Faculty of Medicine in Rijeka

**Curriculum**
**2024/2025**

For course

# Pharmacology

| | |
|---|---|
| Study program: | **Medical Studies in English (R)**<br>University integrated undergraduate and graduate study |
| Department: | **Department of Basic and Clinical Pharmacology and Toxicology** |
| Course coordinator: | **prof. dr. sc. Pilipović Kristina, dr. med.** |
| Year of study: | **3** |
| ECTS: | **10** |
| Incentive ECTS: | **0 (0.00%)** |
| Foreign language: | **Possibility of teaching in a foreign language** |

## Course information:

**Pharmacology** is a compulsory course in the third year of the Integrated Undergraduate and Graduate University Study of Medicine in English. It consists of 30 hours of lectures, 85 hours of seminars, and 15 hours of practicals - 130 hours (10 ECTS).

**Course objective**

The main aim of the Pharmacology course is to provide the acquisition of necessary knowledge in the area of basic and special pharmacology, as well as in the area of pharmacotoxicology and rational pharmacotherapy.
The objective of the course is for the students to acquire knowledge on the mechanisms of drug actions, their therapeutic and adverse effects, routes of drug administration as well as the indications and contraindications for the use of the most important groups of drugs. The students should also at the end of the course understand the pharmacological characteristics of "prototype" drugs for each pharmacotherapeutic class. Additionally, each student must obtain the skill of prescribing different drug formulations and the ability to use relevant sources of pharmacology literature as a critical approach concerning the quality of each drug.

**Course content:**

**Basic pharmacology**: basic pharmacological terms, pharmacology disciplines, drug nomenclature, mechanisms of drug action, pharmacokinetics, factors affecting drug effects

**Special pharmacology**: pharmacodynamics, pharmacokinetics, indications, contraindications, and adverse effects of the most important pharmacological drug groups and particular drugs

**Toxicology**: drug toxicology

**General principles of clinical pharmacology**: drug discovery and development, preclinical and clinical trials

**Pharmacography**: legal regulations and rules of prescribing different drug formulations

**Course learning outcomes**

**I. Cognitive domain – knowledge**

After having passed the Pharmacology course, students should be able to:

1. describe and explain the general principles of pharmacodynamics and pharmacokinetics,
2. list and describe different factors that modify drug effects,
3. define and explain the types and mechanisms of drug interactions,
4. classify drugs into different groups/subgroups,
5. define, describe, and explain the routes of administration, the mechanisms of action at the molecular and cellular level, pharmacological effects on different organ systems, the main therapeutic indications and contraindications, the most important adverse effects and toxicity of particular drugs that are illustrative examples of pharmacotherapeutic groups and subgroups they belong to,
6. analyze pharmacological effects, pharmacokinetic profile, adverse effects, indications, and contraindications between the drugs that belong to different subgroups within the same drug groups and then compare them,
7. describe the symptoms and therapy of clinically the most important drug poisonings,
8. list clinically important drug interactions, and
9. describe and explain the process of new drug discovery and development.

**II. Psychomotor domain - skills**

After passing the pharmacology course, students should acquire the skills of prescribing different drug formulations.

## List of assigned reading:

1. Katzung BG, Edit., Basic & Clinical Pharmacology, 14th Edition, McGraw-Hill Education, New York, USA, 2018.

2. Bradamante V, Klarica M, Šalković-Petrišić M, Edits. Pharmacology Manual, 1st Edition in English, Medicinska naklada, Zagreb, 2010.

**List of optional reading:**

1. Ritter J., Flower R, Henderson G, Rang H. Rang & Dale's Pharmacology, 8th Edition, Elsevier, Churchill Livingstone, London, UK, 2015.

## Curriculum:

### Lectures list (with titles and explanation):

#### L1 Introductory Lecture; Pharmacology – Disciplines; Nature, development and regulation of drugs

To acquaint students with the content and aims of the course and the Syllabus. To inform students about their rights and obligations. To be able to define and explain certain disciplines of Pharmacology. To be able to define and explain the development process and individual stages of research of new drugs

#### L2 Drug Nomenclature; Transfer of Drugs Across Cell Membranes; Drug Administration, Absorption and Distribution

To be able to explain the features of drug names. To be able to define and explain different routes of drug application. To understand and explain how the drugs pass through cell membranes. To acquire knowledge about the distribution of drugs in the blood and tissues.

#### L3 Biotransformation and Elimination of Drugs; Pharmacogenomics

To know and explain the reactions involved in the process of biotransformation of drugs. To know and understand the basic principles of pharmacogenomics. To know and explain drug elimination pathway

#### L4 Drugs and Organism Characteristics Affecting Drug Activity; Allergic and Idiosyncratic Reactions

To describe and explain the influence of chemical structure, doses, route, and time of drug administration on its activity. To list and explain the mechanisms of drug-drug interactions. To explain the influence of age, body mass, and sex on drug activity. To differ, understand, and explain the characteristics of allergic and idiosyncratic reactions.

#### L5 Adrenoreceptor Agonists and Sympathomimetic Drugs; Adrenoreceptor Antagonist Drugs

To describe and explain the routes of administration of adrenergic receptor agonists and anatagonists as well as other sympathomimetics and sympatholytics, mechanisms of their action, pharmacological effects, main indications, contraindications, side effects and toxicity of certain drugs which are an illustrative example of this pharmacotherapeutic group. To analyze the pharmacological effects, pharmacokinetic profile, adverse effects, indications, and contraindications between the drugs that belong to different subclasses within the same drug groups and then compare them.

#### L6 Antipsychotics; Lithium and the Other Drugs in the Treatment of the Bipolar Disorder

To describe and explain the routes of administration, the mechanisms of action, pharmacological effects, the main indications and contraindications, adverse effects, and toxicity of particular drugs that are illustrative examples of the mentioned pharmacotherapeutic groups they belong to. To analyze the pharmacological effects, pharmacokinetic profile, adverse effects, indications, and contraindications between the drugs that belong to different subclasses within the same drug groups and then compare them.

#### L7 Nonsteroidal Anti-Inflammatory Drugs, Disease-Modifying Antirheumatic Drugs, Nonopioid Analgesics, & Drugs Used in Gout

To describe and explain the routes of administration, the mechanisms of action, pharmacological effects, the main indications and contraindications, adverse effects, and toxicity of particular drugs that are illustrative examples of the mentioned pharmacotherapeutic groups they belong to. To analyze the pharmacological effects, pharmacokinetic profile, adverse effects, indications, and contraindications between the drugs that belong to different subclasses within the same drug groups and then compare them.

#### L8 Opioid Agonists and Antagonists

To describe and explain the routes of administration, the mechanisms of action, pharmacological effects, the main indications and contraindications, adverse effects, and toxicity of particular drugs that are illustrative examples of the mentioned pharmacotherapeutic groups they belong to. To analyze the pharmacological effects, pharmacokinetic profile, adverse effects, indications, and contraindications between the drugs that belong to different subclasses within the same drug groups and then compare them.

#### L9 Sedative-Hypnotic Drugs; Anxiolytics

To describe and explain the routes of administration, the mechanisms of action, pharmacological effects, the main indications and contraindications, adverse effects, and toxicity of particular drugs that are illustrative examples of the

mentioned pharmacotherapeutic groups they belong to. To analyze the pharmacological effects, pharmacokinetic profile, adverse effects, indications, and contraindications between the drugs that belong to different subclasses within the same drug groups and then compare them.

**L10 Antiseizure Drugs; Drugs of Abuse**

To describe and explain the routes of administration, the mechanisms of action, pharmacological effects, the main indications and contraindications, adverse effects, and toxicity of particular drugs that are illustrative examples of the mentioned pharmacotherapeutic groups they belong to. To analyze the pharmacological effects, pharmacokinetic profile, adverse effects, indications, and contraindications between the drugs that belong to different subclasses within the same drug groups and then compare them. To acquire basic knowledge concerning different drugs of abuse and the principles of their toxicity, as well as the symptoms and the treatment of poisonings by them.

**Seminar practicals list (with titles and explanation):**

**SEMINAR-PRACTICAL: Diuretic Agents; Antihypertensive Agents**

To describe and explain the routes of administration, the mechanisms of action, pharmacological effects, the main indications and contraindications, adverse effects, and toxicity of particular drugs that are illustrative examples of the mentioned pharmacotherapeutic groups they belong to. To analyze the pharmacological effects, pharmacokinetic profile, adverse effects, indications, and contraindications between the drugs that belong to different subclasses within the same drug groups and then compare them.

**Seminars list (with titles and explanation):**

**S1 Drug receptors & Pharmacodynamics; Pharmacokinetics & Pharmacodynamics: Rational Dosing & the Time Course of Drug Action**

To list and explain the structure of different receptor classes.

To explain the effects of stimulation of different receptors.

To acquire the knowledge concerning basic pharmacodynamic terms and principles.

To list, define, and explain basic pharmacokinetic terms and principles

**S2 Cholinoceptor-Activating & Cholinesterase-Inhibiting Drugs; Cholinoceptor-Blocking Drugs; Skeletal Muscle Relaxants**

To describe and explain the routes of administration, the mechanisms of action, pharmacological effects, the main indications and contraindications, adverse effects, and toxicity of particular drugs that are illustrative examples of the mentioned pharmacotherapeutic groups they belong to. To analyze the pharmacological effects, pharmacokinetic profile, adverse effects, indications, and contraindications between the drugs that belong to different subclasses within the same drug groups and then compare them.

**S3 Adrenoceptor Agonists & Sympathomimetic Drugs, Adrenoceptor Antagonist Drugs**

To describe and explain the routes of administration, the mechanisms of action, pharmacological effects, the main indications and contraindications, adverse effects, and toxicity of particular drugs that are illustrative examples of the mentioned pharmacotherapeutic groups they belong to.

To analyze the pharmacological effects, pharmacokinetic profile, adverse effects, indications, and contraindications between the drugs that belong to different subclasses within the same drug groups and then compare them.

**S4 Antipsychotic Agents & Lithium; Antidepressant Agents; Drugs Used in Alzheimer’s disease**

To describe and explain the routes of administration, the mechanisms of action, pharmacological effects, the main indications and contraindications, adverse effects, and toxicity of particular drugs that are illustrative examples of the mentioned pharmacotherapeutic groups they belong to. To analyze the pharmacological effects, pharmacokinetic profile, adverse effects, indications, and contraindications between the drugs that belong to different subclasses within the same drug groups and then compare them.

**S5 General Anesthetics; Local Anesthetics; Pharmacologic Management of Parkinsonism & Other**

**Movement Disorders**

To describe and explain the routes of administration, the mechanisms of action, pharmacological effects, the main indications and contraindications, adverse effects, and toxicity of particular drugs that are illustrative examples of the mentioned pharmacotherapeutic groups they belong to. To analyze the pharmacological effects, pharmacokinetic profile, adverse effects, indications, and contraindications between the drugs that belong to different subclasses within the same drug groups and then compare them.

**S6 Drugs Used in Asthma; Histamine, Serotonin & the Ergot Alkaloids: H1-Receptor Antagonists**

To describe and explain the routes of administration, the mechanisms of action, pharmacological effects, the main indications and contraindications, adverse effects, and toxicity of particular drugs that are illustrative examples of the mentioned pharmacotherapeutic groups they belong to. To analyze the pharmacological effects, pharmacokinetic profile, adverse effects, indications, and contraindications between the drugs that belong to different subclasses within the same drug groups and then compare them.

**S7 Drugs Used in Disorders of Coagulation; Agents Used in Cytopenias; Hematopoietic Growth Factors**

To describe and explain the routes of administration, the mechanisms of action, pharmacological effects, the main indications and contraindications, adverse effects, and toxicity of particular drugs that are illustrative examples of the mentioned pharmacotherapeutic groups they belong to. To analyze the pharmacological effects, pharmacokinetic profile, adverse effects, indications, and contraindications between the drugs that belong to different subclasses within the same drug groups and then compare them.

**S8 Drugs Used in Heart Failure; Agents Used in Cardiac Arrhythmias**

To describe and explain the routes of administration, the mechanisms of action, pharmacological effects, the main indications and contraindications, adverse effects, and toxicity of particular drugs that are illustrative examples of the mentioned pharmacotherapeutic groups they belong to. To analyze the pharmacological effects, pharmacokinetic profile, adverse effects, indications, and contraindications between the drugs that belong to different subclasses within the same drug groups and then compare them.

**S9 Vasodilatators & the Treatment of Angina Pectoris; Agents Used in Dyslipidemia**

To describe and explain the routes of administration, the mechanisms of action, pharmacological effects, the main indications and contraindications, adverse effects, and toxicity of particular drugs that are illustrative examples of the mentioned pharmacotherapeutic groups they belong to. To analyze the pharmacological effects, pharmacokinetic profile, adverse effects, indications, and contraindications between the drugs that belong to different subclasses within the same drug groups and then compare them.

**S10 Hypothalamic & Pituitary Hormones; Thyroid & Antithyroid Drugs; Adrenocorticosteroids & Adrenocortical Antagonists**

To describe and explain the routes of administration, the mechanisms of action, pharmacological effects, the main indications and contraindications, adverse effects, and toxicity of particular drugs that are illustrative examples of the mentioned pharmacotherapeutic groups they belong to. To analyze the pharmacological effects, pharmacokinetic profile, adverse effects, indications, and contraindications between the drugs that belong to different subclasses within the same drug groups and then compare them.

**S11 The Gonadal Hormones/Inhibitors; Agents that Affect Bone Mineral Homeostasis**

To describe and explain the routes of administration, the mechanisms of action, pharmacological effects, the main indications and contraindications, adverse effects, and toxicity of particular drugs that are illustrative examples of the mentioned pharmacotherapeutic groups they belong to. To analyze the pharmacological effects, pharmacokinetic profile, adverse effects, indications, and contraindications between the drugs that belong to different subclasses within the same drug groups and then compare them.

**S12 Pancreatic Hormones & Antidiabetic Drugs; Drugs Used in the Treatment of Gastrointestinal Diseases**

To describe and explain the routes of administration, the mechanisms of action, pharmacological effects, the main indications and contraindications, adverse effects, and toxicity of particular drugs that are illustrative examples of the mentioned pharmacotherapeutic groups they belong to. To analyze the pharmacological effects, pharmacokinetic profile, adverse effects, indications, and contraindications between the drugs that belong to different subclasses within the same drug groups and then compare them.

**S13 Beta-Lactam and Other Cell Wall- & Membrane-Active Antibiotics; Tetracyclines, Macrolides, Clindamycin, Chloramphenicol, Streptogramins, & Oxazolidinones; Aminoglycosides & Spectinomycin; Sulfonamides, Trimethoprim & Quinolones**

To describe and explain the routes of administration, the mechanisms of action, pharmacological effects, the main indications and contraindications, adverse effects, and toxicity of particular drugs that are illustrative examples of the mentioned pharmacotherapeutic groups they belong to. To analyze the pharmacological effects, pharmacokinetic profile, adverse effects, indications, and contraindications between the drugs that belong to different subclasses within the same drug groups and then compare them

**S14 Antimycobacterial Drugs; Antifungal Agents; Antiviral Agents; Antiprotozoal Drugs; Clinical Pharmacology of the Antihelminthic Drugs**

To describe and explain the routes of administration, the mechanisms of action, pharmacological effects, the main indications and contraindications, adverse effects, and toxicity of particular drugs that are illustrative examples of the mentioned pharmacotherapeutic groups they belong to. To analyze the pharmacological effects, pharmacokinetic profile, adverse effects, indications, and contraindications between the drugs that belong to different subclasses within the same drug groups and then compare them.

**S15 Miscellaneous Antimicrobial Agents; Disinfectants, Antiseptics, & Sterilants; Cancer Chemotherapy**

To describe and explain the routes of administration, the mechanisms of action, pharmacological effects, the main indications and contraindications, adverse effects, and toxicity of particular drugs that are illustrative examples of the mentioned pharmacotherapeutic groups they belong to. To analyze the pharmacological effects, pharmacokinetic profile, adverse effects, indications, and contraindications between the drugs that belong to different subclasses within the same drug groups and then compare them.

**S16 Over-the-Counter drugs; Dietary Supplements; Herbal Remedies; Homeopathic Remedies**

To describe and explain the regulatory aspects related to the use of these preparations; to explain the concept and significance of over-the-counter drugs; to explain the clinical aspects of herbal products and dietary supplements; to understand the basic principles of application of homeopathic remedies.

**S17 Vaccines; Immune Globulins and Other Complex Biologic Products; Immunopharmacology**

To describe and explain the importance of the use of drugs of the above groups, the mechanism of their action, pharmacological effects, main indications, contraindications, side effects and potential toxicity.

**Practicals list (with titles and explanation):**

**PRACTICAL 1: Pharmacography: Drug Formulations (Pharmaceutical Formulations); Pharmaceutical Formulations as Systems for Drug Administration; General Drug Prescription Guidelines; Prescribing ”Apothecary” and Galenic Preparations**

To list and describe different drug formulations.

To define and describe general drug prescription guidelines and legal regulations.

To acquire the skill of prescribing “apothecary” and galenic preparations.

**PRACTICAL 2: Pharmacography: Prescribing Finished Drug Products**

To acquire the skill of prescibing different finished drug products.

## Student obligations:

Students are obligated to regularly attend and actively participate in classes. Students are allowed to be absent at a maximum of 30 % of the course.  It is compulsory to follow and act in accordance with notifications and rules regarding attendance, absence, partial exams, corrections of partial exams, final exam, etc., which will be presented at the first lecture. Additional information and rules will be announced regularly and on time on the Merlin e-learning platform.

## Exam (exam taking, description of the written/oral/practical part of the exam, point distribution, grading criteria):

During Pharmacology course, a student can achieve a maximum of 50 % ( **50 points**) of their final grade, while the remaining 50 % (**50 points**) of the grade is obtained at the final exam. Points distribution is as follows

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| Partial exam I | 20 points |
| Partial exam II | 15 points |
| Partial exam III | 15 points |
| Total (classes) | 50 points |
| Pre-exam colloquium in pharmacography and final exam | 50 points |
| Total (course) | 100 points |

**A. Partial exams**

**Partial exam I** includes the topics covered at **L1-L10 and S1-S3**. It consists of a written test (Test I). Test I will be held on **January 15, 2025**.

**Partial exam II** includes the topics covered at **S4-S10 and SP1**. It consists of a written test (Test II). Test II will be held on **March 27, 2025**.

**Partial exam III** includes the topics covered at **S11-S17** and the theoretical part of practicals P1 and P2. Test III will be held on **May 22, 2025**.

The exact time and the venues for the tests will be announced beforehand.

**Tests** are evaluated according to the scheme:

| **Test I** | | | **Test II** | | |
|---|---|---|---|---|---|
| **Number of correct answers** | **Number of points** | | **Number of correct answers** | **Number of points** | |
| 49-50 | 20 | | 49-50 | 15 | |
| 47-48 | 19 | | 43-48 | 14 | |
| 43-46 | 18 | | 37-42 | 13 | |
| 39-42 | 17 | | 33-36 | 12 | |
| 35-38 | 16 | | 30-32 | 11 | |

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|---|---|---|---|---|---|
| 33-34 | 15 | | 28-29 | 10 | |
| 31-32 | 14 | | 26-27 | 9 | |
| 29-30 | 13 | | 25 | 8 | |
| 27-28 | 12 | | 0-24 | 0 | |
| 26 | 11 | | | | |
| 25 | 10 | | | | |
| 0-24 | 0 | | | | |

**Corrections of the partial exams**

Students can access the corrections for the partial exams if they do not pass them or are not satisfied with the points they obtained. If a student retakes a partial exam because they are unsatisfied with the obtained grade points, only the grade points obtained at the retaken partial exam(s) will be considered valid. Students will have the opportunity to correct partial exams only once.

**Correction of the tests I, II, and III will be organized on June 25-27, 2025. Exact times and venues will be announced on time.**

Students are obligated to apply for the correction(s) of the partial exams. The applications will be received until June 21, 2025, by 12 noon. Suppose students apply for the correction(s) of the partial exams and subsequently decide that they will not be able to access it. In that case, they must personally cancel it at the latest until one workday before the term of the partial exams, **until 12 noon.** If a student does not personally cancel the application for the correction/s of the midterm exams, their final score will be 0 points.

**Exceptionally**, corrections of the midterm exams will also be organized for the students who are absent from the partial exams due to a justified reason. In that case, they must submit a written explanation and appropriate documentation. The materials have to be addressed to Prof Kristina Pilipović and submitted to the Office of the Department, by June 19, 2025, at 3 p.m.

**B. Pre-exam Colloquium in Pharmacography**

The **pre-exam colloquium in Pharmacography** includes material covered during P1-2 and consists of a written part. On the written test, the task will be to correctly prescribe five prescriptions. For each correctly prescribed recipe, the student will receive 1 point (maximum 5 points).

Pre-exam colloquia in Pharmacography will be held on: **June 13, 2025, June 27, 2025, July 11, 2025, September 2, 2025, and September 16, 2025**. The exact times and the venues of these colloquia will be announced on time.

**C. Final exam**

**Only students who have achieved at least 25 points during the course and have passed the Pharmacography colloquium can take the final exam in Pharmacology. Students with less than 25 credits earned during the course must enroll in the Pharmacology course again in the next academic year.**

The final exam consists of an **oral exam**. The maximum number of points that can be obtained at the oral exam is 45 (range 23-45). For the grade 2 (sufficient), the student obtains 23 points; for the grade 3 (good), the student obtains 30 points; for the grade 4 (very good), the student obtains 38; for the grade 5 (excellent), the student obtains 45 points.

The **final grade** is formed based on the results obtained during the course and the grade obtained on the final exam, according to the following scheme:

| Percent/credits for the acquired knowledge, skills and competences (course + final exam) | Numerical grading system | ECTS system |
|---|---|---|
| 90 - 100% | 5 (excellent) | A |
| 75 - 89,9% | 4 (very good) | B |
| 60 – 74,9% | 3 (good) | C |
| 50 - 59,9% | 2 (sufficient) | D |
| 0 - 49,9% | 1 (unsufficient) | F |

## Other notes (related to the course) important for students:

**Academic honesty**

It is expected that all students and teachers follow the code of academic honesty by the Code of Ethics for the students of the Faculty of Medicine at the University of Rijeka. Please read the policy regarding academic honesty at: http://medical-studies-in-english.com/wp-content/uploads/2016/12/CODEOF-ETHICS.pdf

**Contact information**

For all questions and concerns, students are encouraged to contact us by e-mail or personally.

## COURSE HOURS 2024/2025

Pharmacology

| **Lectures** (Place and time or group) | **Practicals** (Place and time or group) | **Seminars** (Place and time or group) | **Seminar practicals** (Place and time or group) |
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| **02.10.2024** | | | |
| L1 Introductory Lecture; Pharmacology – Disciplines; Nature, development and regulation of drugs:<br>• P01 (08:15 - 11:00) [233]<br>  ○ P_371 | | | |
| prof. dr. sc. Pilipović Kristina, dr. med. [233] | | | |
| **09.10.2024** | | | |
| L2 Drug Nomenclature; Transfer of Drugs Across Cell Membranes; Drug Administration, Absorption and Distribution:<br>• P01 (08:15 - 11:00) [233]<br>  ○ P_371 | | | |
| prof. dr. sc. Pilipović Kristina, dr. med. [233] | | | |
| **16.10.2024** | | | |
| L3 Biotransformation and Elimination of Drugs; Pharmacogenomics:<br>• P08 (08:15 - 11:00) [233]<br>  ○ P_371 | | | |
| prof. dr. sc. Pilipović Kristina, dr. med. [233] | | | |
| **23.10.2024** | | | |
| L4 Drugs and Organism Characteristics Affecting Drug Activity; Allergic and Idiosyncratic Reactions:<br>• P15 - TOWN HALL (08:15 - 11:00) [233]<br>  ○ P_371 | | | |
| prof. dr. sc. Pilipović Kristina, dr. med. [233] | | | |
| **30.10.2024** | | | |
| L5 Adrenoreceptor Agonists and Sympathomimetic Drugs; Adrenoreceptor Antagonist Drugs:<br>• P01 (08:15 - 11:00) [233]<br>  ○ P_371 | | | |
| prof. dr. sc. Pilipović Kristina, dr. med. [233] | | | |

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| **04.11.2024** | | | |
| | | S1 Drug receptors & Pharmacodynamics; Pharmacokinetics & Pharmacodynamics: Rational Dosing & the Time Course of Drug Action:<br>• Department of Basic and Clinical Pharmacology with Toxicology (08:00 - 12:00) [2838]<br>◦ Group I<br>• P15 - TOWN HALL (13:00 - 17:00) [2838]<br>◦ Group II | |
| Mežnarić Silvestar, mag. sanit. ing. [2838] | | | |
| **06.11.2024** | | | |
| L6 Antipsychotics; Lithium and the Other Drugs in the Treatment of the Bipolar Disorder:<br>• P01 (08:15 - 11:00) [233]<br>◦ P_371 | | | |
| prof. dr. sc. Pilipović Kristina, dr. med. [233] | | | |
| **11.11.2024** | | | |
| | | S2 Cholinoceptor-Activating & Cholinesterase-Inhibiting Drugs; Cholinoceptor-Blocking Drugs; Skeletal Muscle Relaxants:<br>• Department of Basic and Clinical Pharmacology with Toxicology (08:00 - 12:00) [233] [2838]<br>◦ Group I<br>• P07 (14:00 - 18:00) [233] [2838]<br>◦ Group II | |
| Mežnarić Silvestar, mag. sanit. ing. [2838] · prof. dr. sc. Pilipović Kristina, dr. med. [233] | | | |
| **13.11.2024** | | | |
| L7 Nonsteroidal Anti-Inflammatory Drugs, Disease-Modifying Antirheumatic Drugs, Nonopioid Analgesics, & Drugs Used in Gout:<br>• P15 - TOWN HALL (08:15 - 11:00) [233]<br>◦ P_371 | | | |
| prof. dr. sc. Pilipović Kristina, dr. med. [233] | | | |
| **19.11.2024** | | | |
| | | S3 Adrenoceptor Agonists & Sympathomimetic Drugs, Adrenoceptor Antagonist Drugs:<br>• P06 (12:00 - 16:00) [234]<br>◦ Group II | |

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| doc. dr. sc. Janković Tamara, dipl. sanit. ing. [234] | | | |
| **20.11.2024** | | | |
| L8 Opioid Agonists and Antagonists:<br>• P15 - TOWN HALL (08:15 - 11:00) [1218]<br>◦ P_371 | | | |
| doc. dr. sc. Harej Hrkać Anja, mag. biotech. in med. [1218] | | | |
| **21.11.2024** | | | |
| | | S3 Adrenoceptor Agonists & Sympathomimetic Drugs, Adrenoceptor Antagonist Drugs:<br>• ONLINE (08:00 - 12:00) [234]<br>◦ Group I | |
| doc. dr. sc. Janković Tamara, dipl. sanit. ing. [234] | | | |
| **25.11.2024** | | | |
| | | S4 Antipsychotic Agents & Lithium; Antidepressant Agents; Drugs Used in Alzheimer's disease:<br>• Department of Basic and Clinical Pharmacology with Toxicology (08:00 - 12:00) [236]<br>◦ Group I | |
| doc. dr. sc. Rajič Bumber Jelena, dipl. ing. biol. [236] | | | |
| **26.11.2024** | | | |
| | | S4 Antipsychotic Agents & Lithium; Antidepressant Agents; Drugs Used in Alzheimer's disease:<br>• P04 (13:00 - 17:00) [236]<br>◦ Group II | |
| doc. dr. sc. Rajič Bumber Jelena, dipl. ing. biol. [236] | | | |
| **27.11.2024** | | | |
| L9 Sedative-Hypnotic Drugs; Anxiolytics:<br>• P01 (08:15 - 11:00) [233]<br>◦ P_371 | | | |
| prof. dr. sc. Pilipović Kristina, dr. med. [233] | | | |
| **02.12.2024** | | | |
| | | S5 General Anesthetics; Local Anesthetics; Pharmacologic Management of Parkinsonism & Other Movement Disorders:<br>• P07 (08:00 - 12:00) [2838]<br>◦ Group I | |
| Mežnarić Silvestar, mag. sanit. ing. [2838] | | | |
| **03.12.2024** | | | |

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| | | S5 General Anesthetics; Local Anesthetics; Pharmacologic Management of Parkinsonism & Other Movement Disorders:<br>• P07 (12:00 - 17:00) [2838]<br>○ Group II | |
| Mežnarić Silvestar, mag. sanit. ing. [2838] | | | |
| **04.12.2024** | | | |
| L10 Antiseizure Drugs; Drugs of Abuse:<br>• P15 - TOWN HALL (08:15 - 11:00) [235]<br>○ P_371 | | | |
| prof. dr. sc. Vitezić Dinko, dr. med. [235] | | | |
| **09.12.2024** | | | |
| | | S6 Drugs Used in Asthma; Histamine, Serotonin & the Ergot Alkaloids: H1-Receptor Antagonists:<br>• Department of Basic and Clinical Pharmacology with Toxicology (08:00 - 12:00) [234]<br>○ Group I<br>• P15 - TOWN HALL (13:00 - 17:00) [234]<br>○ Group II | |
| doc. dr. sc. Janković Tamara, dipl. sanit. ing. [234] | | | |
| **16.12.2024** | | | |
| | | S7 Drugs Used in Disorders of Coagulation; Agents Used in Cytopenias; Hematopoietic Growth Factors:<br>• ONLINE (08:00 - 12:00) [233]<br>○ Group I | |
| prof. dr. sc. Pilipović Kristina, dr. med. [233] | | | |
| **17.12.2024** | | | |
| | | S7 Drugs Used in Disorders of Coagulation; Agents Used in Cytopenias; Hematopoietic Growth Factors:<br>• ONLINE (12:00 - 16:00) [233]<br>○ Group II | |
| prof. dr. sc. Pilipović Kristina, dr. med. [233] | | | |
| **13.01.2025** | | | |

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| | | | SEMINAR-PRACTICAL: Diuretic Agents; Antihypertensive Agents:<br>• P15 - TOWN HALL (08:00 - 13:00) [233] [172]<br>○ Group I |
| prof. dr. sc. Mršić-Pelčić Jasenka, dr. med. [172] · prof. dr. sc. Pilipović Kristina, dr. med. [233] | | | |
| **14.01.2025** | | | |
| | | | SEMINAR-PRACTICAL: Diuretic Agents; Antihypertensive Agents:<br>• P09 - TEACHING IN ENGLISH (12:00 - 16:00) [233] [172]<br>○ Group II |
| prof. dr. sc. Mršić-Pelčić Jasenka, dr. med. [172] · prof. dr. sc. Pilipović Kristina, dr. med. [233] | | | |
| **20.01.2025** | | | |
| | | S8 Drugs Used in Heart Failure; Agents Used in Cardiac Arrhythmias:<br>• Department of Basic and Clinical Pharmacology with Toxicology (08:00 - 12:00) [1099]<br>○ Group I<br>• Department of Basic and Clinical Pharmacology with Toxicology (13:00 - 17:00) [1099]<br>○ Group II | |
| Knežević Sandra, dr. med. [1099] | | | |
| **04.03.2025** | | | |
| | | S9 Vasodilatators & the Treatment of Angina Pectoris; Agents Used in Dyslipidemia:<br>• Department of Basic and Clinical Pharmacology with Toxicology - Library (08:00 - 12:00) [1218]<br>○ Group I<br>• P07 (13:00 - 17:00) [1218]<br>○ Group II | |
| doc. dr. sc. Harej Hrkać Anja, mag. biotech. in med. [1218] | | | |
| **11.03.2025** | | | |

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| | | S10 Hypothalamic & Pituitary Hormones; Thyroid & Antithyroid Drugs; Adrenocorticosteroids & Adrenocortical Antagonists:<br>• P04 (08:00 - 12:00) [236]<br>◦ Group I<br>• Department of Basic and Clinical Pharmacology with Toxicology (12:00 - 16:00) [236]<br>◦ Group II | |
| doc. dr. sc. Rajič Bumber Jelena, dipl. ing. biol. [236] | | | |
| **18.03.2025** | | | |
| | | S11 The Gonadal Hormones/Inhibitors; Agents that Affect Bone Mineral Homeostasis:<br>• P06 (08:00 - 12:00) [234]<br>◦ Group I<br>• P07 (13:00 - 17:00) [234]<br>◦ Group II | |
| doc. dr. sc. Janković Tamara, dipl. sanit. ing. [234] | | | |
| **25.03.2025** | | | |
| | | S12 Pancreatic Hormones & Antidiabetic Drugs; Drugs Used in the Treatment of Gastrointestinal Diseases:<br>• P06 (08:00 - 12:00) [1099]<br>◦ Group I<br>• P07 (13:00 - 18:00) [1099]<br>◦ Group II | |
| Knežević Sandra, dr. med. [1099] | | | |
| **01.04.2025** | | | |
| | | S13 Beta-Lactam and Other Cell Wall- & Membrane-Active Antibiotics; Tetracyclines, Macrolides, Clindamycin, Chloramphenicol, Streptogramins, & Oxazolidinones; Aminoglycosides & Spectinomycin; Sulfonamides, Trimethoprim & Quinolones:<br>• v (08:00 - 12:00) [236]<br>◦ Group I<br>• P07 (13:00 - 18:00) [236]<br>◦ Group II | |
| doc. dr. sc. Rajič Bumber Jelena, dipl. ing. biol. [236] | | | |
| **08.04.2025** | | | |

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| | | S14 Antimycobacterial Drugs; Antifungal Agents; Antiviral Agents; Antiprotozoal Drugs; Clinical Pharmacology of the Antihelminthic Drugs:<br>• P07 (08:00 - 12:00) [238]<br>  ◦ Group I<br>• Department of Basic and Clinical Pharmacology with Toxicology (13:00 - 18:00) [238]<br>  ◦ Group II | |
| doc. dr. sc. Dolenec Petra, dipl. ing. biol., prof. biol. [238] | | | |
| **15.04.2025** | | | |
| | | S15 Miscellaneous Antimicrobial Agents; Disinfectants, Antiseptics, & Sterilants; Cancer Chemotherapy:<br>• P06 (08:00 - 12:00) [241]<br>  ◦ Group I<br>• Department of Basic and Clinical Pharmacology with Toxicology (13:00 - 18:00) [241]<br>  ◦ Group II | |
| izv. prof. dr. sc. Skelin Marko, mag. pharm. [241] | | | |
| **29.04.2025** | | | |
| | | S17 Vaccines; Immune Globulins and Other Complex Biologic Products; Immunopharmacology:<br>• P04 (08:00 - 12:00) [241]<br>  ◦ Group I<br>• P07 (13:00 - 18:00) [241]<br>  ◦ Group II | |
| izv. prof. dr. sc. Skelin Marko, mag. pharm. [241] | | | |
| **30.04.2025** | | | |
| | | S16 Over-the-Counter drugs; Dietary Supplements; Herbal Remedies; Homeopathic Remedies:<br>• ONLINE (08:00 - 12:00) [1218]<br>  ◦ Group II<br>  ◦ Group I | |
| doc. dr. sc. Harej Hrkać Anja, mag. biotech. in med. [1218] | | | |
| **06.05.2025** | | | |

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| | PRACTICAL 1: Pharmacography: Drug Formulations (Pharmaceutical Formulations); Pharmaceutical Formulations as Systems for Drug Administration; General Drug Prescription Guidelines; Prescribing ”Apothecary” and Galenic Preparations:<br>• P04 (08:00 - 12:00) [233] [242]<br>◦ Group I<br>• P07 (13:15 - 17:00) [233]<br>◦ Group II | | |
| Juretić Lea, mag. pharm. [242] · prof. dr. sc. Pilipović Kristina, dr. med. [233] | | | |
| **13.05.2025** | | | |
| | PRACTICAL 2: Pharmacography: Prescribing Finished Drug Products:<br>• P06 (08:00 - 12:00) [233] [172]<br>◦ Group I<br>• Department of Basic and Clinical Pharmacology with Toxicology - Library (13:15 - 17:00) [233] [172]<br>◦ Group II | | |
| prof. dr. sc. Mršić-Pelčić Jasenka, dr. med. [172] · prof. dr. sc. Pilipović Kristina, dr. med. [233] | | | |

### List of lectures, seminars and practicals:

| LECTURES (TOPIC) | Number of hours | Location |
|---|---|---|
| L1 Introductory Lecture; Pharmacology – Disciplines; Nature, development and regulation of drugs | 3 | P01 |
| L2 Drug Nomenclature; Transfer of Drugs Across Cell Membranes; Drug Administration, Absorption and Distribution | 3 | P01 |
| L3 Biotransformation and Elimination of Drugs; Pharmacogenomics | 3 | P08 |
| L4 Drugs and Organism Characteristics Affecting Drug Activity; Allergic and Idiosyncratic Reactions | 3 | P15 - TOWN HALL |
| L5 Adrenoreceptor Agonists and Sympathomimetic Drugs; Adrenoreceptor Antagonist Drugs | 3 | P01 |
| L6 Antipsychotics; Lithium and the Other Drugs in the Treatment of the Bipolar Disorder | 3 | P01 |
| L7 Nonsteroidal Anti-Inflammatory Drugs, Disease-Modifying Antirheumatic Drugs, Nonopioid Analgesics, & Drugs Used in Gout | 3 | P15 - TOWN HALL |
| L8 Opioid Agonists and Antagonists | 3 | P15 - TOWN HALL |
| L9 Sedative-Hypnotic Drugs; Anxiolytics | 3 | P01 |
| L10 Antiseizure Drugs; Drugs of Abuse | 3 | P15 - TOWN HALL |

| PRACTICALS (TOPIC) | Number of hours | Location |
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|---|---|---|
| PRACTICAL 1: Pharmacography: Drug Formulations (Pharmaceutical Formulations); Pharmaceutical Formulations as Systems for Drug Administration; General Drug Prescription Guidelines; Prescribing ”Apothecary” and Galenic Preparations | 5 | P04<br>P07 |
| PRACTICAL 2: Pharmacography: Prescribing Finished Drug Products | 5 | Department of Basic and Clinical Pharmacology with Toxicology - Library<br>P06 |

| SEMINARS (TOPIC) | Number of hours | Location |
|---|---|---|
| S1 Drug receptors & Pharmacodynamics; Pharmacokinetics & Pharmacodynamics: Rational Dosing & the Time Course of Drug Action | 5 | Department of Basic and Clinical Pharmacology with Toxicology<br>P15 - TOWN HALL |
| S2 Cholinoceptor-Activating & Cholinesterase-Inhibiting Drugs; Cholinoceptor-Blocking Drugs; Skeletal Muscle Relaxants | 5 | Department of Basic and Clinical Pharmacology with Toxicology<br>P07 |
| S3 Adrenoceptor Agonists & Sympathomimetic Drugs, Adrenoceptor Antagonist Drugs | 5 | ONLINE<br>P06 |
| S4 Antipsychotic Agents & Lithium; Antidepressant Agents; Drugs Used in Alzheimer’s disease | 5 | Department of Basic and Clinical Pharmacology with Toxicology<br>P04 |
| S5 General Anesthetics; Local Anesthetics; Pharmacologic Management of Parkinsonism & Other Movement Disorders | 5 | P07 |
| S6 Drugs Used in Asthma; Histamine, Serotonin & the Ergot Alkaloids: H1-Receptor Antagonists | 5 | Department of Basic and Clinical Pharmacology with Toxicology<br>P15 - TOWN HALL |
| S7 Drugs Used in Disorders of Coagulation; Agents Used in Cytopenias; Hematopoietic Growth Factors | 5 | ONLINE |
| S8 Drugs Used in Heart Failure; Agents Used in Cardiac Arrhythmias | 5 | Department of Basic and Clinical Pharmacology with Toxicology |
| S9 Vasodilatators & the Treatment of Angina Pectoris; Agents Used in Dyslipidemia | 5 | Department of Basic and Clinical Pharmacology with Toxicology - Library<br>P07 |
| S10 Hypothalamic & Pituitary Hormones; Thyroid & Antithyroid Drugs; Adrenocorticosteroids & Adrenocortical Antagonists | 5 | Department of Basic and Clinical Pharmacology with Toxicology<br>P04 |
| S11 The Gonadal Hormones/Inhibitors; Agents that Affect Bone Mineral Homeostasis | 5 | P06<br>P07 |
| S12 Pancreatic Hormones & Antidiabetic Drugs; Drugs Used in the Treatment of Gastrointestinal Diseases | 5 | P06<br>P07 |
| S13 Beta-Lactam and Other Cell Wall- & Membrane-Active Antibiotics; Tetracyclines, Macrolides, Clindamycin, Chloramphenicol, Streptogramins, & Oxazolidinones; Aminoglycosides & Spectinomycin; Sulfonamides, Trimethoprim & Quinolones | 5 | P07<br>v |
| S14 Antimycobacterial Drugs; Antifungal Agents; Antiviral Agents; Antiprotozoal Drugs; Clinical Pharmacology of the Antihelminthic Drugs | 5 | Department of Basic and Clinical Pharmacology with Toxicology<br>P07 |
| S15 Miscellaneous Antimicrobial Agents; Disinfectants, Antiseptics, & Sterilants; Cancer Chemotherapy | 5 | Department of Basic and Clinical Pharmacology with Toxicology<br>P06 |

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| S16 Over-the-Counter drugs; Dietary Supplements; Herbal Remedies; Homeopathic Remedies | 5 | ONLINE |
| S17 Vaccines; Immune Globulins and Other Complex Biologic Products; Immunopharmacology | 5 | P04<br>P07 |

| SEMINAR PRACTICALS (TOPIC) | Number of hours | Location |
|---|---|---|
| SEMINAR-PRACTICAL: Diuretic Agents; Antihypertensive Agents | 5 | P09 - TEACHING IN ENGLISH<br>P15 - TOWN HALL |

### EXAM DATES (final exam):

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| 1. | 20.06.2025. |
| 2. | 04.07.2025. |
| 3. | 18.07.2025. |
| 4. | 04.09.2025. |
| 5. | 18.09.2025. |