Załącznik nr 5 do zarządzenia nr 189/2025

# COURSE SPECIFICATION

**Course code: 0912.4.LEK.C.PT**

**Course title in Polish: Farmakologia z toksykologią**
**Course title in English: Pharmacology with toxicology**

## 1. Placement of the course within the study programme

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|---|---|
| **1.1. Field of study** | Medicine |
| **1.2. Mode of study** | Full-time |
| **1.3. Level of study** | Uniform Master's study |
| **1.4. Profile of study** | General academic |
| **1.5. Course specification author** | dr Piotr Rafalski |
| **1.6. Contact** | piotr.rafalski@ujk.edu.pl |

## 2. General characteristics of the course

| | |
|---|---|
| **2.1. Language of instruction** | English |
| **2.2. Entry requirements** | Physiology, biochemistry |

## 3. Detailed characteristics of the course

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|---|---|
| **3.1. Type of classes** | Lectures (including e-learning); classes (including e-learning) |
| **3.2. Place of course delivery** | Lectures and classes – courses in teaching rooms of the UJK, e-learning platform |
| **3.3. Form of assessment** | Written final exam (test); classes - two semester tests<br><br>Students are required to be prepared for classes (according to the specified outline). Students should actively participate in class discussions. Students take the test of theoretical knowledge at the end of each semester.<br><br>Course ends with an exam after completing the 6th semester of III year. Students who have completed the 5th and 6th semester are admitted to the final exam. |
| **3.4. Teaching methods** | Conversational lecture, discussion. |
| **3.5.a. Basic reading list** | 1. Katzung BG: Basic and clinical pharmacology.16th Ed. McGraw Hill Education Lange 2023<br>2. Brenner GM, Stevens CW: Brenner and Stevens' Pharmacology. 6th Ed. Elsevier 2022 |
| **3.5.b. Supplementary reading list** | 3. Whalen K: Lippincott's Illustrated Reviews: Pharmacology. 8th Ed. Wolters Kluwer 2022<br>4. Brunton LL et al.: Goodman & Gilman's The Pharmacological Basis of Therapeutics. 14th Ed. McGraw Hill 2022 |

## 4. Objectives, content and learning outcomes

### 4.1. Course objectives (taking into account the form of classes)

- **CO1.** Familiarization of students with the major classes of drugs used in clinical medicine, including their mechanisms of action, primary therapeutic indications, and representative agents.
- **CO2.** Acquisition of the ability to select the appropriate drug class and justify the choice of a specific drug based on clinical diagnosis, underlying pathophysiology, and current therapeutic guidelines.
- **CO2.** Familiarization of the student with major adverse drug reactions, contraindications, and clinically significant drug-drug interactions to minimize risks and ensure patient safety.

### 4.2. Course content (taking into count the form of classes)

**Lectures (1st semester)**

1. Introduction to pharmacology; homeopathy; diet supplements; the food for specific groups
2. Introduction to pharmacodynamics; introduction to pediatric and geriatric pharmacology; drug interactions
3. Drugs acting at synaptic and neuroeffector junctional sites
4. Drugs acting on skeletal and smooth muscles
5. Local anesthetics
6. Cannabinoids
7. Treatment of gout

(including classes conducted with the use of distance learning methods and techniques)

8. Antiepileptics

**Classes (1st semester)**

1. Pharmacology of autonomic nervous system - sympathetic nervous system
2. Pharmacology of autonomic nervous system - parasympathetic nervous system
3. Drugs acting on the central nervous system: antipsychotics
4. Drugs acting on the central nervous system: antidepressants
5. Drugs acting on the central nervous system: anxiolytics, sedatives and hypnotics
6. General anesthetics
7. Therapy of neurodegenerative diseases
8. Autacoids
9. Analgesic-antipyretic and anti-inflammatory drugs.
10. Opioid receptor agonists and antagonists
11. Drug addiction and drug abuse.

(including classes conducted with the use of distance learning methods and techniques)

12. Anti-arrhythmic drugs

**Lectures (2nd semester)**

1. Drugs used in respiratory diseases
2. Drugs affecting renal and cardiovascular function
3. Treatment of hypertension
4. Treatment of heart failure; treatment of myocardial ischemia
5. Treatment of pulmonary hypertension
6. Drugs acting on the blood and blood forming organs I: anticoagulant, antiplatelet drugs
7. Drugs acting on the blood and blood forming organs II: thrombolytic and hematopoietic agents

(including classes conducted with the use of distance learning methods and techniques)

8. Basic concepts of clinical toxicology

**Classes (2nd semester)**

1. Therapy of asthma and COPD
2. Therapy of hypercholesterolemia and dyslipidemia
3. Drugs affecting gastrointestinal function; drugs used for control of gastric acidity, treatment of peptic ulcers, prokinetic drugs, antiemetic drugs, drugs used in diarrhea, constipation
4. Hormones and hormone antagonists; pituitary hormones, thyroid and antithyroid drugs, estrogens and progestins, androgens, adrenocortical hormones
5. Treatment of diabetes: oral hypoglycemic agents; insulin, glucagon
6. Agents affecting calcification and bone turnover.
7. Chemotherapy of bacterial infections
8. Chemotherapy of viral, fungal and parasitic infections
9. Chemotherapy of neoplastic diseases
10. Treatment of water-electrolyte imbalance
11. Immunotherapy ; immunosuppressants
12. Vitamins and diet supplements

### 4.3. Course learning outcomes

| Course learning outcomes (code) | Upon completion of the course, the student | Alignment with programme learning outcomes |
|---|---|---|
| | **in the area of knowledge knows and understands:** | |
| W01 | Genetic mechanisms of drug resistance acquisition by microorganisms and tumor cells; | C.W9. |
| W02 | Individual groups of drugs, their main mechanisms and effects, basic indications and contraindications and basic pharmacokinetic and pharmacodynamic parameters; | C.W28. |
| W03 | Physiological and disease conditions of absorption, metabolism and elimination of drugs by the human body; | C.W29. |
| W04 | The basic principles of pharmacotherapy including its effectiveness and safety, the need to individualize treatment, including those resulting from pharmacogenetics; | C.W30. |
| W05 | The most important side effects of drugs, their interaction and the problem of polypharmacy; | C.W31. |
| W06 | The problem of drug resistance, including multi-drug resistance and principles of rational antibiotic therapy; | C.W32. |

| | | |
|---|---|---|
| W07 | Possibilities and types of biological, cell, gene and targeted therapy in specific diseases; | C.W33. |
| W08 | The basic concepts of general toxicology; | C.W34. |
| W09 | Groups of drugs which can lead to poisoning when abused; | C.W35. |
| W10 | Symptoms of the most common acute poisonings with selected groups of drugs, alcohols and other psychoactive substances, mushrooms and heavy metals; | C.W36. |
| W11 | Basic principles of diagnostic and therapeutic procedures in poisoning; | C.W37. |
| W12 | The influence of the oxidative stress on cells and its importance in the pathogenesis of diseases and in aging processes; | C.W38. |

**in the area of skills knows how to:**

| | | |
|---|---|---|
| U01 | Perform simple pharmacokinetic calculations; | C.U8. |
| U02 | Select drugs at appropriate doses for correcting the pathological phenomena in the body and in individual organs; | C.U9. |
| U03 | Design the scheme of rational infection chemotherapy, both empirical and targeted; | C.U10. |
| U04 | Prepare transcripts of all forms of prescription of medicinal substances and issue prescriptions, including e-prescriptions, in accordance with legal regulations; | C.U11. |
| U05 | Look for reliable information about medicinal products, with particular emphasis on the Summary of Product Characteristics (SmPC) and databases; | C.U12. |
| U06 | Assess toxicological danger in specific age groups and in the states of liver and kidney failure, as well as prevent drug intoxication; | C.U13. |

**in the area of social competences is able to:**

| | | |
|---|---|---|
| K01 | Recognize his/her own limitations and self-evaluate educational deficiencies and needs; | K.S5. |
| K02 | Use reliable information sources; | K.S7. |
| K03 | Conclude on the basis of own surveys and observations; | K.S8. |
| K04 | Introduce rules of social conduct and teamwork to the group of specialists, including specialists form other medical professions also in the multicultural and multinational environment; | K.S9. |
| K05 | Give opinions concerning various aspects of professional activity; | K.S10. |
| K06 | Take responsibility for own decisions made during professional activities including own safety and safety of other people. | K.S11. |

### 4.4. Assessment methods for learning outcomes

**Assessment method (+/-)**

| Course learning outcomes (code) | Oral/written/ practical examinaion /other (specify)* | Test* | Project* | In-class activity* | Independent study* | Group work* | Other Observation* |
|---|---|---|---|---|---|---|---|

**Type of classes**

| 1: / 2: | L | C | ... | L | C | ... | L | C | ... | L | C | ... | L | C | ... | L | C | ... | L | C | ... |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W01-W12 | + | + | | | | | | | | | | | | | | | | | | | |
| U01-U06 | + | + | | | | | | | | | | | | | | | | | | | |
| K01-K06 | | | | | | | | | | | | | | | | | | | + | + | |

**Annotation. 1: form of classes; 2: learning outcomes**

### 4.5. Assessment criteria for learning outcomes

**Type of classes:**

**LECTURE (L)** (including classes conducted with the use of distance learning methods and techniques)

| Grade | Assessment criteria |
|---|---|
| **3,0** | 61%-68% the maximum points available |
| **3,5** | 69%-76% the maximum points available |
| **4,0** | 77%-84% the maximum points available |
| **4,5** | 85%-92% the maximum points available |
| **5,0** | 93%-100% the maximum points available |

**Type of classes:**

**CLASSES (C)** (including classes conducted with the use of distance learning methods and techniques)

| Grade | Assessment criteria |
|---|---|
| **3,0** | 61%-68% the maximum points available |
| **3,5** | 69%-76% the maximum points available |
| **4,0** | 77%-84% the maximum points available |
| **4,5** | 85%-92% the maximum points available |
| **5,0** | 93%-100% the maximum points available |

### 5. ECTS credit allocation – student workload

| Category | Student workload (full-time mode) | Student workload (part-time mode) |
|---|---|---|
| **NUMBER OF HOURS WITH THE DIRECT PARTICIPATION OF THE TEACHER (CONTACT HOURS)** | **125** | |
| Participation in lectures* | 35 | |
| Participation in seminars/laboratories* | 75 | |
| Other (specify) - classes conducted with the use of distance learning methods and techniques* | 15 | |
| **INDEPENDENT STUDY (NON-CONTACT HOURS)** | **100** | |
| Preparation for lectures* | 40 | |

| | | |
|---|---|---|
| Preparation for seminars/laboratories* | 60 | |
| Preparation for examination/test* | | |
| Gathering materials for project, online research* | | |
| Preparation of a multimedia presentation* | | |
| Other (specify)* | | |
| **TOTAL HOURS** | **225** | |
| **ECTS CREDITS for the course** | **9** | |

*** delete as appropriate**

**Approved for implementation** (date and legible signatures of course instructors in the given academic year):

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