Appendix number 1.5 to The Rector UR Resolution No. 12/2019

SYLLABUS

**concerning the cycle of education 2024-2030**

(date range)

* 1. BASIC INFORMATION CONCERNING THIS SUBJECT / MODULE

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| --- | --- |
| Subject / Module | PHARMACOLOGY with TOXICOLOGY |
| Course code / module \* | Fm/C |
| Faculty of (name of the leading direction) | Medical College of Rzeszów University |
| Department Name | Department of Experimental and Clinical Pharmacology |
| Field of study | medical direction |
| Level of education | uniform master's studies |
| Profile | practical |
| Form of study | stationary / extramural |
| Year and semester | year IV, semester VIII |
| Type of course | obligatory |
| Coordinator | prof. dr hab. n. med. Piotr Tutka |
| First and Last Name of the Teacher | prof. dr hab. n. med. Piotr Tutka  dr hab. n. med. inż. Dorota Bartusik-Aebisher  mgr farm. Patrycjusz Kołodziejczyk |

\* - According to the resolutions of the Faculty of Medicine

1.2. Forms of classes, number of hours and ECTS

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Lecture | Exercise | Conversation | Laboratory | Seminar | ZP | Practical | Self-learning | **Number of points ECTS** |
| 10 | 40 |  |  |  |  |  |  | 4 |

1.3. The form of class activities

☒classes are in the traditional form

☐classes are implemented using methods and techniques of distance learning

1.4. Examination Forms / module (exam, credit with grade or credit without grade)

2. REQUIREMENTS

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| Basics of knowledge in the field of anatomy, physiology, biochemistry, microbiology and pathology.  Knowledge, skills and competences of the above subjects according to the program of studies of the first, second and third year.  Passing semesters 6 and 7 in the field of pharmacology. |

**3. OBJECTIVES, OUTCOMES, AND PROGRAM CONTENT USED IN TEACHING METHODS**

* 1. Objectives of this course/module

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| --- | --- |
| C1 | Acquisition of knowledge by the student on the pharmacological action of drugs, indications and contraindications to their use, side effects and interactions between drugs used in the therapy of various diseases |
| C2 | Understanding the mechanisms of action of drugs, their fate in the body and interaction |
| C3 | Acquisition of knowledge and skills to recognize and properly respond to adverse and toxic drug reactions |
| C4 | The acquisition of the ability to use the sources of information on medicines correctly (databases, characteristics of publications) and to interpret the knowledge contained therein |
| C5 | Obtain basic knowledge about the separateness of pharmacotherapy of children, the elderly, pregnant women and patients with liver and kidney damage and the ability to modify drug doses in these conditions |
| C6 | Substantive preparation and shaping of the student's attitude to use knowledge about medicines in clinical practice |
| C7 | Acquiring the ability to save ready-made and prescription drugs |
| C8 | Acquisition of knowledge and skills in the field of treatment of life-threatening conditions |

3.2 OUTCOMES FOR THE COURSE / MODULE (TO BE COMPLETED BY THE COORDINATOR)

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| --- | --- | --- |
| EK (the effect of education) | The content of the learning effect defined for the subject (module) | Reference to directional effects (KEK) |
| EK­\_01 | characterizes individual groups of therapeutic agents, | C.W34. |
| EK\_02 | knows the main mechanisms of action of drugs and their changes in the system depending on age, | C.W35. |
| EK\_03 | determines the influence of disease processes on the metabolism and elimination of medicines, | C.W36. |
| EK\_04 | knows the basic rules of pharmacotherapy, | C.W37. |
| EK\_05 | knows the more important side effects of medicines, including those resulting from their interaction, | C.W38. |
| EK\_06 | understands the problem of drug resistance, including multidrug drug resistance | C.W39. |
| EK\_07 | knows the indications for genetic tests carried out to individualize pharmacotherapy, | C.W40. |
| EK\_08 | knows the group of drugs whose abuse can lead to poisoning, | C.W43. |
| EK\_09 | performs simple pharmacokinetic calculations, | C.U13. |
| EK\_10 | selects drugs at appropriate doses to correct pathological phenomena in the body and in particular organs, | C.U14. |
| EK\_11 | correctly prepares records of all forms of prescription medicinal substances, | C.U16. |
| EK\_12 | uses pharmaceutical guides and databases on medicinal products, | C.U17. |
| EK\_13 | knows the rules of pharmaceutical law, | G.W11. |
| EK\_14 | recognizes the symptoms of drug dependence and proposes therapeutic treatment, | E.U19. |
| EK\_15 | interprets the pharmaceutical characteristics of medicinal products and critically assesses advertising materials regarding medicines, | E.U31. |

**3.3 CONTENT CURRICULUM (filled by the coordinator)**

1. **Lectures**

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| **Course contents** |
| 1. Drugs used in diseases of the respiratory system. Principles of treatment of bronchial asthma and bronchospasm.  2. Drugs used in diseases of the digestive system.  3. Anticoagulants, thrombolytics and antiplatelet agents.  4. The neurotransmitters of the central nervous system. Central mechanisms of drug action.  5. Benzodiazepines and other anxiolytic drugs. Sleeping pills.  6. Antipsychotic drugs.  7. Antidepressants and mood stabilizers.  8. Narcotic and non-narcotic analgesics. Principles of pain treatment.  9. Non-steroidal anti-inflammatory drugs. Antipyretic drugs.  10. Addiction to psychoactive substances and their treatment. Treatment of tobacco addiction syndrome. |

**B**. E**xercises**

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| **Course contents** |
| 1. Drugs used in diseases of the respiratory system (bronchodilators, antitussive, expectorants, mucolytics, anti-inflammatory, anti-infective agents). The rules of treatment of bronchial asthma.  2. Drugs used in diseases of the digestive system (antiemetics, affecting gastrointestinal motility, antidiarrheal, laxative, anti-infective). Principles of treatment of gastroesophageal reflux disease and peptic ulcer disease. Treatment of Helicobacter pylori infections. Pharmacotherapy for inflammatory bowel diseases. Drugs used in liver diseases. Drugs used in diseases of the pancreas.  3. Hematopoietic agents (growth factors, minerals, vitamins). Blood. Blood substitutes and blood derivatives. Drugs used to treat anemia. Anticoagulants. Fibrinolytics. Antiplatelet drugs.  4. Neurotransmission in the central nervous system. Neuropeptides. Anesthetics, general and local. Principles of surgical anesthesia. Skeletal muscle relaxants.  5. Calming drugs. Anxiolytics. Sleeping pills.  6. Antipsychotic (neuroleptic) drugs.  7. Antidepressants. Principles of treatment of depressive disorders. Drugs stabilizing the mood.  Test I (material from exercises 1-6).  8. Antiepileptic drugs. Rules for the treatment of epilepsy. Drugs used in degenerative diseases of the central nervous system (drugs in Parkinson's disease, Alzheimer's disease, Huntington's disease and amyotrophic lateral sclerosis).  9. Opioid analgesics. Pain therapy.  10. Other painkillers. Eicosanoids. Non-steroidal anti-inflammatory drugs. Antipyretic drugs. Drugs used in gout. Pharmacotherapy for rheumatoid arthritis.  11. Addiction to drugs and psychoactive substances. Pharmacotherapy for nicotine addiction. Ethanol.  12. Drugs used in ophthalmology.  Test II (material from exercises 7-11)  13. Recent advances in pharmacology (part II).  14. Repetition of the recipe.  15. Repetition of the semester 3.  Practical exam: a recipe (material from 3 semesters). |

**3.4 TEACHING METHODS**

**Lecture:** Problem and information lecture with multimedia presentation.

**Exercises:** Working in groups. Solving tasks and clinical problems. Discussion. Analysis of clinical cases. Working with a database. Preparing a presentation.

4 METHODS AND EVALUATION CRITERIA

4.1 Methods of verification of learning outcomes

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| --- | --- | --- |
| Symbol of effect | Methods of assessment of learning outcomes (Eg.: tests, oral exams, written exams, project reports, observations during classes) | Form of classes |
| EK\_1 | oral answer, colloquium, test exam | Lecture, Exercises |
| EK\_2 | oral answer, colloquium, test exam | Lecture, Exercises |
| EK\_3 | oral answer, colloquium, test exam | Lecture, Exercises |
| EK\_4 | oral answer, colloquium, test exam | Lecture, Exercises |
| EK\_5 | oral answer, colloquium, test exam | Lecture, Exercises |
| EK\_6 | oral answer, colloquium, test exam | Lecture, Exercises |
| EK\_7 | colloquium, written exam | Lecture, Exercises |
| EK\_8 | oral answer, colloquium, test exam | Lecture, Exercises |
| EK\_9 | test exam, written test | Exercises |
| EK\_10 | oral answer, colloquium, test exam | Lecture, Exercises |
| EK\_11 | oral answer, colloquium, test exam | Exercises |
| EK\_12 | oral answer, presentation | Exercises |
| EK\_13 | Oral answer | Exercises |
| EK\_14 | oral answer, colloquium, test exam, | Lecture, Exercises |
| EK\_15 | Oral answer | Exercises |

4.2 Conditions for completing the course (evaluation criteria)

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| The condition for passing the subject is:  - presence on all exercises and attendance at lectures  - demonstration of knowledge and skills at least on a sufficient level as regards the material in accordance with the program (see substantive content)  - demonstrating skills of critical analysis of acquired information and application of pharmacological knowledge in contact with the patient  - obtaining at least a satisfactory grade from the final exam of the subject  The grade from the pass will be the resultant of all learning outcomes, i.e. the knowledge, skills and social competences of the student will be based on internal regulations, which assumes gathering of partial points of students. The point score will include oral answers, written tests (eg in terms of recipes), final tests (minimum two per semester), assessment of activity (assessment of competences and attitudes). The condition for passing the subject and taking the final exam will be obtaining the minimum number of points determined in the regulations. The final mark in the semester will depend on the number of points obtained. Students who do not get the required minimum number of points will not be able to take the final exam and will have to pass all the material in the form of a test.  Final exam: will take place after the end of the semester in the exam session. The exam will consist of a practical part (saving prescriptions) and a test exam. The test exam will have the character of a multiple-choice test and cover the whole issues of the pharmacology course. The criterion for a positive grade in the final exam is to give correct answers to at least 60% of the test questions. Detailed rules regarding the final exam (conditions, form, dates, evaluation criteria) will be included in the regulations. |

5. Total student workload required to achieve the desired result in hours and ECTS credits

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| --- | --- |
| Activity | Hours / student work |
| Hours of classes according to plan with the teacher | 50 |
| Preparation for classes |  |
| Participation in the consultations |  |
| The time to write a paper / essay |  |
| Preparation for tests |  |
| Participation in colloquia |  |
| Student's own time | 80 |
| SUM OF HOURS | 130 |
| TOTAL NUMBER OF ECTS | 4 |

6. TRAINING PRACTICES IN THE SUBJECT / MODUL

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| --- | --- |
| Number of hours |  |
| Rules and forms of apprenticeship |  |

1. LITERATURE

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| **READING:**   1. Brenner G. M., Stevens C. W., Farmakologia, 2010 2. Wielosz M., Receptura dla studentów medycyny i stomatologii, 1998 |
| Additional literature:   1. Wojciech K., Zbigniew H., Farmakologia - podstawy farmakoterapii. Tom I i II, 2004 2. Katzung B.G., Masters S.B., Trezor A.J., pod red. Buczko W., Farmakologia ogólna i kliniczna, Tom I i II, 2012 3. Mutschler E., Geisslinger G., Kroemer H.K, Ruth P., pod red. Buczko W., Farmakologia i toksykologia Mutschlera, 2012 4. Rang H.P., Dale M.M., Ritter J.M., pod red. Mirowska D., Farmakologia Rang i Dale, 2014 5. Korbut R., Olszanecki R., Wołkow P., Jawień J., Farmakologia, 2012 6. Brunton L.L., Lazo J.S., Parker K.L. pod red. Buczko W., Farmakologia Goodmana & Gilmana. Tom I i II, 2007 7. Petrusewicz J., Gągało I., Hać E., Strzałkowska-Grad H., Farmakologia: zbiór pytań testowych dla studentów medycyny i stomatologii, 2002 8. Nowak P, Herman Z.S., Brus R., Receptura dla lekarzy, studentów medycyny i stomatologii, 2005 9. Danysz A., Buczko W., Kompendium farmakologii i farmakoterapii. Podręcznik dla studentów medycyny, 2008 |

Acceptance Unit Manager or authorized person