of a particular patient - Knows risk factors and clinical manifestations of major adverse drug reactions. - Knows methods for assessing the quality of life, the basic principles of dosage of drugs, depending on the pathological and physiological parameters of the human body. - Knows the main types of drug interactions. - Knows methods for assessing the clinical efficacy and safety of drugs, and methods of working with doctors to increase their knowledge of personalized medicine. 	<ul style="list-style-type: none"> - Able to make the choice of the most effective and safe and affordable medicines for the rational use of drugs, taking into account age-related aspects and the condition of patients, determine the optimal dosage regimen; - Able to choose methods of monitoring the safety of treatment and predict the risk of side effects of drugs; - Able to provide informational and advisory assistance to doctors in choosing the dosage form of the drug, dose, frequency and duration of drug administration. - Able to use types of literature (educational, scientific, reference) and computer databases on clinical pharmacology and evidence-based medicine. 	<ul style="list-style-type: none"> - Competent in determining the causes and consequences of irrational use of drugs; - Understands the strengths and weaknesses of various strategies to improve drug use; - Advises doctors on the rational use of drugs. - Consult doctors and patients; - Formulates the problems of rational use of medicines. - He argues the formulary list based on the protocol of treatment. - Understands the essence and internal nature of pharmacogenetics and the main pharmacokinetic processes that determine the possibility of population analysis;

<ul style="list-style-type: none"> - Knows about the tasks, place, methodology, achievements and problems of pharmacogenetics and pharmacogenomics, the basics of using the results of pharmacogenetics studies in the formation of the principles of personalized medicine and standardization in healthcare - in the field of rational pharmacotherapy; 	<ul style="list-style-type: none"> - Is able to control and make a forecast of the risk of side effects of drugs; - Able to prevent and apply correction methods when they occur; - Able to apply clinical protocols for diagnosis and treatment of diseases. - Able to independently acquire new knowledge in this discipline, analyze it, apply the knowledge gained in practice and in the study of other disciplines, as well as to solve urgent practical problems in the field of pharmaceuticals; describe the various techniques and methods of pharmacogenetics; - Able to discuss the benefits and limitations of pharmacogenetics and pharmacogenomics; - Able to identify the key problems of the widespread introduction of the principles of pharmacogenetics in health systems; - Able to critically evaluate publications on the results of research in the field of pharmacogenetics. 	
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12. Prerequisites: pharmacology, biochemistry, clinical pharmacology, evidence-based medicine, genetics, pharmacogenetics, molecular biology.

13. Post requisites: professional development.

14. Literature:

Primary:

1. Kalieva, S. S. Clinical pharmacology and rational pharmacotherapy. Volume 1: textbook / Sh. S. Kaliev., N. A. Minakova. - Almaty: Evero, 2016.-- 460

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3. Greenhalh T. Fundamentals of evidence-based medicine: textbook: translation from English / ed. G.S. Kemelov; Audit in the Kazakh language. Sagatova TK –M .: GEOTAR-Media, 2014

4. Kulmaganbetov, I. R. Pharmacology Clinic. Line 1: About Uralsk / I.R. Kulmaganbetov. - Almaty: Euro, 2014.-- 320 p.

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6. Petrov VI Medicine, based on evidence: textbook. allowance / VI Petrov, SV Недогода.-; Рек. Educational-methodical unit. on med. and farm. education of Russian universities. - М .: ГЭОТАР- Медиа, 2012

Additional:

1. Rational pharmacotherapy in oncology: hand, for practicing physicians / ed. MI Davydova, VA Gorbunova. - М .: GEOTAR- Media, 2015. -844p.

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3. Lecture complex - the subject of using the results of the lesson: lecture complex / pharmacology, pharmacotherapy, clinic wife, pharmacology of the department. - Shymkent: SKSPhA, 2016. - 65 p.

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2 .. Doctor's consultant. Clinical Pharmacology. Version 1.1 [Electronic resource]: manual. - The electron. text data (132 Mb). - М.: Publishing Group "GEOTAR-Media", 2010. - Email. opt. disk (CD-ROM).

1. Department: Pharmacology, Pharmacotherapy and Clinical Pharmacology

2. Level of training: master

3. OP: "Medicine", scientific and pedagogical direction

4. Course: 2

5. The name of the elective discipline: "Therapeutic drug monitoring"

6. Number of loans: 5

7. Purpose: to teach undergraduates in the OP "Medicine" the methodology of maintaining the optimal concentration of the drug at the site of action, especially for drugs that have a narrow therapeutic corridor to optimize pharmacotherapy.

8. Tasks:

- **teach the methodology of therapeutic drug monitoring;**
- teach to control the concentration of drugs in blood plasma in order to select an individual dosage regimen of the drug;
- Teach you how to evaluate potential drug interactions.

9. The content of the discipline: Therapeutic drug monitoring; determination of the concentration of a drug substance and its metabolites in body fluids in order to monitor the ongoing drug therapy.

Clarification of the reasons for the lack of effectiveness of pharmacotherapy, prevention or confirmation of toxic effects. Clarification of the causes of nonlinear kinetics of the drug (lack of a direct relationship between the dose of the drug and its concentration in the blood). The use of drugs in groups of patients with potential pharmacological variability (senile / childhood, pregnancy). Schemes of therapeutic drug monitoring.

10. Justification of the choice of discipline: The elective discipline "Therapeutic drug monitoring" is the final link in the chain of study of biomedical disciplines at the Faculty of Medicine. As an integrative subject, "Therapeutic Drug Monitoring" combines a number of logically related, harmoniously complementary disciplines: pharmacology, pharmacotherapy, clinical pharmacology, analytical chemistry, bio-chemistry, pharmacogenetics.

11. Learning outcomes (competency):

Knowledge (cognitive sphere)	Skills (psychomotor sphere)	Personalities and professional competencies (relationships)
<ul style="list-style-type: none"> - Knows the features of the pharmacokinetics and pharmacodynamics of drugs and methods for assessing the quality of life of a particular patient - Knows risk factors and clinical manifestations of major adverse drug reactions. - Knows methods for assessing the quality of life, the basic principles of dosage of drugs, depending on the pathological and physiological parameters of the human body. - Knows the main types of drug interactions. - Knows methods for assessing the clinical efficacy and safety of drugs, and methods of working with doctors to increase their knowledge of personalized medicine. - Knows about the tasks, place, methodology, achievements and problems of pharmacogenetics and pharmacogenomics, the basics of using the results of pharmacogenetics studies in the formation of the principles of personalized medicine and standardization in healthcare - in the field of rational pharmacotherapy; 	<ul style="list-style-type: none"> - Able to make the choice of the most effective and safe and affordable medicines for the rational use of drugs, taking into account age-related aspects and the condition of patients, determine the optimal dosage regimen; - Able to choose methods of monitoring the safety of treatment and predict the risk of side effects of drugs; - Able to provide informational and advisory assistance to doctors in choosing the dosage form of the drug, dose, frequency and duration of drug administration. - Able to use types of literature (educational, scientific, reference) and computer databases on clinical pharmacology and evidence-based medicine. - Is able to control and make a forecast of the risk of side effects of drugs; - Able to prevent and apply correction methods when they occur; - Able to apply clinical protocols for diagnosis and treatment of diseases. - Able to independently acquire new knowledge in this discipline, analyze it, apply the knowledge gained in practice and in the study of other disciplines, as well as to solve 	<ul style="list-style-type: none"> - Competent in determining the causes and consequences of irrational use of drugs; - Understands the strengths and weaknesses of various strategies to improve drug use; - Advises doctors on the rational use of drugs. - Consult doctors and patients; - Formulates the problems of rational use of medicines. - He argues the formulary list based on the protocol of treatment. - Understands the essence and internal nature of pharmacogenetics and the main pharmacokinetic processes that determine the possibility of population analysis;

	<p>urgent practical problems in the field of pharmaceuticals; describe the various techniques and methods of pharmacogenetics;</p> <ul style="list-style-type: none"> - Able to discuss the benefits and limitations of pharmacogenetics and pharmacogenomics; - Able to identify the key problems of the widespread introduction of the principles of pharmacogenetics in health systems; - Able to critically evaluate publications on the results of research in the field of pharmacogenetics. 	
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12. Prerequisites: pharmacology, biochemistry, clinical pharmacology, evidence-based medicine, genetics, pharmacogenetics, molecular biology.

13. Post requisites: professional development.

14. Literature:

Primary:

1. Kalieva, S. S. Clinical pharmacology and rational pharmacotherapy. Volume 1: textbook / Sh. S. Kaliev., N. A. Minakova. - Almaty: Evero, 2016 .-- 460

2. Kalieva, C. S. Clinical pharmacology and rational pharmacotherapy. Volume 2: textbook / S. S. Kaliev, N. A. Simokhin. - Almaty: Evero, 2016 .-- 288 p.

3. Greenhalh T. Fundamentals of evidence-based medicine: textbook: translation from English / ed. G.S. Kemelov; Audit in the Kazakh language. Sagatova TK –M .: GEOTAR-Media, 2014

4. Kulmaganbetov, I. R. Pharmacology Clinic. Line 1: About Uralsk / I.R. Kulmaganbetov. - Almaty: Euro, 2014 .-- 320 p.

5. Kulmaganbetov, I. R. Pharmacology Clinic. Part II: reading Uralsk / I.R. Kulmaganbetov. - Almaty: Euro, 2014 .-- 392 p.

6. Petrov VI Medicine, based on evidence: textbook. allowance / VI Petrov, SV Недогода.-; Рек. Educational-methodical unit. on med. and farm. education of Russian universities. - M .: ГЭОТАР- Медиа, 2012

Additional:

1. Rational pharmacotherapy in oncology: hand, for practicing physicians / ed. MI Davydova, VA Gorbunova. - M .: GEOTAR- Media, 2015. -844p.

2. Petrov VI Clinical pharmacology and pharmacotherapy in real medical practice: master class: textbook / VI Petrov.-; Рек. GOU DPO "Russian Med. acad. postgraduate education. - M .: - M.: GEOTAR-Media, 2011 .-- 880 p.: Ill.

3. Lecture complex - the subject of using the results of the lesson: lecture complex / pharmacology, pharmacotherapy, clinic wife, pharmacology of the department. - Shymkent: SKSPhA, 2016. - 65 p.

4. Rakhimov K.D. Guidelines for the safe use of medicines: a guide / K.D. Rakhimov, K.A. Zordinova; Ministry of Health of the Republic of Kazakhstan; Almaty state Institute of Advanced Doctors Research Institute of Pharmacology and Toxicology; National Acad. Sciences of the Republic of Kazakhstan .- Almaty: B. and., 2009.- 244s.

Electronic editions:

1. Petrov, V. I. Clinical pharmacology and pharmacotherapy in real medical practice, master class [Electronic resource]: textbook / V. I. Petrov. - The electron. text data (63.5 MB). - M.: Publishing Group "GEOTAR-Media", 2011. - 880 p. email opt. disk (CD-ROM).

2 .. Doctor's consultant. Clinical Pharmacology. Version 1.1 [Electronic resource]: manual. - The electron. text data (132 Mb). - M.: Publishing Group "GEOTAR-Media", 2010. - Email. opt. disk (CD-ROM).

1. Department: Pharmacology, Pharmacotherapy and Clinical Pharmacology

2. Level of training: master

3. OP: "Medicine", scientific and pedagogical direction

4. Course: 2

5. Name of elective discipline: “Chemotherapy and toxic effects of chemotherapeutic drugs”

6. Number of loans: 5

7. Purpose:

- to teach undergraduates in the OP “Medicine” to conduct rational chemotherapy of various diseases in their practical activities, taking into account clinical efficacy and toxicity, depending on specific clinical situations and polymorbidity;
- teach methodologies for the rational use of chemotherapeutic drugs for the treatment of various diseases.

8. Tasks:

- teach methodologies for the rational use of chemotherapeutic drugs;
- teach to predict and evaluate the toxic effects of drugs;
- teach to evaluate the possible interactions of drugs taking into account pharmaceutical, pharmacokinetic and pharmacodynamic aspects.

9. The content of the discipline: The basic principles of chemotherapy. The choice of chemotherapeutic agents, dosage form, dose and frequency of administration of the drug. Duration of treatment, monitoring of treatment, the possibility of undesirable effects of chemotherapeutic agents on the human body, including the fetus in pregnant women, as well as in newborns and when breastfeeding.

The rational combination of chemotherapeutic agents. Use in children, taking into account their anatomical and physiological characteristics. Toxic effects. Measures to eliminate or reduce the adverse reactions of chemotherapeutic agents. Preventive chemotherapy. Combination chemotherapy.

10. Justification of the choice of discipline: The elective discipline "Chemotherapy and toxic effects of chemotherapeutic drugs" is the final link in the chain of study of biomedical disciplines at the Faculty of Pharmacy. As an integrative subject “Chemotherapy and toxic effects of chemotherapeutic drugs”

combines a number of logically connected, harmoniously complementary disciplines: pharmacology, pharmacotherapy, clinical pharmacology, biochemistry, pharmacogenetics and clinical toxicology.

11. Learning outcomes (competency):

Knowledge (cognitive sphere)	Skills (psychomotor sphere)	Personalities and professional competencies (relationships)
<ul style="list-style-type: none"> - Knows the features of the pharmacokinetics and pharmacodynamics of drugs and methods for assessing the quality of life of a particular patient - Knows risk factors and clinical manifestations of major adverse drug reactions. - Knows methods for assessing the quality of life, the basic principles of dosage of drugs, depending on the pathological and physiological parameters of the human body. - Knows the main types of drug interactions. - Knows methods for assessing the clinical efficacy and safety of drugs, and methods of working with doctors to increase their knowledge of personalized medicine. - Knows about the tasks, place, methodology, achievements and problems of pharmacogenetics and pharmacogenomics, the basics of using the results of pharmacogenetics studies in the formation of the principles of personalized medicine and standardization in healthcare - in the field of rational pharmacotherapy; 	<ul style="list-style-type: none"> - Able to make the choice of the most effective and safe and affordable medicines for the rational use of drugs, taking into account age-related aspects and the condition of patients, determine the optimal dosage regimen; - Able to choose methods of monitoring the safety of treatment and predict the risk of side effects of drugs; - Able to provide informational and advisory assistance to doctors in choosing the dosage form of the drug, dose, frequency and duration of drug administration. - Able to use types of literature (educational, scientific, reference) and computer databases on clinical pharmacology and evidence-based medicine. - Is able to control and make a forecast of the risk of side effects of drugs; - Able to prevent and apply correction methods when they occur; - Able to apply clinical protocols for diagnosis and treatment of diseases. - Able to independently acquire new knowledge in this discipline, analyze it, apply the knowledge gained in practice and in the study of other disciplines, as well as to solve urgent practical problems in the field of pharmaceuticals; describe the various techniques and methods of pharmacogenetics; 	<ul style="list-style-type: none"> - Competent in determining the causes and consequences of irrational use of drugs; - Understands the strengths and weaknesses of various strategies to improve drug use; - Advises doctors on the rational use of drugs. - Consult doctors and patients; - Formulates the problems of rational use of medicines. - He argues the formulary list based on the protocol of treatment. - Understands the essence and internal nature of pharmacogenetics and the main pharmacokinetic processes that determine the possibility of population analysis;

	<ul style="list-style-type: none"> - Able to discuss the benefits and limitations of pharmacogenetics and pharmacogenomics; - Able to identify the key problems of the widespread introduction of the principles of pharmacogenetics in health systems; - Able to critically evaluate publications on the results of research in the field of pharmacogenetics. 	
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