



# **Pharmacy - Integrated Academic Studies**

**FIRST YEAR**

2023/2024

**INTRODUCTION TO PHARMACEUTICAL TECHNOLOGY**

Subject:

## **INTRODUCTION TO PHARMACEUTICAL TECHNOLOGY**

The course is evaluated with 9 ECTS. There are 5 classes of active teaching per week (2 classes of lectures and 3 classes of practical work in a small group)

## TEACHERS AND ASSOCIATES:

RB	Name and surname	E-mail address	Title
1.	Snezana Cupara	snezanacupara@yahoo.com	Full Professor
2.	Ana Barjaktarevic	ana.radovanovic@gmail.com	Associate Professor
3.	Marijana Andjic	andjicmarijana10@gmail.com	Teaching Assistant

## COURSE STRUCTURE:

Module	Module name	Weeks	Lectures	Work in a small group	Teacher-supervisor module
1	Medication. Pharmacopoeia. Reference literature in pharmacy. Medical prescription. Pharmacy. Doses. Powders for external and internal use. Extractive preparations. Solutions. Related pharmaceutical calculations	8	2	3	Prof. dr Snezana Cupara
2	Suspensions. Syrups. Ointments. Suppositories. Creams. Liquid emulsions. Gels. Microbiological quality of medicinal preparations. Related pharmaceutical calculations.	7	2	3	Prof. dr Snezana Cupara
					$\Sigma 30 + 45 = 75$

## EVALUATION:

**STUDENT'S PRE-EXAM ACTIVITY: 50 points**

**FINAL EXAM (Written): 50 points**

Student must pass pre-exam activity as well as the final exam. He/She must achieve more than 50 percent of points on each of them in order to get the passing grade. Passing the pre-exam activity is mandatory for taking the final exam.

### Assessment method based on points earned :

Grading system		
Grade	No. of points	Description
10	91-100	Excellent
9	81-90	Exceptionally good
8	71-80	Very good
7	61-70	Good
6	51-60	Passing
5	< 51	Failing

## LITERATURE:

<b>Textbook title</b>	<b>Authors</b>	<b>Publisher</b>	<b>the Library</b>
Pharmaceutical Compounding and Dispensing	Marriott JF, Wilson KA, Langley CA, Belcher D	Pharmaceutical Press, London, 2006	
Handbook of pharmaceutical manufacturing formulations	Fleeger C	Washington: CRC Press, 2004	
Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems, 11th Edition	Loyd A	LWW Lippincott Williams and Wilkins. 2017	
Pharmaceutical Calculations	Ansel H, Stockton J	LWW Lippincott Williams and Wilkins. 2016	
A Practical Guide to Contemporary Pharmacy Practice and Compounding, 4th Edition	Lester Elder D	LWW Lippincott Williams and Wilkins. 2017.	
<b>All lectures can be found on the website of the Faculty of Medicine: <a href="http://www.medf.kg.ac.rs">www.medf.kg.ac.rs</a></b>			

# THE PROGRAM:

## FIRST MODULE

### TEACHING UNIT 1 (FIRST WEEK):

Lectures: 2 classes	Practice: 3 classes
Medication. Pharmacopoeia. Reference literature in pharmacy. Medical prescription in paper and electronic form. Calculation involving system of units.	Introduction to pharmaceutical reference literature. Monographs in Pharmacopoeia - drugs and medicinal preparations - nomenclature, labeling and classification, dosage, solubility, storage. Types of medical prescription. Calculation involving system of units.

### TEACHING UNIT 2 (SECOND WEEK):

Lectures: 2 classes	Practice: 3 classes
Pharmacy. Labeling of medicinal substances. Galenic pharmacy. Operations in galenic practice. Mechanical operations. Physical operations. Chemical operations. Mixed operations. Pharmaceutical calculations involving setting up of proportional sets.	Introduction to the laboratory, laboratory utensils and laboratory techniques. Pharmaceutical calculations involving proportions.

### TEACHING UNIT 3 (THIRD WEEK):

Lectures: 2 classes	Practice: 3 classes
Doses. Evaluation of appropriate dosage of magistral and galenic preparation for external use. Practical measures for dosing the magistral or galenic preparation for internal use. Pharmaceutical calculations involving concentrations.	Discussion of the magistral and official prescription for galenic medicaments. Basic pharmaceutical calculations. Types of doses. Evaluation of appropriate dosage in magistral or galenic prescription. Evaluation of appropriate concentration in the magistral or galenic prescription for external use. Pharmaceutical calculations involving concentrations.

### TEACHING UNIT 4 (FOURTH WEEK):

Lectures: 2 classes	Practice: 3 classes
Powders. Method of powder preparation. Division of powders according to pharmacopeia. Powders for external use. Preparation of powder for external use.	Methods and general principles used in the preparation of powders for external use. Discussion of prescriptions that prescribe different types of powders for external use. Related pharmaceutical calculations

TEACHING UNIT 5 (FIFTH WEEK):

Lectures: 2 classes	Practice: 3 classes
Powders for internal use. Undivided powders. Divided powders. Triturates. Preparation of the triturate in the standard method. Calculation of doses.	Methods and general principles used in the preparation of powders for internal use. Discussion of prescriptions that prescribe different types of powders for internal use. Calculation of doses.

TEACHING UNIT 6 (SIXTH WEEK):

Lectures: 2 classes	Practice: 3 classes
Medical preparation obtained by plant extraction. Examples of pharmacopoeial prescriptions for obtaining extracts.	Methods and general principles used for medical preparation obtained by plant extraction. Discussion of prescriptions that prescribe different types of medical preparations obtained by plant extraction.

TEACHING UNIT 7 (SEVENTH WEEK):

Lectures: 2 classes	Practice: 3 classes
Solutions. Water and ethanol as solvents. Separation of the solution. Calculations involving dilutions.	Methods and general principles used in the preparation of medicinal solutions. Discussion of prescriptions that prescribe different types of medicinal solutions. Calculations involving dilutions.

TEACHING UNIT 8 (EIGHTH WEEK):

Lectures: 2 classes	Practice: 3 classes
Recapitulation of examples of galenic and magistral prescriptions that prescribe powders, solutions, and medical preparation obtained by plant extraction.	Recapitulation of examples of galenic and magistral prescriptions that prescribe powders, solutions, and extractive preparations.

## SECOND MODULE

### TEACHING UNIT 9 (NINTH WEEK):

Lectures: 2 classes	Practice: 3 classes
Suspensions. Syrups. Selection of active components for the formulation of suspensions. Mixing and suspending medicinal substances in the preparing of suspensions.	Methods and general principles used in the preparation of suspensions and syrups. Discussion of prescriptions that prescribe different types of suspensions and syrups.

### TEACHING UNIT 10 (TENTH WEEK):

Lectures: 2 classes	Practice: 3 classes
Medicinal ointments. Preparation of ointment. Types of ointment bases. Examples of bases prescribed by Pharmacopoea.	Methods and general principles used in the preparation of ointment. Discussion of prescriptions that prescribe different types of ointments.

### TEACHING UNIT 11 (ELEVENTH WEEK):

Lectures: 2 classes	Practice: 3 classes
Suppositories. Lipophilic and hydrophilic bases for suppositories.	Methods and general principles used in the preparation of suppositories. Discussion of prescriptions that prescribe different types of suppositories.

### TEACHING UNIT 12 (TWELFTH WEEK):

Lectures: 2 classes	Practice: 3 classes
Semi-solid preparations for skin application. Emulsifiers. Creams – different types of two phases creams- type O / W and W /O.	Methods and general principles used in the preparation of creams. Discussion of prescriptions that prescribe different types of creams.

### TEACHING UNIT 13 (THIRTEENTH WEEK):

Lectures: 2 classes	Practice: 3 classes
Liquid drug emulsions for external and internal use. Preparation of emulsions.	Methods and general principles used in the preparation of emulsions. Discussion of prescriptions that prescribe different types of emulsions.

### TEACHING UNIT 14 (SIXTEENTH WEEK):

Lectures: 2 classes	Practice: 3 classes
Recapitulation of examples of galenic and magistral prescriptions that prescribe suspensions, ointment, suppositories, creams, emulsions and gels.	Recapitulation of examples of galenic and magistral prescriptions that prescribe suspensions, ointment, suppositories, creams, emulsions and gels

TEACHING UNIT 15 (FIFTEENTH WEEK):

Lectures: 2 classes	Practice: 3 classes
Microbiological quality of medicinal preparations. Sterilization methods.	Recapitulation of examples of galenic and magistral prescriptions.