Course descriptions

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COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KJ/01-Mgr-A/00	**Course title:** Academic English Language Preparation (1)
Educational activities: **Type of activities:** seminar **Number of hours:** **per week:** 2 **per level/semester:** 28 **Form of the course:** on-site learning	
Number of credits: 2	
Recommended semester: 2.	
Educational level: I.II.	
Prerequisites:	
Recommended prerequisites: intermediate level of English	
Course requirements: - active presence at seminars - final test with evaluation scale – A (100 – 91 %), B (90 – 81 %), C (80 – 73 %), D (72 – 66 %), E (65 – 60 %), FX (59 – 0 %) Scale of assessment (preliminary/final): 100 %	
Learning outcomes: After completing the seminars a student is able to understand professional texts, reproduce their content orally and in writing, using English professional terminology from the field of human body and the profession of a pharmacist. Thanks to professional texts a student can use English professional terminology in both professional and non-professional environments.	
Class syllabus: The lessons concentrate on the following topics: the human body, the body systems and their functions, pharmaceutical care, the role of a pharmacist, services available in a pharmacy, laboratory equipment.	
Recommended literature: Hollá, O., Kližanová, D., Žufková,V.: English for Pharmacists I. Bratislava: Vydavateľstvo UK, 2020. Grammar Workbook I	
Languages necessary to complete the course: English language	
Notes: Academic English Language Preparation (1 - 5) within Master Study Programme is carried out in English study programme in five semesters. The contents of these specialised professional courses closely follow the contents of other professional courses taught in the relevant semesters. It is therefore highly recommended to take the courses gradually from the 2nd to the 6th semester	

(including) of the study, i.e., Academic English Language Preparation (1) in the 2nd (summer) semester of study.

Past grade distribution
Total number of evaluated students: 714

A	ABS	B	C	D	E	FX
16,81	0,0	11,9	17,51	18,21	28,15	7,42

Lecturers: PaedDr. Viera Žufková, PhD., PhDr. Darina Kližanová

Last change: 25.03.2022

Approved by: PhDr. Darina Kližanová

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KJ/02-Mgr-A/00	**Course title:** Academic English Language Preparation (2)
Educational activities: **Type of activities:** seminar **Number of hours:** **per week:** 2 **per level/semester:** 28 **Form of the course:** on-site learning	
Number of credits: 2	
Recommended semester: 3.	
Educational level: I.II.	
Prerequisites:	
Recommended prerequisites: intermediate level of English	
Course requirements: - active presence at seminars - final test with evaluation scale – A (100 – 91 %), B (90 – 81 %), C (80 – 73 %), D (72 – 66 %), E (65 – 60 %), FX (59 – 0 %) Scale of assessment (preliminary/final): 100 %	
Learning outcomes: After completing the seminars a student is able to understand professional texts, reproduce their content orally and in writing, using English professional terminology from the field of factors influencing health condition. Thanks to professional texts a student can use English professional terminology in both professional and non-professional environments.	
Class syllabus: The lessons concentrate on the following topics: factors influencing our health, pollution of environment, drug abuse and drug addiction, health care, disease transmission.	
Recommended literature: Hollá, O., Kližanová, D., Žufková,V.: English for Pharmacists II. Bratislava: Vydavateľstvo UK, 2020. Grammar Workbook II	
Languages necessary to complete the course: English language	
Notes: Academic English Language Preparation (1-5) within Master Study Programme is obligatory elective and is carried out in English study programme in fivesemesters. The contents of these specialised professional courses closely follow the contents of other professional courses taught in the relevant semesters. It is therefore highly recommended to take the courses gradually from	

the 2nd to the 6th semester (including) of the study, i.e., Academic English Language Preparation (2) in the 3rd (winter) semester of study.

Past grade distribution
Total number of evaluated students: 602

A	ABS	B	C	D	E	FX
21,26	0,0	13,12	16,94	20,43	23,42	4,82

Lecturers: PaedDr. Viera Žufková, PhD., PhDr. Darina Kližanová

Last change: 25.03.2022

Approved by: PhDr. Darina Kližanová

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KJ/03-Mgr-A/20	**Course title:** Academic English Language Preparation (3)
Educational activities: **Type of activities:** seminar **Number of hours:** **per week:** 2 **per level/semester:** 28 **Form of the course:** on-site learning	
Number of credits: 1	
Recommended semester: 4.	
Educational level: I.II.	
Prerequisites:	
Recommended prerequisites: intermediate level of English	
Course requirements: - active presence at seminars - final test with evaluation scale – A (100 – 91 %), B (90 – 81 %), C (80 – 73 %), D (72 – 66 %), E (65 – 60 %), FX (59 – 0 %) Scale of assessment (preliminary/final): 100 %	
Learning outcomes: After completing the seminars a student is able to understand professional texts, reproduce their content orally and in writing, using English professional terminology from the field of basic chemical terminology and disease prevention. Thanks to professional texts a student can use English professional terminology in both professional and non-professional environments.	
Class syllabus: The lessons concentrate on the following topics: disease prevention, healthy way of life, balanced diet, vitamins, minerals, cosmetics, first aid, treatment in various situations and emergencies.	
Recommended literature: Hollá, O., Jurišová, E., Kližanová, D., Žufková,V.: English for Pharmacists III. Bratislava: Vydavateľstvo UK, 2019. Grammar Workbook III	
Languages necessary to complete the course: English language	
Notes: Academic English Language Preparation (1-5) within Master Study Programme is carried out in English study programme in five semesters. The contents of these specialised professional courses closely follow the contents of other professional courses taught in the relevant semesters. It is therefore highly recommended to take the courses gradually from the 2nd to the 6th semester	

(including) of the study, i.e., Academic English Language Preparation (3) in the 4th (summer) semester of study.

Past grade distribution
Total number of evaluated students: 14

A	ABS	B	C	D	E	FX
35,71	0,0	21,43	14,29	0,0	7,14	21,43

Lecturers: PaedDr. Viera Žufková, PhD., PhDr. Darina Kližanová

Last change: 25.03.2022

Approved by: PhDr. Darina Kližanová

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KJ/04-Mgr-A/20	**Course title:** Academic English Language Preparation (4)
Educational activities: **Type of activities:** seminar **Number of hours:** **per week:** 2 **per level/semester:** 28 **Form of the course:** on-site learning	
Number of credits: 1	
Recommended semester: 3.	
Educational level: I.II.	
Prerequisites:	
Recommended prerequisites: intermediate level of English	
Course requirements: - active presence at seminars - final test with evaluation scale – A (100 – 91 %), B (90 – 81 %), C (80 – 73 %), D (72 – 66 %), E (65 – 60 %), FX (59 – 0 %) Scale of assessment (preliminary/final): 100 %	
Learning outcomes: After completing the seminars a student is able to understand professional texts, reproduce their content orally and in writing, using English professional terminology from the field of pharmacology. Thanks to professional texts a student can use English professional terminology in both professional and non-professional environments.	
Class syllabus: The lessons concentrate on the following topics: common disorders, home medicine cabinet, drug classification, frequently prescribed drugs, their sources, composition and effects, alternative medicine, healing herbs - their structure and functions.	
Recommended literature: Hollá, O., Kližanová, D., Žufková,V.: English for Pharmacists IV. Bratislava: Vydavateľstvo UK, 2020. Grammar Workbook IV	
Languages necessary to complete the course: English language	
Notes: Academic English Language Preparation (1-5) within Master Study Programme is carried out in English study programme in five semesters. The contents of these specialised professional courses closely follow the contents of other professional courses taught in the relevant semesters. It is therefore highly recommended to take the courses gradually from the 2nd to the 6th semester	

(including) of the study, i.e., Academic English Language Preparation (4) in the 5th (winter) semester of study.

Past grade distribution
Total number of evaluated students: 1

A	ABS	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: PaedDr. Viera Žufková, PhD., PhDr. Darina Kližanová

Last change: 25.03.2022

Approved by: PhDr. Darina Kližanová

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KJ/15-Mgr-A/20	Academic English Language Preparation (5)

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 1

Recommended semester: 6.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
intermediate level of English

Course requirements:
- active presence at seminars
- final test with evaluation scale – A (100 – 91 %), B (90 – 81 %), C (80 – 73 %), D (72 – 66 %), E (65 – 60 %), FX (59 – 0 %)
Scale of assessment (preliminary/final): 100 %

Learning outcomes:
After completing the seminars, a student can understand professional texts, reproduce their content orally and in writing, using English professional terminology from pharmacy and medicine. Thanks to professional texts a student can use English professional terminology in both professional and non-professional environments.

Class syllabus:
The seminars follow the deepening of communicative skills and professional vocabulary. In addition to selected texts from textbooks, texts from promotional materials, manuals, and magazines are used. The lessons concentrate on the following topics: regular check-ups, prescriptions, drug dosage, over-the-counter drugs, nutrient supplements, pharmaceutical industry, the healthcare system in Slovakia, a career in the pharmaceutical field.

Recommended literature:
Bates, M., Dudley, T.: Nucleus: General Science. London: Longman, 1992
Havlíčková, I., Dostálová, Š., Katerová, Z.: English for Pharmacy and Medical Bioanalytics. Karolinum Press, 2014.
James, V. D.: Medicine. London: Prentice Hall, 1989

Languages necessary to complete the course:
English language

Notes:

Academic English Language Preparation (1-5) within Master Study Programme is carried out in English study programme in five semesters. The contents of these specialised professional courses closely follow the contents of other professional courses taught in the relevant semesters. It is therefore highly recommended to take the courses gradually from the 2nd to the 6th semester (including) of the study, i.e., Academic English Language Preparation (5) in the 6th (summer) semester of study.

Past grade distribution

Total number of evaluated students: 1

A	ABS	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: PhDr. Darina Kližanová, PaedDr. Viera Žufková, PhD.

Last change: 25.03.2022

Approved by: PaedDr. Viera Žufková, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KJ/19-Mgr-A/19	Academic German Language Preparation (1)

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 1

Recommended semester: 2.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 3

A	ABS	B	C	D	E	FX
66,67	0,0	0,0	0,0	0,0	0,0	33,33

Lecturers:

Last change:

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KJ/12-Mgr-A/20	**Course title:** Academic German Language Preparation (2)
Educational activities: **Type of activities:** seminar **Number of hours:** **per week:** 2 **per level/semester:** 28 **Form of the course:** on-site learning	
Number of credits: 1	
Recommended semester: 3.	
Educational level: I.II.	
Prerequisites:	
Course requirements: - active participation of students in classroom - midterm test (15%) - final test (85%) To complete the course successfully a student must achieve at least 60%. Scale of assessment (preliminary/final): 15/85	
Learning outcomes: Students are able to use basic German grammar and practice the basic skills of listening, speaking, reading and writing in the present tense with an emphasis upon correct oral and written expressions and aural comprehension. Students are also introduced to various aspects of German culture in Germany and in German speaking countries focusing on the professional environment of pharmacies.	
Class syllabus: The course is for absolute beginners in German language who would like to obtain basic communication skills and grammar structures needed for everyday life in the academic and professional environment in a German speaking country.	
Recommended literature: Schritte international 2: Deutsch als Fremdsprache / Kursbuch + Arbeitsbuch mit Audio-CD zum Arbeitsbuch und interaktiven Übungen: Niveau A1/2, Hueber, 2009. Schritte international 3: Deutsch als Fremdsprache / Kursbuch + Arbeitsbuch mit Audio-CD zum Arbeitsbuch und interaktiven Übungen: Niveau A2/1, Hueber, 2009.	
Languages necessary to complete the course: English language, only minimal previous knowledge of German language is needed for this course.	
Notes: The course is held only in winter semester. It is highly recommended to take the course in the 3rd semester of the study.	

Past grade distribution
Total number of evaluated students: 0

A	ABS	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: Mgr. Stella Rizmanová

Last change: 30.07.2020

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KJ/13-Mgr-A/20	**Course title:** Academic German Language Preparation (3)
Educational activities: **Type of activities:** seminar **Number of hours:** **per week:** 2 **per level/semester:** 28 **Form of the course:** on-site learning	
Number of credits: 1	
Recommended semester: 4.	
Educational level: I.II.	
Prerequisites:	
Course requirements: - active participation of students in classroom - midterm test (15%) - final test (85%) To complete the course successfully a student must achieve at least 60%. Scale of assessment (preliminary/final): 15/85	
Learning outcomes: Students are able to use basic German grammar and practice the basic skills of listening, speaking, reading and writing in the present tense with an emphasis upon correct oral and written expressions and aural comprehension. Students are also introduced to various aspects of German culture in Germany and in German speaking countries focusing on the professional environment of pharmacies.	
Class syllabus: The course is for absolute beginners in German language who would like to obtain basic communication skills and grammar structures needed for everyday life in the academic and professional environment in a German speaking country.	
Recommended literature: Schritte international 4: Deutsch als Fremdsprache / Kursbuch + Arbeitsbuch mit Audio-CD zum Arbeitsbuch und interaktiven Übungen: Niveau A2/2, Hueber, 2009. Schritte international 5: Deutsch als Fremdsprache / Kursbuch + Arbeitsbuch mit Audio-CD zum Arbeitsbuch und interaktiven Übungen: Niveau B1/1, Hueber, 2009.	
Languages necessary to complete the course: English language, only minimal previous knowledge of German language is needed for this course.	
Notes: The course is held only in summer semester. It is highly recommended to take the course in the 4th semester of the study.	

Past grade distribution
Total number of evaluated students: 0

A	ABS	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0	0,0

Lecturers:

Last change: 30.07.2020

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KJ/14-Mgr-A/20	**Course title:** Academic German Language Preparation (4)
Educational activities: **Type of activities:** seminar **Number of hours:** **per week:** 2 **per level/semester:** 28 **Form of the course:** on-site learning	
Number of credits: 1	
Recommended semester: 5.	
Educational level: I.II.	
Prerequisites:	
Course requirements: - active participation of students in classroom - midterm test (15%) - final test (85%) To complete the course successfully a student must achieve at least 60%. Scale of assessment (preliminary/final): 15/85	
Learning outcomes: Students are able to use basic German grammar and practice the basic skills of listening, speaking, reading and writing in the present tense with an emphasis upon correct oral and written expressions and aural comprehension. Students are also introduced to various aspects of German culture in Germany and in German speaking countries focusing on the professional environment of pharmacies.	
Class syllabus: The course is for absolute beginners in German language who would like to obtain basic communication skills and grammar structures needed for everyday life in the academic and professional environment in a German speaking country.	
Recommended literature: Schritte international 5: Deutsch als Fremdsprache / Kursbuch + Arbeitsbuch mit Audio-CD zum Arbeitsbuch und interaktiven Übungen: Niveau B1/1, Hueber, 2009. Schritte international 6: Deutsch als Fremdsprache / Kursbuch + Arbeitsbuch mit Audio-CD zum Arbeitsbuch und interaktiven Übungen: Niveau B1/2, Hueber, 2009.	
Languages necessary to complete the course: English language, previous knowledge of German language is needed for this course.	
Notes: The course is held only in winter semester. It is highly recommended to take the course in the 5th semester of the study.	

Past grade distribution
Total number of evaluated students: 0

A	ABS	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: Mgr. Stella Rizmanová

Last change: 30.07.2020

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KJ/16-Mgr-A/20	Academic German Language Preparation (5)

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 1

Recommended semester: 7.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

A	ABS	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0	0,0

Lecturers:

Last change:

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KBMBL/18-Mgr-A/20	Advanced Cell-Biology Methods

Educational activities:
Type of activities: practicals / lecture
Number of hours:
per week: 1 / 2 **per level/semester:** 14 / 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 7.

Educational level: I.II.

Prerequisites:

Course requirements:
Mandatory attendance (lectures and laboratories). After successful completion of the laboratory exercises, the subject is finished by an exam, which consists of written and oral part. The minimum percentage to pass the written part is 60%, in order to be allowed for the oral part.

Learning outcomes:
The subject is designed for students, who want to take part and work independently on scientific projects based on cell culture experiments, as a part of their diploma thesis research. Students will be informed about the safety and sterility of requirements, which are the key factors for cell culture workflow. Students will be taught how to approach and solve common problems in the cell culture media for a certain cell culture, subculture techniques, cell viability assays, cell morphology (inverted microscopes), cell freezing and thawing, follow-up molecular-biological methods.

Class syllabus:
Cell cultures and their benefits, use in the biomedicine studies, practical skills in the cell-culture laboratory, characteristics of different types of cell cultures, stem cells, biology of cell cultures, conditions of cell cultivation (laboratory equipment, sterility requirements), freezing and unfreezing of cells, basic and follow-up procedures using molecular-biological techniques (transfection, overexpression, knockdown, knockout, quantitative Real-Time PCR). Procedures implemented in the solving of usual problems associated with the cultivation of cell cultures, e.g., different types of infections and contaminations. Practical part of the subject is directed to the determination of changes in inflammatory gene expression in the simulated model of inflammation in cell culture.

Recommended literature:
Animal Cell Culture: Essential Methods, edited by John M. Davis, Wiley, 2011. ProQuest Ebook Central, https://ebookcentral.prorequest.com/lib/uniba-ebooks/detail.action?docID=675259

Languages necessary to complete the course:
English language

Notes:

Maximum number of students per course: 1 group

Past grade distribution
Total number of evaluated students: 4

A	ABS	B	C	D	E	FX
50,0	0,0	50,0	0,0	0,0	0,0	0,0

Lecturers: Ing. Ľudmila Pašková, PhD.

Last change: 25.06.2021

Approved by: Ing. Ľudmila Pašková, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFANF/14-Mgr-A/20	Analysis of Substances in Biological System

Educational activities:
Type of activities: practicals / lecture
Number of hours:
per week: 2 / 1 **per level/semester:** 28 / 14
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 5.

Educational level: I.II.

Prerequisites:

Course requirements:
Preliminary assessment during the semester - preparation and subsequent defense of the semester work. Successful defense is a prerequisite for the final examination.
Final assessment - written examination, minimum 60% is required to pass the examination
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The course builds on the basic and advanced knowledge gained in the courses Analytical Chemistry 2 and New Trends in Analytical Chemistry and is aimed at the practical field of analysis of substances in complex biological systems. The student learns the analytical specifics of biological material, manipulation with biological samples, the process of developing of a new analytical method with respect to the analysis of small molecules and biomolecules (natural, chemical and biological drugs, drug metabolites, biomarkers) in complex biological matrices. Analytical evaluation of the biological system in this regard includes (i) the study of pharmacokinetics, biodistribution, and elimination of the drug, (ii) metabolomics (analysis of selected targeted metabolites and metabolic profiles, non-targeted metabolomics analysis), (iii) proteomics (qualitative and quantitative analysis of short peptides and proteins as potential biomarkers, analysis of large proteins used in pharmaceutical practice in the form of biotherapeutics (monoclonal antibodies)). Such analytical evaluation is essential for studying the mechanisms of drug action in the body, diagnosis of diseases (via known and novel biomarkers), and optimizing a therapy (e.g., by correlating active drug metabolite levels with the patient's condition, i.e., structure-effect relationship). Students also learns the basics of validation of bioanalytical methods according to current guidelines. Laboratory exercises are focused on the use of modern instrumentation techniques (especially selected chromatographic, electromigration, and spectral separation methods) for the analysis of biologically active substances in complex matrices. The knowledge and experience that students will gain after completing the course will be a good basis for successful completion of the thesis, as well as in doctoral studies (PhD.).

Class syllabus:
Bioanalysis
• Introduction, endogenous and exogenous substances as analytes in complex biological samples

• Characteristics of biological materials, sample collection, handling, storage, preparation, and pretreatment
• Validation of bioanalytical method
• Enzymatic and immunochemical analytical methods
• Electrochemical biosensors
• Chromatographic bioanalytical methods
• Electrophoretic bioanalytical methods
• Spectral methods in bioanalysis
• Metabolomics
• Proteomics

Recommended literature:

• Mikuš, Peter, Maráková, Katarína. Hyphenated electrophoretic techniques in advanced analysis. Bratislava: KARTPRINT, 2012
• Watson, David G. Pharmaceutical analysis: A Textbook for Pharmacy Students and Pharmaceutical Chemists, 5th ed. London: Elsevier, 2020
• Ramesh, Vasudevan, ed. Biomolecular and Bioanalytical Techniques: Theory, Methodology and Applications. Hoboken: Wiley, 2019
• Manz, Andreas, Petra S. Dittrich, Nicole Pamme, and Dimitri Iossifidis. Bioanalytical Chemistry. 2nd ed. London: Imperial College Press, 2015
• Mikkelsen, Susan R., and Eduardo Cortón. Bioanalytical Chemistry. 2nd ed. Hoboken: Wiley, 2016.
• Gross, J. H. Mass Spectrometry: A textbook. 3rd ed. Springer, 2017

Languages necessary to complete the course:
english language

Notes:

Past grade distribution
Total number of evaluated students: 24

A	ABS	B	C	D	E	FX
20,83	0,0	16,67	58,33	0,0	4,17	0,0

Lecturers: Mgr. Michal Hanko, PhD., Mgr. Jana Havlíková, MSc.

Last change: 02.04.2022

Approved by: Mgr. Michal Hanko, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFANF/01-Mgr-A/19	Analytical Chemistry (1)

Educational activities:
Type of activities: lecture / laboratory practicals / seminar
Number of hours:
per week: 2 / 4 / 0 **per level/semester:** 28 / 56 / 0
Form of the course: on-site learning

Number of credits: 7

Recommended semester: 2.

Educational level: I.II.

Prerequisites:

Course requirements:
Obligatory course.
Continuous assessment: The requirement for successful passing the practices is to undertake all tasks in practices and to reach sufficient points – minimum 60% out of 10 points (100%).
Evaluation of knowledge includes written testing at the beginning of each practical - max. 4 points, the performance of the individually given practical task – max. 6 points, including a hand-written completed report.
Practices are successfully passed only if total score obtained at the end of the semester is at least 60% of total available points (max. 10 points for each practical).
Final assessment:
After obtaining the required score from the laboratory practices (tests+tasks/reports) student can continue to final examination. The exam is performed in written form. It is necessary to reach at least 60% of the total score for successful passing of the examination.
The 50% of the final grade represent the score from the laboratory practices and 50% represent the result from the final examination.
Scale of assessment (preliminary/final): 50/50
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
The student after undertaking the course get a consistent and sufficiently extensive theoretical, methodical knowledge base and practical experimental skills for the proof and the identification of inorganic and organic elements, based on chemical reactions. The acquired theoretical knowledge and experimental skills will enable the use of gravimetric and titration analytical methods, including the preparation of samples to solve assigned tasks. Chemical analysis of substances, including drugs, pharmaceuticals, nutritional supplements is carried out in accordance with the basic rules and requirements of safety and protection at work. The student will get not only the necessary information about chemical analysis in real conditions of scientific work, but also a demonstration of problem solving and interrelationships within the analyzed systems, which leads to the development of analytical thinking of the student in general.

Class syllabus:

Qualitative chemical analysis
• General analytical chemistry
• Analytical chemistry: Principle, its importance in pharmacy, division (purpose, methods, quantity of analyzed omponent).
• Analysis procedure: sampling and treatment of the sample before chemical analysis, transfer to solution (mineralization), analysis protocol.
• Analytical reaction requirements: sensitivity and selectivity of the analytical reaction, purity of chemical reagents.
• Inorganic analysis
o Group, selective and specific reactions of cations with the emphasis on significant physiological and risk toxic elements.
o Group, selective and specific reactions of anions.
o Analytical proteolytic reactions. Buffers in analytical chemistry. Acids and bases in non-water solvents.
o Analytical complex-formation reactions and their equilibria. Masking of interfering components during chemical proofs of cations and anions. Organic complex-forming reagents
o Analytical precipitation reactions and their equilibria.
o Analytical oxidation-reduction reactions, kinetics. Catalytic and induced reactions.
o Selection of analytical method and procedure for the analysis of unknown sample.
• Organic analysis
o Proof and determination of C, H, O, N, S and halogens in organic compounds.
o Classification of organic compounds according to the solubility test results as a part of organic sample characterization.
o Functional group analysis – proof of hydrocarbons, halogen derivatives, active hydrogen, sulphonic acids.
o Functional group analysis – proof of alcohols (primary, secondary, tertiary).
o Functional group analysis – proof of phenols (monovalent, aminophenols).
o Functional group analysis – proof of aldehydes and ketones, compounds with active methyl group - methylketons.
o Functional group analysis – proof of carboxylic acids, esters, amides, anhydrides.
o Functional group analysis – proof of amines, nitro- and nitroso compounds.
Quantitative chemical analysis
Gravimetry
o Introduction to gravimetry – laboratory technique.
o Gravimetric determination of cations and anions.
Volumetric analysis:
o Introduction to volumetry – laboratory technique
o Titration curves, equivalence point, indicators, their properties and classification.
o Titration types – direct, indirect, back
o Acid-base determination. Acidimetry, alkalimetry, titrations in non-aqueous medium
o Complexometric determination. Chelatometry, mercurimetry
o Oxidation-reduction determinations: Permanganometry, iodometry, dichromatometry and bromometry
o Precipitation titrations: Argentometry

Recommended literature:

• Mikuš, P., Mikušová, V.: Chemical Analysis Qualitative and Quantitative. Bratislava : UK, 2011. 133 s.
• Mikuš, P., Maráková, K.: Hyphenated electrophoretic techniques in advanced analysis. Bratislava : KARTPRINT, 2012. 217 s.

• D.G. Watson, Pharmaceutical analysis, A textbook for pharmacy students and pharmaceutical chemists, Elsevier, Churchill Livingstone, London 2005.

Languages necessary to complete the course:
english

Notes:

Past grade distribution
Total number of evaluated students: 70

A	ABS	B	C	D	E	FX
7,14	0,0	2,86	24,29	32,86	14,29	18,57

Lecturers: PharmDr. Katarína Maráková, PhD., RNDr. Svetlana Dokupilová, PhD.

Last change: 02.04.2022

Approved by: PharmDr. Katarína Maráková, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFANF/02-Mgr-A/20	Analytical Chemistry (2)

Educational activities:
Type of activities: lecture / laboratory practicals / seminar
Number of hours:
per week: 2 / 5 / 0 **per level/semester:** 28 / 70 / 0
Form of the course: on-site learning

Number of credits: 8

Recommended semester: 3.

Educational level: I.II.

Prerequisites:

Course requirements:
Obligatory course.
Continuous assessment:
The condition for successfull passing of the practices is to undertake all practical tasks and to reach sufficient points – minimum 60% out of 10 points (100%):
• Evaluation of knowledge includes written and oral testing at the beginning of each practical - max. 4 points (40%),
• the performance of the individually given practical task and a hand-written completed report – max. 6 points (60%).
Practices are successfully passed only if a total score obtained at the end of the semester is at least 60% (max. 10 points for each practical).
Final assessment:
after passing (reached required score) laboratory practices – examination. Examination is performed in written form. It is necessary to reach at least 60% of a total score for successful passing of the examination
Scale of assessment (preliminary/final): 20/80

Learning outcomes:
The teaching of analytical chemistry has a significant influence on the formation of logical ideas and workflows in the characterization of the composition of samples, which the pharmacist may encounter in laboratory practice. In the field of instrumental analysis, the student obtains an overview and basic information about the types of analytical methods and their use, with respect to the studied analyte and matrix. Within the theoretical basis for each method, the emphasis is placed on (i) the principle of the method, (ii) the basic instrumental scheme, (iii) the methods of identification and/or quantification of the analyte, and (iv) the analytical / application potential of the method with its advantages and drawbacks. As part of the development of the analytical method, attention is focused on the optimization of working parameters, preparation and analysis of the sample, collection and statistical processing of data using computer technology, and interpretation of the results.

We base these aspects on the further focus of the pedagogical process so that the graduate gains a sufficient overview of the theoretical basis and possibilities of using instrumental methods in pharmaceutical practice and acquires a creative approach to work - independence and principles of good laboratory practice.

Class syllabus:

• Sampling and sample pretreatment before instrumental analysis
o Basic methods of sample preparation
o Preconcentration of analyte
o Analyte purification
o Analyte derivatization
• Statistical evaluation of the analytical result.
o Basic statistical parameters
o General approaches for determination (quantification) in the instrumental analysis (calibration curve, standard addition method)
o The sensitivity of the method, linear dynamic range, the limit of detection, the limit of quantification, accuracy, precision, selectivity, robustness
• Instrumental analytical methods,
o Methods for evaluation of the basic physicochemical parameters of substances
o boiling point, optical rotation, refractive index, pK, etc.
• Instrumental analytical methods,
o Electrochemical methods, basic division, principles, and parameters
o Instrumental arrangement of electrochemical methods
o Potentiometry, potentiometric titrations
o Amperometry
o Polarography and voltammetry
o Titrations with polarizable electrodes
o Electrogravimetry
o Coulometry
o Conductimetry
o Spectral methods
o Optical spectral methods, basic concepts, and division
o Atomic spectral analytical methods: Atomic absorption spectral analysis, atomic emission analysis, flame photometry, X-ray fluorescence spectrometry
o Molecular spectral methods: Molecular absorption spectrometry, fluorescence spectrometry, UV-VIS, infrared spectrometry, Raman spectrometry, nuclear magnetic resonance, mass spectrometry
o Optical methods non-spectral
o Refractometry, polarimetry, light scattering photometry
o Crystallography, X-ray diffraction
o Nuclear analytical methods, basic classification, principles, and parameters
o Identification of β and γ radiation, types of detectors
o Nuclear analytical indicator methods, methods based on natural radioactivity, activation analysis, non-activation interaction analysis, radionuclide X-ray fluorescence analysis
o Separation methods, basic division, principles, and parameters
o Filtration, extraction in analytical chemistry
o Chromatography, planar and column chromatography, gas chromatography, high-performance liquid chromatography
o Electromigration methods, electromigration techniques in the planar and capillary arrangement, capillary zone electrophoresis, capillary isotachophoresis, isoelectric focusing
o Application of analytical methods to identify and determine substances in pharmacy

Recommended literature:
• Mikuš, P., Mikušová, V.: Chemical Analysis Qualitative and Quantitative. Bratislava : UK, 2011. 133 s.
• Mikuš, P., Maráková, K.: Hyphenated electrophoretic techniques in advanced analysis. Bratislava : KARTPRINT, 2012. 217 s.
• D.G. Watson, Pharmaceutical analysis, A textbook for pharmacy students and pharmaceutical chemists, Elsevier, Churchill Livingstone, London 2005.

Languages necessary to complete the course:
english

Notes:

Past grade distribution
Total number of evaluated students: 34

A	ABS	B	C	D	E	FX
0,0	0,0	0,0	11,76	35,29	38,24	14,71

Lecturers: prof. RNDr. Peter Mikuš, PhD., PharmDr. Katarína Maráková, PhD., RNDr. Svetlana Dokupilová, PhD.

Last change: 02.04.2022

Approved by: prof. RNDr. Peter Mikuš, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/01-Mgr-A/00	Anatomy and Physiology

Educational activities:
Type of activities: lecture / laboratory practicals
Number of hours:
per week: 2 / 3 **per level/semester:** 28 / 42
Form of the course: on-site learning

Number of credits: 6

Recommended semester: 2.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
None

Course requirements:
Personal attendance at all lectures and practical classes, justified absence (max 2x) is replaced according to the instructions of the teacher; to pass 3 scheduled pre-tests, each minimally 60% rate. The final exam test is completed by students in computer by written form (distant) of examination. To pass the final exam test by students in minimally 60% rate. Evaluation (mark and score): A 91-100%, B 81-90%, C71-80%, D 66-70%, E 60-65%, FX < 60%.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
By completing the course, the student will gain a comprehensive idea of the organization and activities of the human body. He will learn essential knowledge of the anatomy of the human body, its spatial organization, composition and structure of individual systems and organs, they will get acquainted with the structure of tissues and their components. The student will be able to characterize the basic anatomical and functional units, learn the functions of tissues, organs, individual systems. The focus of teaching is neurohumoral regulation and signaling at the level of the cell and subcellular structures, regulatory, coordination and integration relationships between individual functional systems and the function of the organism as a whole. A necessary condition of the study is the verification of theoretical knowledge gained in lectures at practical exercises. The course is essential for the study of pharmacy and biologically-medically oriented subjects.

Class syllabus:
Introduction to Anatomy and Physiology. Body systems. Structural characteristics of the organs and tissue. Epithelial, connective tissues. Bones, skelet. Muscular system. Types of muscle tissue. Excitation-Contraction Coupling (ECC). Mechanism of contraction. Nervous system - orgainization, structure, function. Physiology of Nerve. Central nervous system. Peripheral nervous system-/ somatic, autonomic. Somatic, visceral reflex arc.
Special Senses. Physiology of vision, hearing, equilibrium and orientation.Endocrine System. Organization and feedback system. Hormones. Glands and their hormones.Organization of

cardiovascular system. Structure, function and factors affecting heart, vessels, circulation. ECG. Autonomic regulation of vascular lumen diameter. Blood pressure. Blood composition, plasma, elements and their role in the body. Blood clotting. Lymphatic system. Respiratory System. Respiratory Tract, Mechanics of Breathing, Gas Transport, Neurochemical Control of Breathing. Digestive System. Anatomy and Function of the Organs. Basic functional units. Enterohepatic circulation. Secretory function of stomach, liver, pancreas, intestine. Physiology of digestion. Nutrition. Regulation of Body Temperature. Urinary System. Anatomy and Functions of the Kidneys, Accesory Excretory Structures, Urine. Countercurrent multipier. Mechanism of micturition. Acid-Base Balance. Body Fluids. Anatomy and Physiology of Reproductive System. Male and Female Reproductive Organs, hormones, mestrual cycle, pregnancy
Exercise topics are focused on the anatomical structure of the body, musculoskeletal system, tissue histology and practical tasks determining selected physiological functions of individual systems: nerve cell physiology, reflexes, muscle physiology, blood examination, ECG recording, blood pressure measurement, urine examination, blood examination, determination blood glucose, cholesterol, functional lung examination, determination of body weight and composition, food composition, sensory examination.

Recommended literature:

Vander`s Human Physiology 12th Ed, McGraw/Hill, Ed., NY, by EP Widmaier, H Raff, KT Strang, 2011, ISBN 978/0/07/122215/0
Introduction to Human Anatomy and Physiology, 2nd edition, Saunders Elsevier, St. Louis, by EP Solomon, 2009, ISBN 072160045X/9780721600451
Human Anatomy and Physiology, Pearson Benjamin Cummings, San Francisco, by EN Marieb, K Hoehn, 2007, ISBN 032137294-8
Human Physiology, 3rd edition, Oxford University Press, by G Pocock, 2006, ISBN 0198568789
Basics of Medical Physiology, Comenius University in Bratislava, by D Ostatníková, 2017, ISBN 978-80-223-4196-7
Essentials of Human Physiology for Pharmacy, CEC Press, 2008, by LK McCorry (e-version)

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 694

A	ABS	B	C	D	E	FX
11,53	0,0	15,42	23,49	13,69	23,05	12,82

Lecturers: doc. MUDr. Tatiana Stankovičová, CSc., PharmDr. Tatiana Foltánová, PhD., PharmDr. Stanislava Kosírová, PhD., PharmDr. Eva Kráľová, PhD., PharmDr. Tomáš Rajtík, PhD., doc. PharmDr. Anna Paul Hrabovská, PhD., PharmDr. Csaba Horváth, PhD., PharmDr. Katarína Hadová, PhD., PharmDr. Dominika Dingová, PhD., Mgr. Ondrej Sprušanský, PhD., Mgr. Lenka Bies Piváčková, PhD., PharmDr. Attila Kulcsár, PhD.

Last change: 13.12.2021

Approved by: doc. MUDr. Tatiana Stankovičová, CSc.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KBMBL/13-Mgr-A/20	Applied Biochemistry

Educational activities:
Type of activities: lecture / laboratory practicals
Number of hours:
per week: 2 / 1 **per level/semester:** 28 / 14
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 5.

Educational level: I.II.

Prerequisites:

Course requirements:
Termination of course: Examination/ written exam
Preliminary conditions: The requirement for completing of practical course is the fulfillment of:
1. all prescribed experimental assignments
2. successfully pass pre-tests
Students have to obtain at least 60 % from the sum of maximal points of pre-tests.
Scale of assessment (preliminary/final): Pre-tests: achievement of at least 60 % from the sum of maximal points of pre-tests.Written exam. Evaluation A corresponds to obtaining min. 92% of the maximum number of points, B – 84%, C – 76%, D – 68%, E – 60%, Fx less than 60%.

Learning outcomes:
Students obtain information about the aetiology of diseases and mechanisms of biochemical processes associated with their pathology. The specific emphasis is put on the current possibilities of therapeutic approaches based on the application of biologics (biological treatment). Except understanding changes in biochemical processes in case of various diseases, the subject is also focused on providing knowledge related to their laboratory and clinical diagnostics, such as processing of biological material, methods used for determination of selected clinical parameters, usage of in vitro diagnostic tools, as well as an overall evaluation of patient status based on laboratory results. The mentioned areas of Applied Biochemistry are implemented into practical courses realized within the subject.

Class syllabus:
- Fundamentals of clinical biochemistry. Procedures for preparation and adjustment of analyzed samples. Principles of selected clinical-biochemical methods.
- Clinical enzymology, laboratory diagnostics. Importance of enzyme preparations in the diagnosis and therapy of diseases.
- Disorders of glucose and glycogen metabolism, biochemical presentation of diabetes mellitus.
- Lipid metabolism disorders. Lipoproteins: lipid transport forms, regulation of cholesterol metabolism, dyslipoproteinemias, disorders of sphingolipid metabolism
- Disorders connected to specific metabolic processes of carbohydrates, lipids, and proteins in the liver. Formation of ketone bodies and their relationship to various pathological conditions.

- Proteins and amino acid absorption disorders, proteolytic enzymes, innate amino acid metabolism disorders.
- Disorders of synthesis and degradation of purine and pyrimidine nucleotides.
- Disorders of heme and bilirubin metabolism, porphyria and hemoglobinopathy.
- Disorders of hormonal regulation.
- Acidobasic balance, mineral metabolism.
- Biochemical fundamentals of tumor process, specific markers of cancer diseases.
- Biochemical principles of the inflammatory response of the organism, enzymes, and mediators of the inflammatory process.

Recommended literature:

Lieberman M., Peet A.: Marks´ Basic Medical Biochemistry: A Clinical Approach. Wolters Kluver/Lippincott Wiliams & Wilkins, 2017, 5th edition.
Nessar A.: Clinical Biochemistry, Oxford University Press, 2016, 2nd edition.
Voet D., Voet J.G.: Biochemistry. John Wiley Inc. New York, 2011, 4th edition.

Languages necessary to complete the course:

English language.

Notes:

Past grade distribution

Total number of evaluated students: 27

A	ABS	B	C	D	E	FX
3,7	0,0	11,11	22,22	29,63	29,63	3,7

Lecturers: PharmDr. Andrea Balažová, PhD., doc. PharmDr. Marek Obložinský, PhD., RNDr. František Bilka, PhD., Mgr. Ivana Holková, PhD., PharmDr. Renáta Kubíková, PhD., Ing. Ľudmila Pašková, PhD.

Last change: 21.03.2022

Approved by: doc. PharmDr. Marek Obložinský, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/22-Mgr-A/14	Basics of Regulatory Pharmacy

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 1 / 1 **per level/semester:** 14 / 14
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
Phartmacology (1), Social Pharmacy and Pharmacoeconomics

Course requirements:
Mandatory 80% attendance at lectures and seminar work, in particular cases a written test.
Scale of assessment (preliminary/final): Ongoing 0 / final 100

Learning outcomes:
By passing this course, student is acquiring basic knowledge from field of regulation of medicinal products, mainly of evaluation of non-clinical and clinical documentation in the process of registration of medicinal products, regulation of safety of medicinal product, evaluation of efficacy of medicinal products and basic knowledge concerning regulatory aspects and procedures in medicines agencies (SIDC, EMA) and regulatory principles in non-clinical testing and clinical trials. During classes, one solves case studies with experts from practice.

Class syllabus:
- history of regulation of medicinal products in context of increased need for safety and efficacy demonstration
- principles of regulation of medicinal products, basic characteristics of medicinal products – quality, efficacy, safety
- need for good manufacturing practice, good clinical practice, good laboratory practice from regulatory point of view – effects on non-clinical and clinical testing
-integration of regulatory pharmacy into pre- and post-marketing, planning and overview of product strategy, transfer of information to interested parties
- regulatory and practical aspects of non-clinical and clinical testing
- re-evaluation, referrals in the EU, issues concerning confidentiality and transparency in regulatory processes – consistence of decisions and application of state of the art knowledge
- orphan medicinal products, paediatric data, advanced therapies, biosimilars, generics – non-clinical and clinical aspects
- over-the-counter vs. prescription-only medicines, legal status of medicinal products, evaluation of legal status

- regulation and evaluation of medical devices
- regulatory aspects of medicinal product´s documentation
- off-label use and misuse from the regulatory point of view
- regulatory aspects of pharmacovigilance, evaluation of adverse events and safety of medicinal products
- evaluation of risk-benefit ratio in medicinal product´s regulation

Recommended literature:
Klimas J a kol: Basics of Regulatory Pharmacy, Univerzita Komenského v Bratislave, 2014
Guidelines of European medicines agency, see http://www.ema.europa.eu/ema/

Languages necessary to complete the course:
Slovak, English

Notes:
maximum number of students: 20, in case of higher interest - selection will be made based on: grade average (years 1-3), average from subjects Pharmacology and Social pharmacy and pharmacoeconomics, motivation letter, certificate (exam) proving knowledge of english language

Past grade distribution
Total number of evaluated students: 0

A	ABS	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: prof. PharmDr. Ján Klimas, PhD., MPH

Last change: 01.12.2021

Approved by: prof. PharmDr. Ján Klimas, PhD., MPH

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KBMBL/03-Mgr-A/00	Biochemistry

Educational activities:
Type of activities: lecture / laboratory practicals
Number of hours:
per week: 3 / 4 **per level/semester:** 42 / 56
Form of the course: on-site learning

Number of credits: 8

Recommended semester: 4.

Educational level: I.II.

Prerequisites:

Course requirements:
Main condition for the practical exercisses recognition is 60% yield as the summary of three semestral tests. The course is completed by examination made up of two parts: written and oral.

Learning outcomes:
After biochemistry completing courses the students should manage the basic biochemical analysis including kinetic enzymology on cell and molecular level. Moreover should have a good knowledge about basic metabolic pathways, their enzyme equipment and subcellular location. Should know something about mechanism of metabolic regulation as well as about some important signalling molecules and enzymes that can be involved into the mechanism of drug effect.

Class syllabus:
Dynamic picture of the biological function and properties of the higher protein structure. In this context are introduced enzymes, coenzymes, catalytic function, kinetics of enzyme reaction, inhibition, kinetic inhibition parameters and the meaning for pharmacy. No less important is aspect relating to the metabolism of nutrients associated with energy generation in ATP form. Discussed are the individual metabolic pathways of saccharides, lipids and proteins, their enzyme subcellular equipment including regulation on signal molecules level. Krebs cycle and oxidative phosphorylation is introduced as a final catabolic process with emphasis on the interconnection of both of them through reduced NADH and FADH2 coenzymes that are reoxidatived via electron and proton transportprocesses located in the inner mitochondrial membrane. Conclusion is devoted to basic information on genetic principles, replication, transcription, recombination and regulation of gene expression.

Recommended literature:
Voet D., Voet J.: Biochemistry, John Wiley & Sons, USA, 2004, 3rd ed.
Elliott W.H., Elliott D.C.: Biochemistry and Molecular Biology. 4th ed. Oxford University Press 2009.
Campbell M.K., Farrel S.O.: Biochemistry. Thomson Brooks-Cole, 2009, 6th ed.

Languages necessary to complete the course:
English language.

Notes:
Biochemistry course in its practical part is focus on two thematic units: Definition, function, properties and meaning of biochemical substrates mainly of saccharides, lipids and proteins. Second part is devoted to enzymology where are introduced the enyzme structures and function based on higher protein structures, principle of catalysis, inhibition, as well as kinetics of enzyme or inhibition reaction. Given the difficulty of biological materials is not possible to replace practical exercises.

Past grade distribution
Total number of evaluated students: 627

A	ABS	B	C	D	E	FX
11,48	0,0	11,8	18,66	24,56	28,87	4,63

Lecturers: RNDr. František Bilka, PhD., PharmDr. Renáta Kubíková, PhD., PharmDr. Andrea Balažová, PhD., doc. PharmDr. Marek Obložinský, PhD., Ing. Ľudmila Pašková, PhD., Mgr. Ivana Holková, PhD., PharmDr. Gabriela Greifová, PhD.

Last change: 23.11.2021

Approved by: RNDr. František Bilka, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KChTL/01-Mgr-A/00	Bioorganic Chemistry

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
Recommendation: Organic Chemistry 1

Course requirements:
a) To prepare a seminar paper
b) Pass the written test.
For passing the exam it is required to achieve more than 60 % of the points.
A: 90,01 % – 100,00 %; B: 82,01 % – 90,00 %; C: 74,01 % – 82,00 %; D: 66,01 % – 74,00 %; E: 60,01 % – 66,00 %; Fx: ≤ 60,00 %.
Scale of assessment (preliminary/final): 20/80

Learning outcomes:
The basic aim of the course Bioorganic Chemistry lies in the understanding of biological processes at the level of organic reaction mechanisms and identifying the basic parameters that govern these processes. Bioorganic Chemistry then is to deal with the problems of living nature in which chemical factors play an important role.

Class syllabus:
Bioorganic Chemistry follows the course of Organic Chemistry. Due to the fact that biological objects represent complex systems, their study requires an interdisciplinary approach.
The course in the form of lectures focuses on those areas of bioorganic chemistry which are related to the structure of biomolecules, their spatial arrangement and relationships to biological functions. The emphasis is not only on the compounds with dominant position in living objects, such as aminoacids, peptides, proteins, heterocyclic bases, mono- and polysaccharides, nucleotides and nucleic acids, lipids but also the knowledge of known mechanisms of chemical reactions taking place in a biological system.
Watching the rules of creating of macromolecular structure of organisms and their mutual interactions also with other molecules belong to other areas to be studied by bioorganic chemistry. The detailed knowledge of the structure and chemical processes occurring in a biological system allows to create bio-analogical chemical systems operating on a similar principle as in living nature (biomembranes, enzymatic catalysis, etc…) for practical use.

Recommended literature:

1. Devínsky F. et al. Organic Chemistry for Pharmacy Students. Comenius University Press, Bratislava, 2010
2. Van Vranken, D., Weiss, G.: Introduction to Bioorganic Chemistry and Chemical Biology, Garland Science 2013
3. McMurry, J.W., Begley, T.P.: The Organic Chemistry of biological Pathways, W. H. Freeman, 2nd ed., 2015
4. Voet D., Voet J.: Biochemistry, John Wiley & Sons, 3rd ed., 2004

Languages necessary to complete the course:

English language

Notes:

The course is held only in winter semester.
Teachers: Assoc. prof. PharmDr. Jindra Valentová, PhD.

Past grade distribution

Total number of evaluated students: 31

A	ABS	B	C	D	E	FX
67,74	0,0	12,9	6,45	9,68	3,23	0,0

Lecturers: doc. PharmDr. Jindra Valentová, PhD.

Last change: 03.04.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFChL/02-Mgr-A/20	Biophysics

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 1 / 2 **per level/semester:** 14 / 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: I.II.

Prerequisites: FaF.KFChL/21-Mgr-A/21 - Pharmaceutical Physics and FaF.KFChL/22-Mgr-A/21 - Physical Chemistry

Recommended prerequisites:
General biology, Organic chemistry, Mathematics

Course requirements:
Written essay on the selected theme from literature, seminar presentation of the theme and its defense (max. 40 points). Active discussion at seminars, oral examination from lecture topics (max. 20 points).
A total of at least 55 points must be obtained to obtain an A rating, at least 51 points to obtain a B rating, a minimum of 47 points for a C rating, a minimum of 42 points for a D rating and a minimum of 37 points for an E rating. Scale of assessment (preliminary/final): Seminar work and exam interview: a maximum of 60 points
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
The aim of the subject is to provide pharmacists with knowledge of physical processes that take place on the level of tissues, cells and molecules at physiological and pathological conditions. The importance of pharmaceutical view is emphasized in each of the studied problems. Students will be able to understand basic topics of molecular biophysics, to study selected themes from literature, to elaborate a written work about it and to present a lecture.

Class syllabus:
Selected lectures from molecular biophysics will be delivered either by experts from the Faculty or invited from other institutes: Introduction to Biophysics. Membrane biophysics, lipid bilayers, lipid rafts. Polymorphic behavior of lipids. Lipids as drug delivery systems in various applications. Biological membrane and anesthesia, solitons. Membrane channels – general introduction, specification, methods of study. Methods of isolation and detection of voltage dependent ion channels. Biophysics and pharmacology of voltage dependent channels. Hereditary diseases caused by mutation of membrane's channels. Dendrimers in drug delivery. Computational drug design.
The lectured topics are discussed in seminars. The students discuss their own selected scientific problem and related literature for the essay and its presentation.

Recommended literature:

Basics of medical physics and biophysics. http://www.fmed.uniba.sk/uploads/media/Basics_of_Biophysics.pdf
http://www.freebookcentre.net/physics-books-download/Biological-and-Environmental-Physics.html
http://www.freebookcentre.net/Physics/Medical-Physics-Books.html
Gurtu J.N., Gurtu A.: Pragati's biophysical chemistry (electronic resource). Meerut, Pragati Prakashan, 2010, http://site.ebrary.com/lib/uniba/Doc?id=10355534
Lacinová Ľ., Uhríková D.: Voltage dependent channels in excitable membranes. Bratislava, Comenius University, 2011
Vítek F.: Lectures on biophysics with medical orientation. Prague, Karolinum, 2011
Dillon P. F.: Biophysics : A physiological approach. Cambridge, Cambridge University Press, 2012
Comprehensive biophysics, volumes 1-6. Amsterdam, Elsevier, 2012
Glaser R.: Biophysics : An introduction. Heidelberg, Springer, 2012
Amler E. et al.: Chapters from biophysics. Prague, Karolinum, 2012
Hrazdira I., Mornstein V., Bourek A.: Fundamentals of biophysics and medical technology. Brno, Masaryk University, 2013
Lacinova, Gen Physiol Biophys 24:Suppl 1:1-78, 2005

Languages necessary to complete the course:

English

Notes:

The number of enrolled students for the subject is ranged between 5 – 30 (min – max).

Past grade distribution

Total number of evaluated students: 3

A	ABS	B	C	D	E	FX
0,0	0,0	0,0	0,0	33,33	66,67	0,0

Lecturers: prof. RNDr. Daniela Uhríková, CSc., Mgr. Mária Klacsová, PhD.

Last change: 01.04.2022

Approved by: prof. RNDr. Daniela Uhríková, CSc.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFChL/01-Mgr-A/20	Biostatistics for Pharmacists

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 1 / 2 **per level/semester:** 14 / 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 4.

Educational level: I.II.

Prerequisites:

Course requirements:
The overall evaluation consists of continuous evaluation in seminars (0-10 points), evaluation of the final written project (0-24 points) and evaluation of the presentation (0-16 points) as a simple sum of points: A 45-50 points, B 40-44 points, C 36-39 points, D 33-35 points, E 30-32 points.

Learning outcomes:
After completing the course, the student is familiar with applied statistical methods in drug development and research, drug control and analysis, manufacturing processes and outputs, methods applied in epidemiology and drug policy, and finally in applied statistical procedures of economic management of pharmacies and drug distribution.

Class syllabus:
1. Methodology of the statistical survey: research question, research hypothesis, population, sample, methods of selection, quantitative and qualitative research, types of studies, observation, experiment, meta-analysis, research set design, sample size, randomization procedures, factors, intervention, intervention effect , cross effect, effect size, background, supressor, confounder, noise, main research result, support information, research protocol, statistical survey phases (schedule, data collection, quality assurance procedures, statistical analysis, interpretation)
2. Data preparation for statistical analysis: object and subject of research, random variables, types and distributions of random variables, parameter, external and internal sources of variability, uncertainty and error, probability and its models, transformation of variable, standardization of random variable, blinding methods , Latin square, data quality control and assurance (gross errors, incomplete, missing and outlying data, transformation, encryption, coding), replicas, parallel measurements, sorting, filtering, stratification
3. Procedures for the selection of data processing methods: target population, research sample, sample design, prospective and retrospective studies, intervention, exposed and control, randomization, cross schedule, longitudinal study, blindness, instrumental and questionnaire research, reliability, validity, sensitivity and robustness of the questionnaire, the Likert scale, scoring, signal, noise, distortion, standardized questionnaire, methods of questionnaire validation, reliability measurement, transformation of data-information-knowledge, character, character value, variable independence, descriptor, predictor, regressor

4. Descriptive statistics: cardinal, ordinal and nominal variables, scale, interval and categorical variables, measures of extent, arithmetic, geometric and hypergeometric mean, statistical weight, mode, median, variability rates, variation range, mean deviation, variance and standard deviation variation coefficient, shape measures, symmetry of distribution, distribution concentration, frequency analysis, information content and its reduction
5. Univariate sample analysis: selection types, point and interval estimation, parametric tests, null hypothesis, significance level, effect size, first and second type errors, false positivity and negativity, statistical significance, clinical and biological significance, mean value hypothesis tests and variance, two mean and variance matching tests, component variation analysis, variance analysis, balanced experiment, solid, random and mixed effects and models, single-factor variance analysis
6. Measures of association: countable random variable, transformable measurable variables to countable, exposure and effect as quality, frequency characteristic analysis, chance and risk, absolute and relative risk, risk ratio and chance ratio, count interval estimation, interval estimation of or and rr , pivot table, independence, 2x2 tables, Fisher-Freeman exact test, Pearson test of goodness of fit, survival curves, Kaplan-Meier survival curve
7. Relative numbers and indices - aggregation, temporal and spatial development, time series, cyclic phenomena, seasonality, trend, chaos, noise, effects of cyclic and random phenomena on processes, predictability
8. Multivariate analysis: correlation and covariance, trends, correlation dependency, simple linear regression, linear modeling, transformation to linear problem, statistical dependence rates, sign tests, serial tests, Kruskall Walis test, Friedman test for dependent samples, regression diagnostics (linearity, homoskedascity, autocorrelation, residue analysis), multi-factor analysis of variance, general linear model, nonlinear regression models with two or more parameters
9. Process evaluation: types of measurement errors, simple and compound uncertainty, uncertainty propagation and composition, Ishikawa diagram, accuracy, accuracy, robustness, detection limit (LOD), quantification limit (LOQ), outliers tests, validation, control standard, certified reference material, accredited tests, ROC curve, sensitivity and selectivity, AUC, inter-rater agreement, pharmacopoeial statistics, evaluation process validation
10. Statistical software: data import and export, format compatibility, data processing, scripts, data mining, statistical software for UK users.

Recommended literature:
Jones D.: Pharmaceutical Statistics, London, Pharmaceutiacal Press, 2002.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 4

A	ABS	B	C	D	E	FX
25,0	0,0	25,0	0,0	0,0	50,0	0,0

Lecturers: RNDr. Tomáš Fazekaš, PhD., RNDr. Alexander Búcsi, PhD.

Last change: 23.03.2022

Approved by: RNDr. Tomáš Fazekaš, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFANF/11-Mgr-A/19	Calculations in chemical analysis

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 1

Recommended semester: 2.

Educational level: I.II.

Prerequisites:

Course requirements:
Elective course. Continuous assessment: To successfully complete the seminar from calculations, it is necessary to obtain at least 60% of the sum of the maximum number of points from individual seminars - (max. 10 points per seminar). The exam will be performed in writing - by a test. To successfully pass the exam, it is necessary to obtain at least 60% of possible points. The assessment A: 100.0 - 92.1% B: 92.0 - 84.1% C: 84.0 - 76.1% D: 76.0 - 68.1% E: 68.0 - 60.0% FX: <60.0%. Scale of assessment (preliminary/final): 0/100

Learning outcomes:
Calculations from various chemical equations are an integral part of chemical analysis. Elective course "Calculations in chemical analysis" which takes place in parallel with the course “Analytical Chemistry 1”, helps students to overcome problematic areas of chemical analysis and at the same it extends this scope to other relevant calculations.

Class syllabus:
• Determination of stoichiometry of chemical equations, calculations of equilibrium constants, pH
• Calculation of concentration for the prepared solution (mass and molar concentration, dilution of solutions, mass and volume percentage)
• Calculation of the content of the test substance in gravimetric determinations • Calculation of the content of the test substance in acid - base titrations (alkalimetry, acidimetry, acid-base determinations in non-aqueous solvents)
• Calculation of the content of the analyte in complexation titrations (chelatometry, argentometric determination of cyanides, mercurimetry)
• Calculation of the content of the analyte in redox titrations (iodometry, bromatometry, manganometry, dichromatometry)
• Calculation of the content of the test substance in precipitation titration determinations (argentometry)
• Evaluation of measured data of direct, backward and indirect titrations

Recommended literature:

• Mikuš, P., Mikušová, V.: Chemical Analysis Qualitative and Quantitative. Bratislava : UK, 2011. 133 s. Strana: 2 D.G. Watson, Pharmaceutical analysis, A textbook for pharmacy students and pharmaceutical chemists, Elsevier, Churchill Livingstone, London 2005.
• web pages with appropriate keywords and their combinations

Languages necessary to complete the course:
english language

Notes:

Past grade distribution
Total number of evaluated students: 4

A	ABS	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: Ing. Dáša Kružlicová, PhD.

Last change: 02.04.2022

Approved by: Ing. Dáša Kružlicová, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/11-Mgr-A/00	Clinical Pharmacology and Pharmacotherapy (1)

Educational activities:
Type of activities: lecture / laboratory practicals / seminar
Number of hours:
per week: 2 / 0 / 2 **per level/semester:** 28 / 0 / 28
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 7.

Educational level: I.II.

Prerequisites:

Course requirements:
Preliminary assessment: 1 seminar work Final assessment: final test - written examination, the minimum threshold of success: 60%.

Learning outcomes:
Students shall acquire basic information not only on the efficacy of medicinal products, but also on their safe administration to patients, in particular risk groups. Students become familiar with the methods of preclinical and clinical trials of medicinal products, explanation of mechanism of interactions, adverse effects of drugs and their monitoring. Pharmacy students will be able to contribute to the rational use of medicines in clinical practice.

Class syllabus:
- Introduction to the study of Clinical Pharmacology and Pharmacotherapy
- Preclinical evaluation of drugs
- Clinical evaluation of drugs
- Rational pharmacotherapy
- Harmful effects of drugs, adverse drug reaction
- Pharmacovigilance
- Summary of Product Characteristic and Patient Information Leaflet
- Over the counter drugs
- European drug policy
- Drug interactions
- Humans rights and medicine
- Ethical problems and non-proved therapeutical approaches
- Basic pharmacokinetic parameters in clinical practice
- Prescription form, generic substitution
- Individual variability in pharmacotherapy of neonates and children, pregnant women, elderly
- Importance of pharmacogenetics for the rational pharmacotherapy. Gene therapy
- Chronopharmacology and its importance for therapy
- Pathophysiological status influencing drug response
- Obesity, dyslipidemia, diabetes and cardiovascular disease, nutritional supplements for proper diet

- Abdominal pain, basic evaluation and first aid.
- Chest pain and back pain, diagnosis and first aid

Recommended literature:

- Walker R, Whittlesea C: Clinical Pharmacy and Therapeutics. Fifth edition. Churchill Livingstone. Elsevier. 2012. 983 p.
- Brown M.J., Sharma P., Mir F.A., Bennet P.N.: Clinical Pharmacology. 12th Edition. Elsevier. 2018 (available as e-book from Central Library)
- Francis S-A, Smith F.J., Malkinson J., Constanti A., Taylor K. Integrated Pharmacy Case Studies. Pharmaceutical Press. 2015 (available as e-book from Central Library)
- Gray A.H., Wright J., Bruce L., Oakley J. Clinical Pharmacy. Second Edition. Pharmaceutical Press. 2016 (available in Central Library for present studying)
- Nathan A: Managing symptoms in the pharmacy. Second Edition. Pharmaceutical Press. 2012 (available as e-book from Central Library) (e-book section from Central Library: https://www.fpharm.uniba.sk/en/divisions/central-library/e-books/)
Online databeses: - LEXICOMP Online. Wolters Kluwer Clinical Drug Information, Inc. <online: http://online.lexi.com/lco/action/home)

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 599

A	ABS	B	C	D	E	FX
12,85	0,0	12,52	20,03	24,54	28,88	1,17

Lecturers: PharmDr. Stanislava Kosírová, PhD., Mgr. Diana Vavrincová, PhD., Mgr. Peter Vavrinec, PhD., PharmDr. Eva Kráľová, PhD., PharmDr. Tatiana Foltánová, PhD., Mgr. Gabriel Dóka, PhD., PharmDr. Zuzana Kiliánová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH

Last change: 01.02.2022

Approved by: prof. PharmDr. Ján Klimas, PhD., MPH

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/12-Mgr-A/00	Clinical Pharmacology and Pharmacotherapy (2)

Educational activities:
Type of activities: lecture / laboratory practicals / seminar
Number of hours:
per week: 3 / 0 / 2 **per level/semester:** 42 / 0 / 28
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
KFT/09-Mgr-A/00 Pharmacology and Toxicology (2), KFT/11-Mgr-A/00 Clinical pharmacology and pharmacotherapy (1)

Course requirements:
Preliminary assessment: 1 seminar work.
Final assessment: Written examination, minimum success rate: 60%

Learning outcomes:
Completing the course the student acquires basic information about treatment options and first aid for pain, insomnia, dizziness and vomiting, fever, cough, diarrhea, bleeding events, infections, gastrointestinal diseases and ear, nose, throat diseases. The student will become familiar with the ATC groups and therapeutic use of the most current symptoms of disease and potential manifestations of adverse effects in selected pharmacotherapeutic groups. This course will contribute to the participation of pharmacists for solving pharmacotherapeutic problems in clinical practice in cooperation with the physician.

Class syllabus:
- Anatomical-therapeutical-chemical classification of drugs. ATC A - V group:
- Drugs decreasing motility of smooth muscles
- The most frequent diseases of GIT, dyspepsia, oesophageal reflux, pyrosis, diarrhea, constipation, first aid and treatment
- Dizziness, nausea and vomiting - first aid and treatment
- Bleeding disorders, first aid and therapy
- Antithrombotic drugs in therapy
- Chest pain and back ache as suspicious of ischemic heart disease and myocardial infarction
- Unconsciousness and shock states
- Drugs used for topical application in dermatology
- Allergic reactions and their skin manifestations
- Glucocorticoids and their pharmacological importance
- Hormonal contraception and hormonal replacement therapy

- Strategy of antibiotic therapy
- Pharmacotherapy of reumatoid diseases
- Fever, its clinical importance and therapy
- Headache and migraine, first aid and therapeutical approaches
- Insomnia, first aid and therapeutical approaches
- Asthma and chronic obstructive lung disease
- Cough and drugs used for cough, first aid and therapy
- Life style drugs, falsified medicines

Recommended literature:

Recommended Literature: e-books and printed books:
- Walker R, Whittlesea C: Clinical Pharmacy and Therapeutics. Fifth edition. Churchill Livingstone. Elsevier. 2012. 983 p.
- Brown M.J., Sharma P., Mir F.A., Bennet P.N.: Clinical Pharmacology. 12th Edition. Elsevier. 2018 (available as e-book from Central Library)
- Francis S-A, Smith F.J., Malkinson J., Constanti A., Taylor K. Integrated Pharmacy Case Studies. Pharmaceutical Press. 2015 (available as e-book from Central Library)
- Gray A.H., Wright J., Bruce L., Oakley J. Clinical Pharmacy. Second Edition. Pharmaceutical Press. 2016 (available in Central Library for present studying)
- Nathan A: Managing symptoms in the pharmacy. Second Edition. Pharmaceutical Press. 2012 (available as e-book from Central Library)
(e-book section from Central Library: https://www.fpharm.uniba.sk/en/divisions/central-library/e-books/) Online databeses: - LEXICOMP Online. Wolters Kluwer Clinical Drug Information, Inc. <online:
http://online.lexi.com/lco/action/home)

Languages necessary to complete the course:

English

Notes:

Past grade distribution

Total number of evaluated students: 582

A	ABS	B	C	D	E	FX
19,24	0,0	19,59	21,99	19,24	13,75	6,19

Lecturers: Mgr. Gabriel Dóka, PhD., PharmDr. Tatiana Foltánová, PhD., PharmDr. Zuzana Kiliánová, PhD., PharmDr. Stanislava Kosírová, PhD., PharmDr. Eva Kráľová, PhD., Mgr. Diana Vavrincová, PhD., Mgr. Peter Vavrinec, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, Mgr. Lenka Bies Piváčková, PhD.

Last change: 01.02.2022

Approved by: prof. PharmDr. Ján Klimas, PhD., MPH

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/14-Mgr/A/00	Computer Data Processing

Educational activities:
Type of activities: practicals / lecture / seminar
Number of hours:
per week: 2 / 0 / 0 **per level/semester:** 28 / 0 / 0
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: I.II.

Prerequisites:

Course requirements:
Student has to attend all seminars as well 3 continuous tests.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
After completing the course the student is able to work independently and creatively in the field of collection, processing, presentation and evaluation of data in electronic form. A self-versed in this area and can use the methods and techniques of data, data organization understands and is able to use the current version of the standard application software for their professional activities.

Class syllabus:
The content is updated skills and abilities of the student to interact with computing resources by the so-called. Standard Application Dressed up as a result of the intensive development of technical and program area, which is an organic part of professional pharmaceutical activities in all sectors of pharmaceutical science and practice.
- Qualified user communication with a computer, knowledge of work with devices, peripherals and media computing,
-Data organization and its resources, standards and conventions,
- computer operating system command Editors enabling communication,
- work with archive files (zip, rar and others) and their current tools, issues of data storage,
- word processing , production and operations on text files , import and export, creating tables and forms, including conversion to PDF,
- spreadsheet and user functions, including mathematical statistics, with particular emphasis on visuals to a spreadsheet as a source of pharmaceutically important user graphics,
- database applications as one of the major areas of application user spreadsheet,
- Create presentations as a specific document formats,
- Internet network (IE browsers, Mozilla Firefox),
- the link between the work included in the standard application field of MS Office and Internet world,
- search services and technology to work with them,

- cloud approach to working with organized data , services like Google Docs , Google and Google Sheets Slides,
- mastering the techniques of web -based data stores Google Drive and others),
- managing online work processes as a prerequisite for e-learning techniques,
- prerequisite work at each level of exercise is communication by electronic mail (webmail communication), - part of the subject is also a serious hygiene problem in computing.

Recommended literature:
Current web resources as well textbooks.

Languages necessary to complete the course:
English language

Notes:

Past grade distribution
Total number of evaluated students: 610

A	ABS	B	C	D	E	FX
30,66	0,0	11,31	23,28	10,49	21,15	3,11

Lecturers: doc. PharmDr. Tomáš Tesař, PhD., MBA

Last change: 02.08.2021

Approved by: doc. PharmDr. Tomáš Tesař, PhD., MBA

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KGF/08-Mgr-A/20	Cosmetic Formulations

Educational activities:
Type of activities: practicals / lecture
Number of hours:
per week: 1 / 2 **per level/semester:** 14 / 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Course requirements:
8th semester (4th year master´s degree)

Learning outcomes:
Evaluation of students' success in the exam: A – 61,70%, B – 34,04%, C – 2,13%, D - 2,13%, E – 0% Fx – 0%

Class syllabus:
Human skin, skin types, specifics of their treatment. The most commonly used biologically active substances and their use. Types of cosmetics for skin and body skin care. Taking care of healthy skin. The most common skin diseases and their treatment. Skin aging, mechanisms of aging, prevention and anti-aging preparations and alternative substances. Sunlight, benefits and risks, types of UV filters, phototypes, types of cosmetics for protection against sunlight. Biologically active substances and auxiliary substances in cosmetics. Cosmetics testing, the most common allergens, prohibited substances, interpretation of information on cosmetics packaging, legislation on the production of cosmetics. Hair physiology. Hair cosmetics, therapy of the most common hair diseases. Phototherapy in the management of skin and autoimmune diseases. Cosmetics with a special focus. Care for specific parts of the body: nails, eyes, lips, feet. Cosmetics for intimate hygiene.

Recommended literature:
A. Shai, H. I. Maibach, R. Baran: Handbook of Cosmetic Skin Care. CRC Press, 2009
D. Janeš, N. Kočevar Glavač: Modern cosmetics. Širimo dobro besedo, d. o. o.Velenje, 2018
S. Barton: Discovering Cosmetic Science, Royal society of chemistry, 2020
K. Sakamoto, R. Lochhead, H. Maibach: Cosmetic science and technology: Theoretical principles and technology. Elsevier Books, 2017

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 6

A	ABS	B	C	D	E	FX
33,33	0,0	33,33	33,33	0,0	0,0	0,0

Lecturers: Ing. Michael Kenneth Lawson, PhD., PharmDr. Veronika Šimunková, PhD., Mgr. Jana Selčanová, PharmDr. Miroslava Špaglová, PhD., PharmDr. Mária Čuchorová, PhD., PharmDr. Veronika Mikušová, PhD., PharmDr. Desana Matušová, PhD., PharmDr. Mária Raučinová, PhD.

Last change: 12.12.2021

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFB/13-Mgr-A/20	Current Trends in Preparations of Natural Origin

Educational activities:
Type of activities: lecture / laboratory practicals
Number of hours:
per week: 2 / 1 **per level/semester:** 28 / 14
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 6.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 5

A	ABS	B	C	D	E	FX
20,0	0,0	20,0	40,0	0,0	0,0	20,0

Lecturers: doc. PharmDr. Silvia Bittner Fialová, PhD.

Last change:

Approved by:

STATE EXAM DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF/300-Mgr-A/15	**Course title:** Defense of Diploma Thesis
Number of credits: 4	
Educational level: I.II.	
State exam syllabus:	
Last change:	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/29-Mgr-A/20	Diet and Nutrition Basics

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 2 / 1 **per level/semester:** 28 / 14
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 7.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
Not estimated

Course requirements:
Obligatory attendance at seminars. Preliminary test. Exam (on-line test), evaluation: A = 100-95%, B = 90-85%, C = 84-75%, D = 74-65%, E = 64-55%, Fx = less than 55%.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
By completing the course, the student will gain basic knowledge and skills from the nutrition and dietetics. The nutrition, diet and eating habits of the population have shown to contribute to the development of most diseases, which have a high prevalence, are associated with long-term use of medicines and create high financial demands on public and individual finances. The course focuses on general issues of nutrition, preventive and curative diet therapy for selected diseases and specific groups, deals with legislation and using of foods for specific nutritional purposes, especially dietetic foods and dietary supplements. The subject also includes dietetic, nutritional and supplementary counselling provided preventively, but also as a part of treatment. The students will understand and be able to apply knowledge of basic concepts related to nutrition, health and disease and clinical nutrition. They will learn the basics of assessing the state of nutrition, the cause and development of diseases related to nutrition and lifestyle. They will learn to apply knowledge from prevention programs in the management of nutrition in the most common and epidemiologically serious diseases. The course allows students completing and expanding the professional profile of a pharmacist, cooperation with other health care providers in solving healthcare problems related to nutrition and providing comprehensive counselling and consulting services for individualized pharmaceutical care.

Class syllabus:
Description of subject – lectures:
1. Dietetics in the treatment and prevention of diseases. Development and current trends. Scientific approach in dietetics. The relationship of nutrition to health and disease.

2. Physiology of nutrition. Components of nutrition - macronutrients (carbohydrates, fats, proteins), micronutrients, vitamins and minerals. Water. Alcohol.
3. Energy balance - energy intake and expenditure. Energy substrates. Energy density of food. Influence of energy expenditure.
4. Dietary recommendations. Nutritional habits and their monitoring (analysis of dietary records, databases of energy and nutritional composition of food).
5. Healthy and balanced diet. Dietary guidelines in the prevention of chronic diseases.
6. Therapeutic and preventive dietary recommendations for selected diseases: obesity, diabetes mellitus type 1 and type 2 diabetes, dyslipoproteínémia, hypertension, atherosclerosis, cancer.
7. Diet therapy in specific population groups (children, pregnant and lactating women, in old age). Diet therapy for other diseases. Specific groups of patients with food allergy and intolerance.
8. Examination of nutritional status (anamnesis, physical, laboratory and auxiliary examinations). Nutritional status of the individual. Population nutritional monitoring. Eating disorders (malnutrition, anorexia, bulimia).
9. Enteral and parenteral nutrition. Foods for specific nutritional purposes - dietetic foods, dietary supplements. Legislation, marketing, payment, rational use and advice.
10. Alternative forms of nutrition (vegetarianism, veganism) and dietetics. Issues of organic foods, genetically modified foods, functional foods.
11. The current nutritional situation in our country and in the world. The National Health and Nutrition Program. Food consumption and its development. Food, nutrition and health literacy. Evaluation methods. Food safety.
Description of subject – seminars:
The practical tasks and solutions of model situations and case studies, focused on:
1. Anthropometric examinations in adults and children.
2. Measurement of skin algae. Bioimpedance analysis of body composition.
3. Biochemical markers of nutrition in the evaluation of nutritional status.
4. Rational nutrition - Food pyramid, Food plate. Caloric tables, practice of calculating caloric values. Nutrition databases and software.
5. Case reports I: overweight / obesity patient management - training in dietary and nutritional counselling in the context of drug management.
6. Case reports II: management of a patient with selected diseases (oncological diseases, cardiovascular diseases, diabetes) - training in dietary and nutritional counselling.
7. Case reports III: basic dietary and nutritional counselling related to other conditions (celiac disease, osteoporosis, allergies, intolerances) in the context of drug management.

Recommended literature:

1. Temple N.J., Wilson T., Bray G.A. (Eds). Nutrition Guide for Physicians and Related Healthcare
Professionals (Nutrition and Health) 2nd ed. 2017 Edition ISBN-13: 978-3319499284.
2. U.S. Department of Health and Human Services and U.S. Department of Agriculture. 2015 – 2020 Dietary Guidelines for Americans. 8th Edition. December 2015. Available at https://health.gov/ourwork/food-and-nutrition/2015-2020-dietary-guidelines/.
3. Australian Dietary Guidelines, 2013. Available at https://www.eatforhealth.gov.au/guidelines.
4. Food-Based Dietary Guidelines. Joint Research Centre, European Commission´s science and knowledge service, Last update Feb 2020. Available at https://ec.europa.eu/jrc/en/healthknowledge-gateway/about.
5. WCRF/AICR 2018. Diet, Nutrition, Physical Activity, and Cancer: a Global Perspective. Continous
Update Project expert Report. Available at https://www.wcrf.org/sites/default/files/Summary-of-Third-Expert-Report-2018.pdf.

Other materials available at Moodle 2020/2021 according recommendations of teachers.

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 29

A	ABS	B	C	D	E	FX
24,14	0,0	17,24	31,03	24,14	3,45	0,0

Lecturers: doc. PharmDr. Daniela Mináriková, PhD.

Last change: 29.11.2021

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KBMBL/05-Mgr-A/16	Diploma Thesis Preparation KBMBL (1)

Educational activities:
Type of activities: laboratory practicals
Number of hours:
per week: 6 **per level/semester:** 84
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 44

A	ABS	B	C	D	E	FX
97,73	0,0	2,27	0,0	0,0	0,0	0,0

Lecturers: PharmDr. Andrea Balažová, PhD., doc. Mgr. Martina Hrčka Dubničková, PhD., doc. Mgr. Andrea Bilková, PhD., Mgr. Ivana Holková, PhD., PharmDr. Hana Kiňová Sepová, PhD., doc. PharmDr. Marek Obložinský, PhD., RNDr. František Bilka, PhD., Ing. Ľudmila Pašková, PhD., PharmDr. Renáta Kubíková, PhD., Mgr. Eva Drobná, PhD., PharmDr. Gabriela Greifová, PhD.

Last change:

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KBMBL/06-Mgr-A/16	Diploma Thesis Preparation KBMBL (2)

Educational activities:
Type of activities: laboratory practicals
Number of hours:
per week: 25 **per level/semester:** 350
Form of the course: on-site learning

Number of credits: 16

Recommended semester: 10.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 56

A	ABS	B	C	D	E	FX
80,36	0,0	7,14	10,71	1,79	0,0	0,0

Lecturers: PharmDr. Andrea Balažová, PhD., doc. Mgr. Martina Hrčka Dubničková, PhD., doc. Mgr. Andrea Bilková, PhD., Mgr. Ivana Holková, PhD., PharmDr. Hana Kiňová Sepová, PhD., doc. PharmDr. Marek Obložinský, PhD., RNDr. František Bilka, PhD., Ing. Ľudmila Pašková, PhD., PharmDr. Renáta Kubíková, PhD., Mgr. Eva Drobná, PhD., PharmDr. Gabriela Greifová, PhD.

Last change:

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KChTL/02-Mgr-A/16	Diploma Thesis Preparation KCHTL (1)

Educational activities:
Type of activities: laboratory practicals / seminar
Number of hours:
per week: 4 / 2 **per level/semester:** 56 / 28
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Course requirements:
Elaboration of the project of the experimental/practical part or compiling of the theoretical part of the diploma thesis with the aid of the supervisor (responsible teacher).
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
Student elaborates the diploma work on the selected topic as a scientific study using a representative selection of scientific literature. The student must use correctly chosen scientific procedures that can be verified. The diploma thesis should be a contribution to the specific field of research. In the frame of the subject, the student will have to familiarize with the research topic. In case of theoretical build-up for writing of the diploma thesis the student will perform a search of scientific articles and other literature.

Class syllabus:
The student has to show the ability to creatively work on the topic of the diploma thesis using his/her knowledge from previous study at the faculty, from scientific literature and other materials recommended by the supervisor. In case of experimental focus of this subject, the student will work on the specific assignments. In case of theoretical focus, a literature search of the newest finding in the specific research field should be compiled into the theoretical part of the diploma thesis.

Recommended literature:
information provided by the supervisor

Languages necessary to complete the course:
English language

Notes:
It is requested, that the student will consult the time schedule with the supervisor when the student can work on the assignments at times where the he/she doesn’t have other subjects.

Past grade distribution
Total number of evaluated students: 59

A	ABS	B	C	D	E	FX
94,92	0,0	5,08	0,0	0,0	0,0	0,0

Lecturers: RNDr. Roman Mikláš, PhD., doc. PharmDr. Miloš Lukáč, PhD., doc. PharmDr. Jindra Valentová, PhD., Mgr. Natalia Lucia Miklášová, PhD., Ing. Ladislav Habala, PhD., Mgr. Lucia Lintnerová, PhD., Mgr. Peter Herich, PhD.

Last change: 03.04.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KChTL/03-Mgr-A/16	Diploma Thesis Preparation KCHTL (2)

Educational activities:
Type of activities: laboratory practicals
Number of hours:
per week: 25 **per level/semester:** 350
Form of the course: on-site learning

Number of credits: 16

Recommended semester: 10.

Educational level: I.II.

Prerequisites:

Course requirements:
Finishing of experimental work and diploma thesis completion with guidance of the supervisor.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
Student elaborates the diploma work on the selected topic as a scientific study using a representative selection of scientific literature. The student must use correctly chosen scientific procedures that can be verified. The student puts the results of his/her work in the selected research area into the final form of the diploma thesis. The basic requirements and main features of the diploma thesis are defined by the internal decree of Comenius University.

Class syllabus:
The student has to show the ability to creatively work on the topic of the diploma thesis using his/her knowledge from previous study at the faculty, from scientific literature and other materials recommended by the supervisor. In the frame of writing the diploma thesis, the student has to compile a literature search into a complete theoretical part describing new finds and current situation in the specified field of science, also the student must complete the experimental/practical part of work, evaluates the experimental data obtained and concludes the findings.

Recommended literature:
information provided by the supervisor

Languages necessary to complete the course:
English language

Notes:

Past grade distribution
Total number of evaluated students: 60

A	ABS	B	C	D	E	FX
86,67	0,0	11,67	0,0	0,0	0,0	1,67

Lecturers: doc. PharmDr. Jindra Valentová, PhD., Mgr. Natalia Lucia Miklášová, PhD., RNDr. Roman Mikláš, PhD., Ing. Ladislav Habala, PhD., doc. PharmDr. Miloš Lukáč, PhD., Mgr. Lucia Lintnerová, PhD., Mgr. Peter Herich, PhD.
Last change: 03.04.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFANF/04-Mgr-A/16	Diploma Thesis Preparation KFANF (1)

Educational activities:
Type of activities: laboratory practicals
Number of hours:
per week: 6 **per level/semester:** 84
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:
Mikuš, P., Maráková, K.: Hyphenated electrophoretic techniques in advanced analysis. Bratislava : KARTPRINT, 2012. 217 s.
Tekeľ, J., Mikuš, P.: Analýza látok v biologických systémoch, Univerzita Komenského, Bratislava 2004.
D.G. Watson, Pharmaceutical analysis, A textbook for pharmacy students and pharmaceutical chemists, Elsevier, Churchill Livingstone, London 2005.
web pages with appropriate key words and their combinations (spectral methods, spectrometry, spectroscopy, absorption, fluorescence, UV, IR, MS, NMR, electrochemical methods, polarography, biosensors, separation methods, electrophoresis, chromatography)

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 45

A	ABS	B	C	D	E	FX
64,44	0,0	8,89	17,78	6,67	2,22	0,0

Lecturers: RNDr. Svetlana Dokupilová, PhD., prof. RNDr. Peter Mikuš, PhD., PharmDr. Katarína Maráková, PhD., Ing. Dáša Kružlicová, PhD., PharmDr. Mária Bodnár Mikulová, PhD., Mgr. Michal Hanko, PhD.

Last change: 11.12.2021

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFANF/05-Mgr-A/16	Diploma Thesis Preparation KFANF (2)

Educational activities:
Type of activities: laboratory practicals
Number of hours:
per week: 25 **per level/semester:** 350
Form of the course: on-site learning

Number of credits: 16

Recommended semester: 10.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:
Mikuš, P., Maráková, K.: Hyphenated electrophoretic techniques in advanced analysis. Bratislava : KARTPRINT, 2012. 217 s.
Tekeľ, J., Mikuš, P.: Analýza látok v biologických systémoch, Univerzita Komenského, Bratislava 2004.
D.G. Watson, Pharmaceutical analysis, A textbook for pharmacy students and pharmaceutical chemists, Elsevier, Churchill Livingstone, London 2005.
web pages with appropriate key words and their combinations (spectral methods, spectrometry, spectroscopy, absorption, fluorescence, UV, IR, MS, NMR, electrochemical methods, polarography, biosensors, separation methods, electrophoresis, chromatography)

Languages necessary to complete the course:
english language

Notes:

Past grade distribution
Total number of evaluated students: 44

A	ABS	B	C	D	E	FX
36,36	0,0	31,82	20,45	6,82	4,55	0,0

Lecturers: prof. RNDr. Peter Mikuš, PhD., RNDr. Svetlana Dokupilová, PhD., PharmDr. Katarína Maráková, PhD., Ing. Dáša Kružlicová, PhD., Mgr. Michal Hanko, PhD.

Last change: 11.12.2021

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFB/01-Mgr-A/16	Diploma Thesis Preparation KFB (1)

Educational activities:
Type of activities: laboratory practicals
Number of hours:
per week: 6 **per level/semester:** 84
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 26

A	ABS	B	C	D	E	FX
76,92	0,0	19,23	3,85	0,0	0,0	0,0

Lecturers: prof. Ing. Milan Nagy, CSc., prof. PharmDr. Pavel Mučaji, PhD., doc. PharmDr. Szilvia Czigle, PhD., Mgr. Jaroslav Tóth, PhD., doc. PharmDr. Silvia Bittner Fialová, PhD., PharmDr. Ivana Šušaníková, PhD., doc. Ing. Miroslav Habán, PhD., Mgr. Ondrej Ďuriška, PhD., PharmDr. Vladimír Forman, PhD., RNDr. Ingrid Mistríková, CSc., RNDr. Daniela Tekeľová, CSc., PharmDr. Zuzana Scheerová Kontšeková, PhD., RNDr. Veronika Lachová, PhD., PharmDr. Katarína Rendeková, PhD., PharmDr. Elena Kurin, PhD., Mgr. Petra Mitrengová, PhD.

Last change: 09.06.2016

Approved by: prof. Ing. Milan Nagy, CSc.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFB/02-Mgr-A/16	Diploma Thesis Preparation KFB (2)

Educational activities:
Type of activities: laboratory practicals
Number of hours:
per week: 25 **per level/semester:** 350
Form of the course: on-site learning

Number of credits: 16

Recommended semester: 10.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 26

A	ABS	B	C	D	E	FX
69,23	0,0	19,23	7,69	3,85	0,0	0,0

Lecturers: prof. PharmDr. Pavel Mučaji, PhD., doc. PharmDr. Szilvia Czigle, PhD., prof. Ing. Milan Nagy, CSc., doc. PharmDr. Silvia Bittner Fialová, PhD., Mgr. Jaroslav Tóth, PhD., doc. Ing. Miroslav Habán, PhD., Mgr. Ondrej Ďuriška, PhD., PharmDr. Vladimír Forman, PhD., RNDr. Ingrid Mistríková, CSc., RNDr. Daniela Tekeľová, CSc., RNDr. Veronika Lachová, PhD., PharmDr. Zuzana Scheerová Kontšeková, PhD., PharmDr. Ivana Šušaníková, PhD., PharmDr. Elena Kurin, PhD., PharmDr. Katarína Rendeková, PhD., Mgr. Petra Mitrengová, PhD.

Last change: 09.06.2016

Approved by: prof. Ing. Milan Nagy, CSc.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFCh/03-Mgr-A/16	Diploma Thesis Preparation KFCH (1)

Educational activities:
Type of activities: laboratory practicals / seminar
Number of hours:
per week: 4 / 2 **per level/semester:** 56 / 28
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 3

A	ABS	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. Mgr. Fils Andriamainty, PhD., doc. PharmDr. Ivan Malík, PhD., doc. PharmDr. Miroslava Sýkorová, PhD., Mgr. Stanislav Bilka, PhD., PharmDr. Jana Čurillová, PhD., PharmDr. Vladimír Garaj, PhD., PharmDr. Iva Kapustíková, PhD., PharmDr. Matej Maruniak, PhD., PharmDr. Lenka Stopková, PhD., Mgr. Róbert Šandrik, PhD., Ing. Stanislava Šoralová, PhD.

Last change: 09.06.2016

Approved by: doc. Mgr. Fils Andriamainty, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFCh/04-Mgr-A/16	Diploma Thesis Preparation KFCH (2)

Educational activities:
Type of activities: laboratory practicals
Number of hours:
per week: 25 **per level/semester:** 350
Form of the course: on-site learning

Number of credits: 16

Recommended semester: 10.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 8

A	ABS	B	C	D	E	FX
62,5	0,0	0,0	37,5	0,0	0,0	0,0

Lecturers: doc. Mgr. Fils Andriamainty, PhD., doc. PharmDr. Ivan Malík, PhD., doc. PharmDr. Miroslava Sýkorová, PhD., Mgr. Stanislav Bilka, PhD., PharmDr. Jana Čurillová, PhD., PharmDr. Vladimír Garaj, PhD., PharmDr. Iva Kapustíková, PhD., PharmDr. Matej Maruniak, PhD., PharmDr. Lenka Stopková, PhD., Mgr. Róbert Šandrik, PhD., Ing. Stanislava Šoralová, PhD.

Last change: 09.06.2016

Approved by: doc. Mgr. Fils Andriamainty, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFChL/04-Mgr-A/16	Diploma Thesis Preparation KFCHL (1)

Educational activities:
Type of activities: laboratory practicals
Number of hours:
per week: 6 **per level/semester:** 84
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 19

A	ABS	B	C	D	E	FX
84,21	0,0	0,0	5,26	0,0	0,0	10,53

Lecturers: prof. RNDr. Daniela Uhríková, CSc., RNDr. Mária Vojteková, CSc., Ing. Jarmila Oremusová, CSc., Mgr. Mária Klacsová, PhD., RNDr. Tomáš Fazekaš, PhD., doc. RNDr. Jana Gallová, CSc., prof. Ing. Vladimír Frecer, DrSc., RNDr. Alexander Búcsi, PhD., prof. RNDr. Ľubica Lacinová, DrSc., Mgr. Lukáš Hubčík, PhD., PharmDr. Gilda Liskayová, PhD.

Last change:

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFChL/05-Mgr-A/16	Diploma Thesis Preparation KFCHL (2)

Educational activities:
Type of activities: laboratory practicals
Number of hours:
per week: 25 **per level/semester:** 350
Form of the course: on-site learning

Number of credits: 16

Recommended semester: 10.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 17

A	ABS	B	C	D	E	FX
35,29	0,0	17,65	23,53	5,88	17,65	0,0

Lecturers: prof. RNDr. Daniela Uhríková, CSc., RNDr. Mária Vojteková, CSc., Ing. Jarmila Oremusová, CSc., Mgr. Mária Klacsová, PhD., RNDr. Tomáš Fazekaš, PhD., doc. RNDr. Jana Gallová, CSc., prof. Ing. Vladimír Frecer, DrSc., RNDr. Alexander Búcsi, PhD., prof. RNDr. Ľubica Lacinová, DrSc., Mgr. Lukáš Hubčík, PhD., PharmDr. Gilda Liskayová, PhD.

Last change:

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/06-Mgr-A/16	Diploma Thesis Preparation KFT (1)

Educational activities:
Type of activities: laboratory practicals / seminar
Number of hours:
per week: 4 / 2 **per level/semester:** 56 / 28
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 138

A	ABS	B	C	D	E	FX
70,29	0,0	15,22	8,7	3,62	1,45	0,72

Lecturers: prof. RNDr. Magdaléna Kuželová, CSc., doc. MUDr. Tatiana Stankovičová, CSc., prof. PharmDr. Ján Klimas, PhD., MPH, doc. PharmDr. Peter Křenek, PhD., PharmDr. Elena Ondriašová, CSc., PharmDr. Tatiana Foltánová, PhD., PharmDr. Eva Kráľová, PhD., PharmDr. Stanislava Kosírová, PhD., doc. PharmDr. Marek Máťuš, PhD., Mgr. Ondrej Sprušanský, PhD., PharmDr. Tomáš Rajtík, PhD., Mgr. Diana Vavrincová, PhD., Mgr. Peter Vavrinec, PhD., Mgr. Gabriel Dóka, PhD., PharmDr. Zuzana Kiliánová, PhD., Mgr. Lenka Bies Piváčková, PhD., doc. RNDr. Ingrid Tumová, CSc., doc. PharmDr. Anna Paul Hrabovská, PhD.

Last change: 09.06.2016

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/07-Mgr-A/16	Diploma Thesis Preparation KFT (2)

Educational activities:
Type of activities: laboratory practicals
Number of hours:
per week: 25 **per level/semester:** 350
Form of the course: on-site learning

Number of credits: 16

Recommended semester: 10.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 131

A	ABS	B	C	D	E	FX
36,64	0,0	30,53	19,85	7,63	5,34	0,0

Lecturers: prof. RNDr. Magdaléna Kuželová, CSc., doc. MUDr. Tatiana Stankovičová, CSc., prof. PharmDr. Ján Klimas, PhD., MPH, doc. PharmDr. Peter Křenek, PhD., PharmDr. Elena Ondriašová, CSc., PharmDr. Tatiana Foltánová, PhD., PharmDr. Eva Kráľová, PhD., PharmDr. Stanislava Kosírová, PhD., doc. PharmDr. Marek Máťuš, PhD., Mgr. Ondrej Sprušanský, PhD., PharmDr. Tomáš Rajtík, PhD., PharmDr. Zuzana Kiliánová, PhD., Mgr. Diana Vavrincová, PhD., Mgr. Peter Vavrinec, PhD., Mgr. Gabriel Dóka, PhD., doc. RNDr. Ingrid Tumová, CSc., Mgr. Lenka Bies Piváčková, PhD., doc. PharmDr. Anna Paul Hrabovská, PhD.

Last change: 09.06.2016

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KGF/03-Mgr-A/16	Diploma Thesis Preparation KGF (1)

Educational activities:
Type of activities: laboratory practicals / seminar
Number of hours:
per week: 4 / 2 **per level/semester:** 56 / 28
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 23

A	ABS	B	C	D	E	FX
91,3	0,0	0,0	8,7	0,0	0,0	0,0

Lecturers: PharmDr. Alžbeta Lengyelová, PharmDr. Veronika Šimunková, PhD., PharmDr. Mária Raučinová, PhD., Mgr. Jana Selčanová, PharmDr. Milica Molitorisová, PhD., PharmDr. Veronika Mikušová, PhD., PharmDr. Miroslava Špaglová, PhD., PharmDr. Mária Čuchorová, PhD., Ing. Michael Kenneth Lawson, PhD.

Last change: 09.06.2016

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KGF/04-Mgr-A/16	Diploma Thesis Preparation KGF (2)

Educational activities:
Type of activities: laboratory practicals
Number of hours:
per week: 25 **per level/semester:** 350
Form of the course: on-site learning

Number of credits: 16

Recommended semester: 10.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 21

A	ABS	B	C	D	E	FX
76,19	0,0	4,76	19,05	0,0	0,0	0,0

Lecturers: PharmDr. Milica Molitorisová, PhD., PharmDr. Veronika Šimunková, PhD., PharmDr. Mária Raučinová, PhD., PharmDr. Veronika Mikušová, PhD., PharmDr. Miroslava Špaglová, PhD., PharmDr. Mária Čuchorová, PhD., PharmDr. Desana Matušová, PhD., Ing. Michael Kenneth Lawson, PhD.

Last change: 09.06.2016

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/02-Mgr-A/16	Diploma Thesis Preparation KORF (1)

Educational activities:
Type of activities: practicals / seminar
Number of hours:
per week: 4 / 2 **per level/semester:** 56 / 28
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The student systematically processes the assigned topic according to the instructions of the supervisor. The Diploma thesis must be consistent with the internal regulations of the Comenius University in Bratislava = the Directive of the Rector of Comenius University about the basic requirements for final thesis. The thesis contains the current state of the problem and student conducts a literature search related to the issue. Based on it, he proposes the aim of the work, methodology and methods of processing the experimental part. The diploma thesis contains results of experimental part, the comparative discussion and the summarizing conclusion. The diploma thesis is assessed by opponent and the student presents it on the public defence.

Class syllabus:
The focus of diploma thesis is in accordance with the issues addressed at the department by the relevant supervisors. Topics:
Evaluation of drug consumption and health technologies (HTA), pharmacoeconomics, drug policy.
Pharmacoepidemiology and pharmacy management.
Awareness studies, KAP (knowledge-attitudes-practice) studies.
Legislation in the field of pharmacy / healthcare or constitutional rights, economic and legal analysis of pharmaceutical and healthcare.
History of pharmacy, ethics.
Drug consumption and its relation to the health status of the population.
Quality of health / pharmaceutical care. Quality of life of patients.
Individually prepared medicines.
Professional satisfaction of pharmacists.
Pharmaceutical historiography.
Adherence of patients to therapy.
Management of selected diseases from the perspective of a pharmacist.
Hospital pharmacy.
Safety and pharmacovigilance of drugs.

Prevention and public health.

Recommended literature:

Languages necessary to complete the course:
English language

Notes:

Past grade distribution
Total number of evaluated students: 129

A	ABS	B	C	D	E	FX
79,84	0,0	15,5	3,1	0,78	0,78	0,0

Lecturers: PharmDr. Ľubica Lehocká, PhD., doc. PharmDr. Daniela Mináriková, PhD., doc. PharmDr. Tomáš Tesař, PhD., MBA, PharmDr. Miroslava Snopková, PhD., PharmDr. Zuzana Koblišková, PhD., PharmDr. Lucia Masaryková, PhD., Ing. Ingrid Slezáková

Last change: 02.08.2021

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/03-Mgr-A/16	Diploma Thesis Preparation KORF (2)

Educational activities:
Type of activities: independent work
Number of hours:
per week: 25 **per level/semester:** 350
Form of the course: on-site learning

Number of credits: 16

Recommended semester: 10.

Educational level: I.II.

Prerequisites:

Course requirements:
Graduation Thesis Defence
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The student systematically processes the assigned topic according to the instructions of the supervisor. The Diploma thesis must be consistent with the internal regulations of the Comenius University in Bratislava = the Directive of the Rector of Comenius University about the basic requirements for final thesis. The thesis contains the current state of the problem and student conducts a literature search related to the issue. Based on it, he proposes the aim of the work, methodology and methods of processing the experimental part. The diploma thesis contains results of experimental part, the comparative discussion and the summarizing conclusion. The diploma thesis is assessed by opponent and the student presents it on the public defence.

Class syllabus:
The focus of diploma thesis is in accordance with the issues addressed at the department by the relevant supervisors. Topics:
Evaluation of drug consumption and health technologies (HTA), pharmacoeconomics, drug policy.
Pharmacoepidemiology and pharmacy management.
Awareness studies, KAP (knowledge-attitudes-practice) studies.
Legislation in the field of pharmacy / healthcare or constitutional rights, economic and legal analysis of pharmaceutical and healthcare.
History of pharmacy, ethics.
Drug consumption and its relation to the health status of the population.
Quality of health / pharmaceutical care. Quality of life of patients.
Individually prepared medicines.
Professional satisfaction of pharmacists.
Pharmaceutical historiography.
Adherence of patients to therapy.
Management of selected diseases from the perspective of a pharmacist.
Hospital pharmacy.

Safety and pharmacovigilance of drugs.
Prevention and public health.

Recommended literature:

Languages necessary to complete the course:
English language

Notes:

Past grade distribution
Total number of evaluated students: 123

A	ABS	B	C	D	E	FX
67,48	0,0	17,89	4,88	1,63	8,13	0,0

Lecturers: PharmDr. Ľubica Lehocká, PhD., PharmDr. Miroslava Snopková, PhD., doc. PharmDr. Daniela Mináriková, PhD., doc. PharmDr. Tomáš Tesař, PhD., MBA, PharmDr. Zuzana Koblišková, PhD., PharmDr. Lucia Masaryková, PhD., PharmDr. Milica Molitorisová, PhD., Ing. Ingrid Slezáková

Last change: 02.08.2021

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFCh/01-Mgr-A/00	Drug Analysis

Educational activities:
Type of activities: lecture / laboratory practicals
Number of hours:
per week: 3 / 3 **per level/semester:** 42 / 42
Form of the course: on-site learning

Number of credits: 7

Recommended semester: 7.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
KFCH/05-Mgr-A/00 Pharmaceutical Chemistry (1); KFCH/06-Mgr-A/20 Pharmaceutical Chemistry (2); KFANF/01-Mgr-A/19 Analytical Chemistry (1); KFANF/02-Mgr-A/20 Analytical Chemistry (2).

Course requirements:
Participation in all compulsory forms of teaching, elaboration of protocols from laboratory practicals and completion of two written preliminary tests, each with a minimum success rate of 60 %. Completion of the written final examination test with a minimum success rate of 60 %. The content of all lectures and laboratory practicals will be included in the final examination test.
Classification grades: (A) 100 – 92 %, (B) 91 – 84 %, (C) 83 – 76 %, (D) 75 – 68 %, (E) 67 – 60 %, (FX) less than 60 %.
Scale of assessment (preliminary/final): 20/80.

Learning outcomes:
The aim of the course Drug Analysis is to teach students the basic principles of methods and tests used in the complex quality control of drugs, excipients and medicines in order to ensure their quality, safety and efficacy. The content of the course is based on the requirements of currently valid European Pharmacopoeia for the identification of drugs, evaluation of drug purity and determination of drug content. Students will get acquainted with the pharmacopoeial analysis of drugs using chemical, volumetric, gravimetric, chromatographic, spectral and electroanalytical methods. Theoretical knowledge is applied in laboratory practicals, where students experimentally perform drug quality control. When working with the European Pharmacopoeia, students learn to orientate quickly and with understanding in a wide range of pharmacopoeial procedures and statements.
The knowledges and skills acquired in course Drug Analysis can be then applied in practice in public and hospital pharmacies, in control laboratories, in state regulatory authorities for drug control, in pharmaceutical production and research, and in further postgraduate education of pharmacists.

Class syllabus:

– Content, mission and importance of Drug Analysis; The European Pharmacopoeia; The European Directorate for the Quality of Medicines & HealthCare.
– Qualitative analysis: Identification reactions of ions and functional groups; Specific identification reactions of drugs; Physical and physicochemical methods.
– Purity of drugs and its control: Limit tests for inorganic impurities; Physical and physicochemical methods.
– Quantitative analysis: Gravimetry; Titrimetric methods; Physical and physicochemical methods.
– Quality control of the final pharmaceutical products.
– Quality control of containers and materials used for the manufacture of containers.
– Stability of drugs and medicines.
– Validation in pharmaceutical analysis. Good manufacturing practice. Pharmaceutical analysis in registration of medicinal products. Safety data sheet.

List of concerned general chapters in the European Pharmacopoeia:
1. General notices
2. Methods of analysis
2.2. Physical and physico-chemical methods: 2.2.1. Clarity and degree of opalescence of liquids; 2.2.2. Degree of coloration of liquids; 2.2.3. Potentiometric determination of pH; 2.2.4. Approximate pH of solutions; 2.2.5. Relative density; 2.2.6. Refractive index; 2.2.7. Optical rotation; 2.2.8. Viscosity; 2.2.9. Capillary viscometer method; 2.2.10. Viscosity – rotating viscometer method; 2.2.11. Distillation range; 2.2.12. Boiling point; 2.2.13. Determination of water by distillation; 2.2.14. Melting point – capillary method; 2.2.15. Melting point – open capillary method; 2.2.16. Melting point – instantaneous method; 2.2.17. Drop point; 2.2.18. Freezing point; 2.2.19. Amperometric titration; 2.2.20. Potentiometric titration; 2.2.21. Fluorimetry; 2.2.22. Atomic emission spectrometry; 2.2.23. Atomic absorption spectrometry; 2.2.24. Absorption spectrophotometry, infrared; 2.2.25. Absorption spectrophotometry, ultraviolet and visible; 2.2.26. Paper chromatography; 2.2.27. Thin-layer chromatography; 2.2.28. Gas chromatography; 2.2.29. Liquid chromatography; 2.2.30. Size-exclusion chromatography; 2.2.31. Electrophoresis; 2.2.32. Loss on drying; 2.2.38. Conductivity; 2.2.46. Chromatographic separation techniques; 2.2.47. Capillary electrophoresis; 2.2.49. Falling ball and automatic rolling ball viscometer methods; 2.2.54. Isoelectric focusing
2.3. Identification: 2.3.1. Identification reactions of ions and functional groups
2.4. Limit tests: 2.4.1. Ammonium; 2.4.2. Arsenic; 2.4.3. Calcium; 2.4.4. Chlorides; 2.4.5. Fluorides; 2.4.6. Magnesium; 2.4.7. Magnesium and alkaline-earth metals; 2.4.8. Heavy metals; 2.4.9. Iron; 2.4.10. Lead in sugars; 2.4.11. Phosphates; 2.4.12. Potassium; 2.4.13. Sulfates; 2.4.14. Sulfated ash; 2.4.17. Aluminium; 2.4.19. Alkaline impurities in fatty oils
2.5. Assays: 2.5.1. Acid value; 2.5.2. Ester value; 2.5.3. Hydroxyl value; 2.5.4. Iodine value; 2.5.5. Peroxide value; 2.5.6. Saponification value; 2.5.8. Determination of primary aromatic amino-nitrogen; 2.5.11. Complexometric titrations; 2.5.12. Water: semi-micro determination
3. Materials for containers and containers
4. Reagents
4.1. Reagents, standard solutions, buffer solutions: 4.1.1. Reagents; 4.1.2. Standard solutions for limit tests; 4.1.3. Buffer solutions
4.2. Volumetric analysis: 4.2.1. Primary standards for volumetric solutions; 4.2.2. Volumetric solutions
5. General texts
5.5. Alcoholimetric tables

Recommended literature:

– The European Pharmacopoeia. Current Edition and Supplements. Strasbourg: Council of Europe.
– Hansen, S., Pedersen-Bjergaard, S., Rasmussen, K.: Introduction to Pharmaceutical Chemical Analysis. Chichester: John Wiley & Sons, 2012.
– Kapustíková, I.: Drug Analysis, Laboratory Practicals. Bratislava: Comenius University in Bratislava, 2020.
– Kar, A.: Pharmaceutical Drug Analysis. New Delhi: New Age International, 2005.
– Pedersen, O.: Pharmaceutical Chemical Analysis. Methods for Identification and Limit Tests. New York: CRC Press, Taylor & Francis Group, 2006.
– Rouessac, F., Rouessac, A.: Chemical Analysis. Modern Instrumentation Methods and Techniques. 2nd Ed. Chichester: John Wiley & Sons, 2007.
– Watson, D. G.: Pharmaceutical Analysis. A Textbook for Pharmacy Students and Pharmaceutical Chemists. 4th Ed. Edinburgh: Elsevier, 2017.

Languages necessary to complete the course:
English language.

Notes:

Past grade distribution
Total number of evaluated students: 563

A	ABS	B	C	D	E	FX
7,1	0,0	15,28	25,22	17,58	31,26	3,55

Lecturers: PharmDr. Iva Kapustíková, PhD., PharmDr. Jana Čurillová, PhD.

Last change: 28.03.2022

Approved by: PharmDr. Iva Kapustíková, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF/VP-A/20	Extracurricular study activities

Educational activities:
Type of activities:
Number of hours:
per week: **per level/semester:**
Form of the course: on-site learning

Number of credits: 1

Recommended semester: 1., 2.., 3., 4.., 5., 6.., 7., 8.., 9., 10..

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

A	ABS	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. PharmDr. Jindra Valentová, PhD.

Last change:

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/15-Mgr-A/00	First Aid

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 1

A	ABS	B	C	D	E	FX
0,0	0,0	100,0	0,0	0,0	0,0	0,0

Lecturers: doc. RNDr. Ingrid Tumová, CSc., PharmDr. Dominika Dingová, PhD.

Last change: 02.06.2015

Approved by: doc. RNDr. Ingrid Tumová, CSc.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/24-Mgr-A/19	Functional and Pathological Anatomy

Educational activities:
Type of activities: lecture / laboratory practicals
Number of hours:
per week: 2 / 3 **per level/semester:** 28 / 42
Form of the course: on-site learning

Number of credits: 6

Recommended semester: 2.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
None

Course requirements:
Personal attendance at all lectures and practical classes, justified absence (max 2x) is replaced according to the instructions of the teacher; to pass 2 scheduled pre-tests, each minimally 60% rate. The final exam test is completed by students in computer by written form (distant) of examination. To pass the final exam test by students in minimally 60% rate. Evaluation (mark and score): A 91-100%, B 81-90%, C71-80%, D 66-70%, E 60-65%, FX < 60%.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
By passing the subject, the student acquires essential knowledge of the anatomy and physiology of the human body, individual organs, familiarize with the structure of tissues and basic anatomical and functional units. Student will recognize the functions of tissues, organs and also the regulatory, coordination and integration relationships between them. At the same time, the student acquires basic knowledge from general pathology about cellular damage, regressive, metabolic and progressive changes at the level of the cell and subcellular structures, tissues and etiopathogenesis, and manifestations of pathological changes at the organ level.

Class syllabus:
Human body – organization and structure, anatomical terminology. Structure of the human body – topography of organ systems, specific areas, relationship to function. Basic building and functional units of systems. Organization, functional anatomy of the organs of the individual systems.
Etiopathogenesis of cellular damage, regressive, metabolic and progressive changes, inflammation, local disturbances of blood circulation and lymph. Metabolic disorders of proteins, fats, carbohydrates. Fluid, electrolyte, and acid-base balance. Vitamins and minerals. Developmental changes, structural damages, and functional disturbances typical and most frequently occurred disorders in the individual organs of individual systems of the body – nervous, cardiovascular plus blood, endocrine, immune, respiratory, digestive, urogenital, sensory, integumentary and musculo-skeletal systems.

Practical training is focused on histology and functional morphology of cells, nervous and muscular tissues, structure and function of sensory organs, blood analysis, blood pressure measurements, ECG characteristics, composition of body fluids, functional measurements of lungs, determination of glycemia and cholesterol and rational nutrition.

Recommended literature:

Vander`s Human Physiology 12th Ed, McGraw/Hill, Ed., NY, by EP Widmaier, H Raff, KT Strang, 2011, ISBN 978/0/07/122215/0

Essentials of Human Physiology for Pharmacy, CEC Press, 2008, by LK McCorry (e-version)

Textbook of pathology, 7th edition, by H. Mohan. Ed. Jaypee Brothers Medical Publishers (P) Ltd, New Delhi, India, 2014, ISBN 978-9351523697

Essentials of Pathophysiology, 3rd edition, by C.M. Porth. Ed. Lippincott and Wilkins: Philadelphia, 2011, ISBN 0781770874

General and Systemic Pathology, 4th edition, by J.C.E. Underwood. Ed. Churchill Livingstone: NY, 2004 ISBN 0443073341/9780443073342

Essentials of Pathophysiology for Pharmacy, 1st edition, MM Zdanovicz, CRC Press, 2002, by ISBN 781587160363 (e-version)

Pathophysiology, by I Hulín, Bratislava: Slovak Academic Press, 1997, ISBN 80-85665-90-5

Lecture and exercise handouts will be available in Moodle's online system 2220,2021.

Languages necessary to complete the course:

English

Notes:

New subject was introduced in summer course 2020

Past grade distribution

Total number of evaluated students: 68

A	ABS	B	C	D	E	FX
0,0	0,0	2,94	7,35	29,41	41,18	19,12

Lecturers: doc. MUDr. Tatiana Stankovičová, CSc., prof. PharmDr. Ján Klimas, PhD., MPH, PharmDr. Tatiana Foltánová, PhD., PharmDr. Stanislava Kosírová, PhD., PharmDr. Eva Kráľová, PhD., PharmDr. Tomáš Rajtík, PhD., doc. PharmDr. Anna Paul Hrabovská, PhD., PharmDr. Katarína Buzgóová, PhD., PharmDr. Attila Kulcsár, PhD., Mgr. Lenka Bies Piváčková, PhD., Mgr. Ondrej Sprušanský, PhD., PharmDr. Dominika Dingová, PhD.

Last change: 13.12.2021

Approved by: doc. MUDr. Tatiana Stankovičová, CSc.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/19-Mgr-A/19	General Biology

Educational activities:
Type of activities: lecture / laboratory practicals
Number of hours:
per week: 2 / 1 **per level/semester:** 28 / 14
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 1.

Educational level: I.II.

Prerequisites:

Course requirements:
Student assessment consists of three written parts.
Control test - exercises - the result is 20% of the total evaluation of the subject.
Exam - written test - the result is 60% of the total evaluation of the course.
Exam - solving selected problems from the areas covered in lectures - the result is 20% of the total evaluation of the course.
In each written part, the student must achieve at least 60% success rate
Grade Rating (%)
A 100.00 - 92.00
B 91.99 - 84.00
C 83.99 - 76.00
D 75.99 - 68.00
E 67.99 - 60.00
FX <60.00

Learning outcomes:
By completing the course the student acquires basic information about the position of molecular and cell biology in the pharmaceutical study and the scientific field of Pharmacy. The acquired knowledge is the basis for related medical disciplines: physiology, pathology, biochemistry, immunology, microbiology, molecular and general pharmacology, clinical disciplines and forms the basis for understanding the effects of biologically active molecules - drugs.

Class syllabus:
- Chemical composition of living matter, biologically active macromolecules - carbohydrates, lipids, proteins, nucleic acids
- Basic cell structure, cell theory, phylogeny, origin of cells and multicellular organisms. prokaryotic and eukaryotic cell. Non-membrane cell structures - cytology in terms of cell morphology and structure,
- Cell membrane, membrane organelles, their structure and function
- Membrane transport, cell connections.
- Biocommunication, cellular receptors

- DNA replication and DNA repair mechanisms
- Gene expression - basic principles and regulation of transcription and translation.
- Cell division and cell cycle, cell death
- Germ cells, sexosomes, insemination. Ontogenesis. Stem cells
- Chromatin, chromosomes, HUGO project. Introduction to genetics, Mendel's laws, investigative methods in genetics, human genetics, mutations, genetic engineering
- Cellular and molecular biology of cancer, oncogenes, tumor suppressor genes, metastases

Recommended literature:
- Alberts, Bruce, et al. Essential cell biology. Garland Science, 2015..
- Alberts, Bruce, et al. Molecular biology of the cell. WW Norton & Company, 2017.
- Lodish, Harvey, et al..: Molecular Cell Biology, eight edition, W.H.Freeman and Company, 2016

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 94

A	ABS	B	C	D	E	FX
7,45	0,0	13,83	9,57	20,21	30,85	18,09

Lecturers: Mgr. Ondrej Sprušanský, PhD., Mgr. Lenka Bies Piváčková, PhD., PharmDr. Katarína Hadová, PhD., PharmDr. Csaba Horváth, PhD.

Last change: 13.12.2021

Approved by: Mgr. Ondrej Sprušanský, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KChTL/06-Mgr-A/19	General and Inorganic Chemistry

Educational activities:
Type of activities: lecture / laboratory practicals / seminar
Number of hours:
per week: 2 / 3 / 2 **per level/semester:** 28 / 42 / 28
Form of the course: on-site learning

Number of credits: 6

Recommended semester: 1.

Educational level: I.II.

Prerequisites:

Course requirements:
Seminars: The student is required to complete all seminars during semester. During the course each student must write 3 interim tests (max 20 points each). The exam admission requires to reach more than 60% of the total maximum point score from all tests.
Laboratory exercises: During the semester, the student is required to complete all laboratory exercises. According to the study programme he/she must write one test from the laboratory techniques (0-40 points) and independently perform one synthetic work (0-10 points). The exam admission requires to reach more than 60% of the total maximum point score from the laboratory exercises.
The points reached within the seminars and laboratory work are multiplied by the factor of 0,3 and their value is 30% of the exam grade in case of a successful completion of the exam. The coefficient obtained from the seminars applies solely to the academic year in which it was obtained.
Exam: The participation in the exam is conditioned by the full completion of the seminars and laboratory exercises programme and by the acquisition of more than 60% of the total maximum point score from the seminars and more than 60% of the total maximum point score from the laboratory exercises.
In case of an in-person exam, the whole exam is taken in writing. In case of an on-line exam, the exam consists of the written part and of the oral part. To pass the in-person exam successfully, the student must reach more than 60 % of the maximum point score in the General Chemistry part and more than 60 % of the maximum point score in the Inorganic Chemistry part. To pass the on-line exam successfully, the student must reach more than 60 % of the maximum point score in the written exam part and more than 60 % of the maximum point the General Chemistry oral exam part and more than 60 % of the maximum point score in the Inorganic Chemistry oral exam part. The mean final percentage obtained from all exam parts is then multiplied by the factor of 0,7. The final exam grade is composed from the part obtained for seminars (30%) and from the part obtained for laboratory exercises and the examination test (70%).
Grading scale of the overall result of the exam (after considering the outcome of the interim control): A: 90,01 % – 100,00 %; B: 82,01 % – 90,00 %; C: 74,01 % – 82,00 %; D: 66,01 % – 74,00 %; E: 60,01 % – 66,00 %; Fx: ≤ 60,00 %.

Scale of assessment (preliminary/final): 30/70

Learning outcomes:
The aim of the course is to acquire the basic knowledge of general and inorganic chemistry. In the context of teaching the course will give students basic laboratory skills and carry out the synthesis of selected types of inorganic compounds. The gained knowledge and skills are necessary for the completion of the other chemical courses, such as Organic Chemistry 1, 2 and are also needed for the pharmaceutically oriented courses, e.g. Pharmaceutical Chemistry.

Class syllabus:
The course of General and Inorganic Chemistry is the first principal subject in the complex chemical preparation of students of pharmacy. The first part – general chemistry – includes topics such needed as the theoretical base of the follow up courses of chemical, pharmaceutical, biological and medical orientation. Great attention is paid to the issue of the chemical bond and the structure of substances, in particular to their relevance in explaining the characteristics of pharmaceutical compounds, including their pharmacotherapeutic effects. In the second part of the course – systematic inorganic chemistry – the chemistry of elements and their compounds is presented according to their rational division into the groups of the periodic system of elements. Alongside with the interpretation of the nature of the chemical reactivity of elements and their compounds, emphasis is laid on their use in pharmacy and medicine on the basis of their function, place and importance in biological systems. Needed attention shall be paid to the environmental education. The course is comprehensively designed, focusing on Master Degree accredited study programme of Pharmacy. Further pharmaceutically significant knowledge from the systematic inorganic chemistry is supplemented in the course of Selected Chapters in Inorganic Chemistry.

Recommended literature:
1. C. E. Housecroft, A. G. Sharpe: Inorganic Chemistry, 4th Edition, Pearson Publ. 2012.
2. J. C. Kotz, P. M. Treichel, J. R. Townsend: Chemistry & Chemical Reactivity, 7th Edition, Brooks/Cole 2010.
3. K. A. Strohfeldt: Essentials of Inorganic Chemistry for Students of Pharmacy, Pharmaceutical Sciences and Medicinal Chemistry, Wiley 2015

Languages necessary to complete the course:
English language

Notes:
The course is held only in winter semester.

Past grade distribution
Total number of evaluated students: 84

A	ABS	B	C	D	E	FX
11,9	0,0	20,24	28,57	17,86	0,0	21,43

Lecturers: doc. Ing. Martin Pisárčik, CSc., Ing. Ladislav Habala, PhD., Mgr. Natalia Lucia Miklášová, PhD., Mgr. Lucia Lintnerová, PhD., Mgr. Anna Miňo, PhD.

Last change: 30.03.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KGF/17-Mgr-A/20	Good Manufacturing Drugs Practice

Educational activities:
Type of activities: practicals / lecture
Number of hours:
per week: 1 / 2 **per level/semester:** 14 / 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 6.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 33

A	ABS	B	C	D	E	FX
39,39	0,0	42,42	9,09	0,0	0,0	9,09

Lecturers: PharmDr. Milica Molitorisová, PhD., PharmDr. Desana Matušová, PhD.

Last change: 13.07.2021

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/22-Mgr-A/00	Health Psychology

Educational activities:
Type of activities: practicals / lecture / seminar
Number of hours:
per week: 0 / 1 / 1 **per level/semester:** 0 / 14 / 14
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 7.

Educational level: I.II.

Prerequisites:

Course requirements:
Student has to attend all lectures and seminars to be allowed to take the oral examination.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
After finishing the course student will gain basic overview in the following topics: social psychology, psychology of patients, psychology of diseases and psychology of healthcare professional, information on basic types of personalities, assertive behaviour,abilities to handle conflict situations, stress, how to communicate correctly and use the verbal and nonverbal communication, how to get ready for public presentation, how to communicate with patients, colleagues,other healthcare professionals, representatives of pharmaceutical industry, insurance companies and/or media.Students through various tests can find out information on themselves (what kind of personalities they are,what should they focus on while solving of stress and conflict situations, and how they can improve their communication abilities).

Class syllabus:
1. Introduction to Health Psychology .
2. Psychology in disease. Relationship patient – healthcare professional in psychology.
3. Personality, forming of personality and its position in social group.
4. Social interaction and communication.
5. Verbal communication in the work of pharmacists.
6. Non-verbal communication in the work of pharmacists.
7. Optimal communication in the work of pharmacists.
8. Conflict in community pharmacy and its resolution in team of co-workers.
9. Stress situations in community pharmacy.
10. Public requirements for pharmacist‘s personality.
11. Basic types and characteristics of problematicl customers of pharmacy.
12. Cooperation within a team of co-workers in healthcare, leadership.
13. Public presentation, job interview and presentation of self.

Recommended literature:

1. Veatch, R.M., Haddad, A.: Case studies in pharmacy ethics, Oxford, Univesity Press, 2008, 331 p.
2. Bissel, P., Traulsen, J.M.: Sociology and pharmacy practice, London, Pharmaceutical Press, 2005, 226 p.
3. Wingfield, J., Badcott, D.: Pharmacy ethics and decision making, London, Pharmaceutical Press, 2007, 313 p.
4. Appelbe, G.E., Wingfield, J.: Dale and Appelbe s Pharmacy Law and Ethics, London, Pharmaceutical Press, 2005, 593 p.
5. Hungman, B.: Healthcare Communication, London, Pharmaceutical Press, 2009, 304 p.

Languages necessary to complete the course:
English language.

Notes:

Past grade distribution
Total number of evaluated students: 204

A	ABS	B	C	D	E	FX
48,53	0,0	25,98	6,86	7,84	6,37	4,41

Lecturers: PharmDr. Ľubica Lehocká, PhD.

Last change: 02.08.2021

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/28-Mgr-A/20	Health Technology Assessment

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 1 / 1 **per level/semester:** 14 / 14
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Course requirements:
Student #s assessment includes a written test. The minimum success limit is 65 %. The final assessment of the exam is:
A = 100 – 85 %, B = 84 – 79 %, C = 78 – 73 %, D = 72 – 66 %, E = 65 – 60 %, FX = less than 59 %.

Learning outcomes:
By completing the study course, the student acquires basic knowledge in the field of the health technology assessment with an emphasis on the evaluation of drugs for the categorization process within the public health insurance system. Health technology assessment is an interdisciplinary process, that summarizes information on health, social, economic and ethical issues related to the use of health technology. For the purposes of Directive 2011/24 /EU, the term „Health technology“ means a medicinal product, medical device or medical and surgical procedures, as well as disease prevention, diagnosis or treatment measures used in healthcare. As part of the course, students will participate in solving case studies from real practice.

Class syllabus:
- History of health technology assessment.
- The importance of health technology assessment.
- Health technology assessment as a strategic tool for decision-making in the health care system.
- Directive 2011/24/EU and health technology assessment.
- EUnetHTA Project
- Procedure of health technology assessment.

The HTA Core Model is a methodological framework for production and sharing of HTA information. (The first part characterizes the health problem and the currently used technology, so it contains epidemiological and basic information about the currently available medical intervention to address this medical problem. The second area concerns the description and technical characteristics of the evaluated medical intervention. The third part deals with its clinical effectiveness. The fourth part focuses on the safety of the evaluated medical intervention. The fifth part focuses on financial costs and economic evaluation. Part six contains the ethical aspects of the evaluated medical intervention. Organizational aspects depending on the individual health care systems are part of part seven. Part eight analyzes the social aspects related to putting new

technology into practice. The last part deals with legal analysis related to new technology in the context of the requirements of applicable legislation).
- Knowledge transfer in the context of HTA.
- Current use of health technology assessment in European countries.
- European cooperation in health technology assessment

Recommended literature:
Tesař, T., Babeľa, R.: Hodnotenie zdravotníckych technológii, Úvod do problematiky. SAP – Slovak Academic Press s.r.o., Bratislava, 2014, 96 s.
Zákon č. 363/ 2011 Z.z. o rozsahu a o podmienkach úhrady liekov, zdravotníckych pomôcok a dietetických potravín na základe verejného zdravotného poistenia a o zmene a doplnení niektorých zákonov v znení neskorších predpisov.

Languages necessary to complete the course:
English language

Notes:
Maximum number of students: 12, in case of greater interest, there will be a selection of students in which the study average will be assessed (Years 1 – 3).

Past grade distribution
Total number of evaluated students: 6

A	ABS	B	C	D	E	FX
83,33	0,0	0,0	16,67	0,0	0,0	0,0

Lecturers: doc. PharmDr. Tomáš Tesař, PhD., MBA, PharmDr. Slávka Porubcová

Last change: 14.02.2022

Approved by: doc. PharmDr. Tomáš Tesař, PhD., MBA

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/24-Mgr-A/19	History of Pharmacy

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
The theory of pharmacy, its basic concepts and categories, patterns of development, developmental periods from medicine, through differentiation and the emergence of pharmacy as an independent scientific field are interpreted. Special attention is paid to the development of pharmaceutical sciences, research, production, control, supply, pharmacy, education, pharmaceutical historiography and museology. In clarifying these components of pharmacy, emphasis is placed on the interdisciplinary nature of the pharmaceutical sciences and the dynamism of their development in the context of the natural medical and social sciences. The role of personalities in the development of pharmaceutical sciences is illustrated. Prognostic aspects are outlined from the development results.

Recommended literature:
Rusek, V., Kučerová, M.: Úvod do studia farmacie a dějiny farmacie. Praha: Avicenum, 1983. 195 s.
Chalabala, M. a kol.: Encyklopédia farmácie. Martin: Osveta, 1991. 440 s.
Historie farmácie v Českých zemích. Praha: Milpo Media, 2003.
Opletal, L., Opletalová, V.: Lék a jeho vývoj v dějinách. Praha: Karolínium, 1999. 128 s.
Schmitz, R.: Geschichte der Pharmazie. Eschborn: I. Govi-Verlag, 1998.
Bartunek, A.: Osobnosti slovenského lekárnictva, Martin, Osveta 2001. 208 s.

Languages necessary to complete the course:
English language

Notes:

Past grade distribution
Total number of evaluated students: 1

A	ABS	B	C	D	E	FX
0,0	0,0	0,0	100,0	0,0	0,0	0,0

Lecturers: doc. PharmDr. Tomáš Tesař, PhD., MBA

Last change: 14.02.2022

Approved by: doc. PharmDr. Tomáš Tesař, PhD., MBA

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KGF/07-Mgr-A/20	Homoeopathics

Educational activities:
Type of activities: practicals / lecture / seminar
Number of hours:
per week: 0 / 2 / 0 **per level/semester:** 0 / 28 / 0
Form of the course: on-site learning

Number of credits: 1

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

A	ABS	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: PharmDr. Mária Čuchorová, PhD.

Last change: 12.08.2020

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/24-Mgr-A/20	Hospital Pharmacy

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
Retail Pharmacy, Legislation and Ethics

Course requirements:
Oral assessment.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
By completing the study course, the student aquires a general overview of the field of hospital pharmacy, which in a theoretical and practical position deals with the issue of providing pharmaceutical care to patients in medical facilities.

Class syllabus:
1. The position of the pharmacist in the health care system.
2. Teaching is provided in hospital pharmacies (in the form of exercises).
3. Demonstration and acquisition of practical skills in the preparation and dispensation of drugs to inpatients.
4. Emphasis on the practical assumption of responsibility for the prepared and dispensed drug to outpatients and inpatients.
5. Demonstration of drug effects and drug side effects.
6. Preparation and dispensing of drugs in cooperation with a specialist.
7. Progressive forms of drug distribution in the clinical environment.
8. Practical use of the hospital drug formuraly.
9. Work with a patients medication cards in hospital wards.
10. Participation in patient management – medication practice.

Recommended literature:
Vyhláška MZ SR č. 129/ 2012 o požiadavkách na správnu lekárenskú prax
- Zákon NR SR č. 362/2011 Z.z. o liekoch a zdravotníckych pomôckach v znení neskorších predpisov
- Sýkora, J., Szücsová, S.: Nemocničné lekárenstvo v 90. rokoch 20. storočia v Slovenskej republike. Farm.Obz. 2000, 5, s. 16-17.

- Koncepcia odboru lekárenstvo, Vestník MZ SR 2006, čiastka 13.
Strana: 2
- Fulmeková a kol: Lekárenstvo, UK Bratislava 2010,s.185
- Aktuálne vestníky MZ SR r.2010-2017 Lekárenský software

Languages necessary to complete the course:
English language

Notes:
The course is obligatory elective and it is taught only in the 8th semester of study.

Past grade distribution
Total number of evaluated students: 9

A	ABS	B	C	D	E	FX
77,78	0,0	0,0	11,11	0,0	11,11	0,0

Lecturers: doc. PharmDr. Tomáš Tesař, PhD., MBA, PharmDr. Slávka Porubcová

Last change: 14.02.2022

Approved by: doc. PharmDr. Tomáš Tesař, PhD., MBA

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KBMBL/07-Mgr-A/20	Hygiene of Pharmaceutical Facilities

Educational activities:
Type of activities: lecture / laboratory practicals
Number of hours:
per week: 2 / 1 **per level/semester:** 28 / 14
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: I.II.

Prerequisites:

Course requirements:
For credits is required successful completion of two pre-tests during the semester with a minimum success rate of 50% from each of the tests and subjects is terminated by the writing form with a minimum success rate of 60%.

Learning outcomes:
The subject focuses mainly on the explanation of the facts that are most important for the pharmacist. The rules used for compliance with hygiene air, water and waste in environment will be the first information to topic. The aim of environmental health is to inform students about how to improve the health status of the population, how to create conditions in environment that will ensure, respectively contributed to the protection of human health, its healthy development, physical and mental well-being. Food hygiene and tools general use is a field which studies the process of nutrition and addresses how their ensure for the physiological needs of man . Nutrition can increase the overall fitness of the organism, however, if it is irrational, causes the emergence of the widespread outbreak of civilization diseases (obesity, diabetes , cardiovascular disease, tumours). Health risks associated with food are caused by foreign substances contained in food. Therefore, following to the basic rules of nutrition learn students the adverse effects of contaminants in food and their prevention against them . In terms of experts, pharmacist obtains in
the last part of the subject the necessary knowledge and information about observing the rules of hygiene, of the pharmaceutical equipment, of the work in these facilities and the hygiene in the preparation of pharmaceuticals, which requires discipline , knowledge of the dangerous factors and basic knowledge of effective measures necessary to achieve the health security in terms of microbiological contamination of pharmaceutical equipments.

Class syllabus:
The first part Hygiene pharmaceutical facilities engage in the basic constituents of the environment and its effects on human health - specifically, it is the position of hygiene and its role in the health and environmental hygiene air, water and waste. In the second part, students learn the basic rules of nutrition - specifically food hygiene. The third part emphasizes occupational hygiene, pharmaceutical facilities and rules of hygiene in the preparation of drugs. The basic contents of Hygiene pharmaceutical facilities are based on the current status of the individual disciplines

relating to hygiene and environment-specific rules or methods used in practice - requirements for hygiene in pharmacy, manipulation with medicines and drugs and evaluation of microbial products of the pharmaceutical industry in terms of requirements sterility and non-sterility according to Ph. Eur.

Recommended literature:

Ághová Ľ. and contributors: Hygiene (Environmental medicine), Comenius University, Bratislava 1997 textbook, pp.200
European Pharmacopeia – actual version, selected chapters
Bencko V. et al.: Hygiene and epidemiology (selected chapters), Prague: The Karolinum Press, 2007, pp. 270
Riddley R. John and Channing John: Occupational Health and Hygiene, Butterworth-Heinemann Ltd., Oxford, UK, 1999, pp. 241

Languages necessary to complete the course:
English language.

Notes:

Past grade distribution
Total number of evaluated students: 35

A	ABS	B	C	D	E	FX
77,14	0,0	22,86	0,0	0,0	0,0	0,0

Lecturers: doc. Mgr. Martina Hrčka Dubničková, PhD., doc. Mgr. Andrea Bilková, PhD., Mgr. Eva Drobná, PhD., PharmDr. Hana Kiňová Sepová, PhD., PharmDr. Gabriela Greifová, PhD.

Last change: 28.06.2021

Approved by: doc. Mgr. Martina Hrčka Dubničková, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KBMBL/24-Mgr-A/21	Immunodiagnostics

Educational activities:
Type of activities: lecture / laboratory practicals
Number of hours:
per week: 1 / 1 **per level/semester:** 14 / 14
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 5., 7.

Educational level: I.II.

Prerequisites:

Course requirements:
The student may have excused max. 2 practical classes, that will we individually examined. The student must submit correctly prepared and evaluated protocols and assigned tasks from all completed practical classes. The final exam is in written form and for successful completion it is necessary to obtain at least a rating of 60 % points.

Learning outcomes:
Students will become familiar with methods and principles of human immune profile diagnosis, factors of cellular and humoral immunity, as well as serological, immunochemical, and molecular biology techniques used to evaluate the parameters of the immune system and their use in the diagnosis of diseases. At the same time, the student will gain knowledge about the isolation and processing of samples from the patient (e.g., serum, plasma, or various types of blood cells), as well as how to use them for immunodiagnostic purposes.

Class syllabus:
The subject of Immunodiagnostics builds on the knowledge of basic and clinical immunology. It deals with the human immune profile, the state of cellular and humoral immunity and the immunochemical and molecular biology techniques used to evaluate it. It deals in detail with the latest types of vaccines (DNA, mRNA, vectors, VLPs, etc.), preparation of monoclonal antibodies and immunodiagnostic preparations, including rapid tests available in pharmacies. A separate part is devoted to up to date immunoanalytical techniques used for detection of antigens and antibodies, without which current diagnosis of diseases is not possible.

Recommended literature:
Ferenčík M.: Handbook of Immunochemistry, Chapman & Hall, London, New York, 1993.
Shawkatová I. and co-aut.: Laboratory methods in immunology, Comenius University, Bratislava, 2014.
Buc M., Javor J.: Basic and clinical immunology for dentistry student, Comenius University, Bratislava, 2017.
Buc M.: Basic and clinical immunology, Comenius University, Bratislava, 2020.

Languages necessary to complete the course:

English language.

Notes:

Past grade distribution
Total number of evaluated students: 8

A	ABS	B	C	D	E	FX
0,0	0,0	25,0	0,0	12,5	62,5	0,0

Lecturers: doc. Mgr. Andrea Bilková, PhD., PharmDr. Hana Kiňová Sepová, PhD., Mgr. Eva Drobná, PhD., PharmDr. Gabriela Greifová, PhD., doc. Mgr. Martina Hrčka Dubničková, PhD.

Last change: 25.11.2021

Approved by: PharmDr. Hana Kiňová Sepová, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KBMBL/23-Mgr-A/21	Immunology

Educational activities:
Type of activities: lecture / laboratory practicals
Number of hours:
per week: 2 / 1 **per level/semester:** 28 / 14
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 3.

Educational level: I.II.

Prerequisites:

Course requirements:
There will be 2 written tests during the semester; to pass, at least 50% points must be obtained from each of them. Student has to write a report on each laboratory practice with the correct evaluation of obtained results. Maximum 2 laboratory practices may be apologised, and the student will be examined of the missed lesson. To pass the final exam, it is necessary to obtain at least 12 points out of 20.

Learning outcomes:
Student will gain knowledge about the mechanisms and functions of the immune system and its main significance for human life. He/She will understand that drugs applied to the body act through cellular and humoral immune mechanisms, and these are essential in the prevention and treatment of all diseases.

Class syllabus:
The subject Immunology deals with the knowledge of basic and clinical immunology. The student is familiarized with the composition and function of the human immune system, mechanisms of cell and humoral immunity, as well as the preventive, therapeutic and practical use of immunology in medicine and in pharmaceutical practice. In basic immunology, the subject deals with inflammation, fever, structure, and function of complement, cytokines, antigens, and antibodies. Emphasis is placed on the preparation and use of monoclonal antibodies in pharmacy and medicine, without which modern diagnosis and therapy of diseases would not be possible. The clinical part of immunology lectures is focused on anti-infective, anti-tumour and transplant immunity and deals also with immunopathological diseases as well as the role of immunomodulators in the prevention and therapy of some diseases. The last but not least it focuses also on the production, application, and the use of vaccines and preparations for passive immunization.

Recommended literature:
Buc, M: Basic and Clinical Immunology, Comenius University, Bratislava, 2020.
Shawkatová, I. et al..: Laboratory methods in immunology, Comenius University, Bratislava, 2014.
Buc. M.: Basic and Clinical Immunology, Comenius University, Bratislava, 2008.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 14

A	ABS	B	C	D	E	FX	N/a
14,29	0,0	0,0	21,43	7,14	28,57	28,57	0,0

Lecturers: PharmDr. Hana Kiňová Sepová, PhD., doc. Mgr. Andrea Bilková, PhD., doc. Mgr. Martina Hrčka Dubničková, PhD., Mgr. Eva Drobná, PhD., PharmDr. Boris Dudík, PhD., PharmDr. Gabriela Greifová, PhD.

Last change: 25.11.2021

Approved by: doc. Mgr. Andrea Bilková, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KGF/16-Mgr-A/20	Innovative Dosage Forms and Biological Medicines

Educational activities:
Type of activities: practicals / lecture
Number of hours:
per week: 1 / 2 **per level/semester:** 14 / 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 4

A	ABS	B	C	D	E	FX
25,0	0,0	0,0	0,0	50,0	25,0	0,0

Lecturers: PharmDr. Veronika Šimunková, PhD., PharmDr. Alžbeta Lengyelová, PharmDr. Veronika Mikušová, PhD., PharmDr. Milica Molitorisová, PhD., PharmDr. Mária Raučinová, PhD., Mgr. Jana Selčanová, PharmDr. Mária Čuchorová, PhD., PharmDr. Miroslava Špaglová, PhD., PharmDr. Desana Matušová, PhD.

Last change: 12.07.2021

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/23-Mgr-A/20	Innovative Medicines in Pharmacotherapy

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
Phartmacology (1), Social Pharmacy and Pharmacoeconomics

Course requirements:
Mandatory 80% attendance at lectures and seminar work, in particular cases a written test.
Scale of assessment (preliminary/final): Ongoing 0 / final 100

Learning outcomes:
By completing the course, the student will gain knowledge about the advances in pharmacotherapy achieved in recent decades, the milestones in the treatment of major diseases and the importance of investment in science and research. At the same time, by completing the course, the student gets familiar with examples of innovative medical procedures in selected medical disciplines in the world and in Slovakia, as well as with obstacles or solutions that appear in practice when using new procedures.

Class syllabus:
- Characteristics of the concept and meaning of innovations in medicine (focus on pharmacotherapy) - Research and development of new medicines with a focus on practical demonstrations of what innovation brings to patients, physicians and society - The importance of the availability of innovation (Market Access and current trends seeking a compromise between availability and the rising costs of securing innovation entry) - Information on the growing role of the patient in decision-making processes, which also influences the direction of future investments in innovation - Practical examples of innovations in selected medical disciplines (1. Oncology 2. Hematooncology 3. Rheumatology and Dermatology 4. Cardiology 5. Vaccines 6. Hepatology 7. Neurology)

Recommended literature:
www.efpia.eu/topics/innovation, Laws 362/2011 and 363/2011 as amended, www.ema.europa.eu, www.nice.org.uk, www.sukl.sk

Languages necessary to complete the course:
Slovak, English

Notes:

maximum number of students: 40, in case of higher interest - selection will be made based on: grade average (years 1-3), average from subjects Pharmacology and Social pharmacy and pharmacoeconomics, motivation letter, certificate (exam) proving knowledge of english language

Past grade distribution

Total number of evaluated students: 0

A	ABS	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: prof. PharmDr. Ján Klimas, PhD., MPH

Last change: 01.12.2021

Approved by: prof. PharmDr. Ján Klimas, PhD., MPH

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KJ/17-Mgr-A/19	Latin Medicinal Terminology

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 1.

Educational level: I.II.

Prerequisites:

Course requirements:
active participation on seminars, two semester tests with the overall grade at least 60%, written and oral exam.
Grading scale:
100 – 91% = A
90 – 81% = B
80 – 73% = C
72 – 66% = D
65 – 60% = E
59 – 0% = Fx
Scale of assessment (preliminary/final): 15/85

Learning outcomes:
At the end of the course, students can understand the terminology correctly and use it in acquiring knowledge and practice within their field. Professional medical terminology includes mainly terms of the Latin and Greek origin used in medicine. Anatomical, pathological terms. Acquired information about specialized terms and their development helps students orient themselves to their field and understand their specialisation in the broader social and historical context, especially with increasing overall knowledge.

Class syllabus:
1. Introduction to Latin Grammar
2. Basic Grammatical Terms
3. Syntactic Structure of Terms
4. Pronunciation of Latin Sounds
5. 1st Declension
6. 2nd Declension
7. Midterm Test
8. 3rd Latin Consonant Declension - Masculines and Feminines
9. 3rd Latin Consonant Declension - Neutres
10. 3rd Latin Vowel Declension

11. 3rd Greek Consonant Declension
12. 3rd Greek Vowel Declension
13. Final overview of grammar

Recommended literature:
• VALLOVÁ, Eleonóra and Tomáš HAMAR. Latin Language for Pharmacy Students. Bratislava: Comenius University Bratislava, 2011. ISBN 978-80-223-2890-6.
• OZÁBALOVÁ, Ľudmila, VALLOVÁ, Eleonóra and Tomáš HAMAR. Trojjazyčný latinsko-anglicko-slovenský slovník pre študentov farmácie a medicíny. Bratislava: Univerzita Komenského, 2017. ISBN 978-80-223-4347-3.

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 86

A	ABS	B	C	D	E	FX
29,07	0,0	18,6	24,42	6,98	8,14	12,79

Lecturers: Mgr. Ivan Lábaj, PhD., PhDr. Tomáš Oravec

Last change: 29.03.2022

Approved by: doc. PhDr. Ľudmila Ozábalová, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KJ/18-Mgr-A/19	Latin Pharmaceutical Terminology

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I.II.

Prerequisites: FaF.KJ/17-Mgr-A/19 - Latin Medicinal Terminology

Course requirements:
active participation on seminars, two semester tests with the overall grade at least 60%, written and oral exam
Scale of assessment (preliminary/final): 15/85

Learning outcomes:
After successfully completing the course, the student is able to understand pharmaceutical terminology, and to use it correctly. Pharmaceutical terminology mainly includes terms from botany, pharmacognosy, chemistry, galenics and prescription. Acquired information on pharmaceutical terms helps students to better orient themselves in their chosen field, and to see the problematics of their specialization in a broader social and historical context, especially with the increase in the total amount of knowledge.

Class syllabus:
1. Grammatical overview of lessons 1 – 6
2. 3rd Declension Adjectives
3. Comparison of Adjectives
4. Adverbs
5. 4th Declension
6. 5th Decelension
7. Midterm Test
8. Numerals
9. Verbs
10. Latin Prefixes and Suffixes
11. Greek Prefixes and Suffixes
12. Compound Words of Greek Origin
13. Compond Words of Latin Origin and Hybrid Words

Recommended literature:
• VALLOVÁ, Eleonóra and Tomáš HAMAR. Latin Language for Pharmacy Students. Bratislava: Comenius University Bratislava, 2011. ISBN 978-80-223-2890-6.

• OZÁBALOVÁ, Ľudmila, VALLOVÁ, Eleonóra and Tomáš HAMAR. Trojjazyčný latinsko-anglicko-slovenský slovník pre študentov farmácie a medicíny. Bratislava: Univerzita Komenského, 2017. ISBN 978-80-223-4347-3.

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 62

A	ABS	B	C	D	E	FX
25,81	0,0	25,81	16,13	17,74	3,23	11,29

Lecturers: Mgr. Ivan Lábaj, PhD., PhDr. Tomáš Oravec

Last change: 26.03.2022

Approved by: doc. PhDr. Ľudmila Ozábalová, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/27-Mgr-A/20	Legal Rudiments for Pharmacists

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 1 / 2 **per level/semester:** 14 / 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Course requirements:
During the semester, two practical cases will be solved using uncommented legislation of 25 points each. Credits will not be awarded to a student who obtains less than 12 points from any written test. The minimum success limit for both written tests is 60 %. Evaluation scale: A: 100 – 93 %, B: 92 – 85 %, C:84 – 77 % D: 76 – 69 %, E: 68 – 60 %. FX: less than 59 %.

Learning outcomes:
Student receive an overview and practical skills in those areas of law with which he will come into contact after graduation as an economically active person, especially in the field of liability law, civil, labor and administrative law.

Class syllabus:
1. Introduction to legal disciplines - legal norms, principles, general concepts.
2. Basics of civil law - Act No. 40/1964 Coll. Civil code.
3. Civil, criminal, disciplinary and contractual liability for damage/injury.
4. Introduction to employment law.
5. Employment relationship - pre-contractual relations, commencement and termination of employment.
6. Rights and obligations of the contracting parties.
7. Job description and work discipline
8. Responsibility in labor law.
9. Decisions, applications
10. Administrative proceedings - administrative bodies, procedural parties, representation

Recommended literature:
platné právne normy – najmä zákon č. 40/1964 Zb. občiansky zákonník, zákon č. 71/1967 Zb. správny poriadok a zákon č. 311/2001 Z. z. zákonník práce

Languages necessary to complete the course:
English

Notes:

The course is obligatory elective. Total capacity of this course is not limited, (for one seminar group 24 students max.)

Past grade distribution
Total number of evaluated students: 5

A	ABS	B	C	D	E	FX
20,0	0,0	60,0	20,0	0,0	0,0	0,0

Lecturers: doc. PharmDr. Tomáš Tesař, PhD., MBA, JUDr. PhDr. Lilla Garayová, PhD.

Last change: 13.02.2022

Approved by: doc. PharmDr. Tomáš Tesař, PhD., MBA

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KORF/18-Mgr-A/20	**Course title:** Management Basics in Pharmacy
Educational activities: **Type of activities:** lecture / seminar **Number of hours:** **per week:** 2 / 1 **per level/semester:** 28 / 14 **Form of the course:** on-site learning	
Number of credits: 3	
Recommended semester: 4.	
Educational level: I.II.	
Prerequisites:	
Recommended prerequisites: Not estimated	
Course requirements: Completion of lectures and seminars. Preliminary tests minimum 50% for each one. The exam performed by the written test with a minimum threshold of success 65%. The assessment: A = 100-93%, B = 92-86%, C = 85-79%, D = 78-72%, E = 71-65%, FX = 64% and less. Scale of assessment (preliminary/final): 0/100	
Learning outcomes: The Course presents a selection of specific topics from the comprehensive theory of management with regard to the specifics of Health Care Management. It gives students the basic knowledge, which health care staff – and pharmacists, too – should be theoretically recognized and practically applied in their managerial role. Content of the Course includes description of the main management functions, such as managing, planning, organizing, people management and leadership roles, discusses the specifics of operational management in pharmaceutical and healthcare environment, as well as the basics marketing in public pharmacy. Subject provides students a foundation for their future management work in different areas of health care and pharmacy. Theoretical findings are discussed by practical demonstration in the seminars (presentation and discussion, case studies, management games).	
Class syllabus: 1. Introductory into management: definition, terminology, history, value, managers´roles and functions. 2. Strategic management. 3. Human resource management. 4. Financial management. 5. Operational management. 6. Management of quality and effectivity. 7. Health care management – characteristics. 8. Health Technology Assessment.	

9. Management of marketing.
10. Pharmaceutical market: stakeholders and customers related management.
11. Marketing strategy, SWOT analysis, planning processes.
12. Marketing mix.
13. Communication (public relations, advertisement) and business ethics.
14. Marketing in a health care facility (e-g- public pharmacy)

Recommended literature:

1. Desselle, S.P., Zgarrick, D.P., Alston, G.L. Pharmacy Management. 2000, third edition, American Society of Health-System Pharmacists, Med Graw Hill, Inc. 2010, 715p., ISBN 978-0-07-177431-4.
2. Kelly, W.N. Pharmacy. What it is and How it works. CRP Press, Taylor & Francis Group. LLC. 2012. 452p. ISBN 978-1-4398-5305-4.
3. Kotler, P. et al. Marketing management. Harlow: Pearson Education Limited, 2016. ISBN 978-1-292-09323-9.
4. Royal Pharmaceutical Society. Medicines, Ethics and Practice. The Professional guide for pharmaceuticals. Edition 39, July 2015, 202p.
5. Quin, S. Management Basic, 1st edition, 2010, 75p., ISBN 978-87-7681-717-6
6. Pownall, I., Effective Management Decision Making, 2012, 236p. ISBN 978-87-403-0120.

Languages necessary to complete the course:
English language.

Notes:

Past grade distribution
Total number of evaluated students: 36

A	ABS	B	C	D	E	FX
33,33	0,0	27,78	11,11	5,56	11,11	11,11

Lecturers: doc. PharmDr. Daniela Mináriková, PhD., doc. PharmDr. Tomáš Tesař, PhD., MBA, Mgr. Laura Adamkovičová

Last change: 07.02.2022

Approved by: doc. PharmDr. Tomáš Tesař, PhD., MBA

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFChL/18-Mgr-A/19	Mathematic for Pharmacists

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 1 / 2 **per level/semester:** 14 / 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 1.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
None

Course requirements:
During full-time teaching, students will write 8 to 10 tests for a total of 40 points during the semester, and a written test worth of 60 points is written at the exam. Points from tests at seminars and from the current test at the exam are added together. In case of on-line teaching, students write a test worth of 100 points. To obtain an A rating, it is necessary to obtain at least 92 points, to obtain an B rating at least 84 points, to obtain a C rating at least 76 points, to obtain a D rating at least 68 points and to obtain an E rating at least 61 points.
Scale of assessment (preliminary/final): Seminar tests: maximum 40 points (full-time teaching) Final exam test: maximum 60 points (full-time teaching) Final exam test: maximum 100 points (on-line teaching)

Learning outcomes:
The course in mathematics and its applications is suitable both for students of the pharmacy program who are aiming to pursue research as well as for students going to pharmacy practice. The students will read introduction to discrete mathematics, linear algebra, mathematical analysis and differential equations. After passing the course the students will master basic principles of differential and integral calculus. They will acquire the necessary theoretical background needed for subsequent studies of physics, physical chemistry, biophysics, and other specialized subjects of the pharmacy curriculum.

Class syllabus:
Propositional calculus. Theory of sets – definition of set, operations on sets. Relations and functions – definition of function, graph of function, elementary functions. Infinite sequences and power series – limits of sequences. Differential calculus – limits of functions, derivative, and differential. Taylor series. Integral calculus – fundamental integration formulas, indefinite and definite integrals and their applications. Functions of several variables – partial derivatives, total differential and total derivative. Ordinary differential equations of first order and their applications.

Lectures from mathematics are supplemented by seminars where students acquire skills in solving of mathematical problems.

Recommended literature:
D. L. Stancl, M.L. Stancl: Calculus for Management and the Life and Social Sciences, 2nd ed., R.D. Irwin, Boston, MA, 1990.
R. L. Finney, G. B. Thomas Jr.: Calculus and Analytic Geometry, 9th ed., Addison-Wesley, Reading, 1996.

Languages necessary to complete the course:
English

Notes:
The course is offered during winter semester only.

Past grade distribution
Total number of evaluated students: 27

A	ABS	B	C	D	E	FX
14,81	0,0	11,11	7,41	25,93	29,63	11,11

Lecturers: prof. Ing. Vladimír Frecer, DrSc., doc. Mgr. Marcela Chovancová, PhD.

Last change: 10.12.2021

Approved by: prof. Ing. Vladimír Frecer, DrSc.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KGF/10-Mgr-A/20	Medical Devices

Educational activities:
Type of activities: lecture / laboratory practicals / seminar
Number of hours:
per week: 2 / 0 / 0 **per level/semester:** 28 / 0 / 0
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 5.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

A	ABS	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: PharmDr. Veronika Šimunková, PhD., PharmDr. Mária Raučinová, PhD., Mgr. Jana Selčanová, PharmDr. Veronika Mikušová, PhD.

Last change: 14.07.2021

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/28-Mgr-A/20	Medical Propaedeutics

Educational activities:
Type of activities: practicals / lecture
Number of hours:
per week: 1 / 1 **per level/semester:** 14 / 14
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I.II.

Prerequisites:

Course requirements:
Personal attendance at all lectures and practical classes, justified absence (max 2x) is replaced according to the instructions of the teacher; to pass 1 scheduled pretests, minimally 60% rate. The final exam test is completed by students in computer by written form (distant) of examination. To pass the final exam test by students in minimally 60% rate. Evaluation (mark and score): A 91-100%, B 81-90%, C71-80%, D 66-70%, E 60-65%, FX < 60%.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The subject Medical Propedeutics for Pharmacists is designed for pharmacy students focused on selected knowledge from medical disciplines and reflected the current state of pharmacy practice necessary to increase the quality of basic knowledge of compulsory study and professional qualifications of pharmacists. Subject content familiarises a student with a process of determining diagnosis based on physical examination, using a wide range of currently used laboratory and instrumentation procedures, screening tests and markers of some diseases, facilitates the determination of medication therapy management. An important skill is ability to communicate clearly and effectively with patients. The subject will provide general principles to prevent the emergence and spread of infectious diseases and a brief overview of vaccination and new possibilities for pharmacy-based immunization. The subject also provides space for medical education using pharmacist campaigns.

Class syllabus:
Medical history, physical examination of the patient and diagnosis, documentation of acquired health knowledge. Specifics of health status of children and seniors. Laboratory and instrumental examination methods. Laboratory and instrumentation analytical methods. Laboratory Medicine based on evidence. Implementation of laboratory diagnostics at the place of provision of Health Care Pact (Point of Care Testing PoCT). Overview of instruments analytical methods. Screening tests. Provision of physical and biochemical examinations in pharmacist - legislation, advice, dangerous waste management. Molecular markers of selected diseases. Overview of the paths and methods of drugs administration. Vaccination. The importance and role of disease prevention in society. Donation. Basics of epidemiology - Epidemiological Surveillance (tracking) of Infectious

Diseases in SR. Epidemiological methods in practice, indicators of occurrence, the result of the disease and health of the population. Pandemics. The importance and role of prevention of disease in society, educational pharmacists campaigns.
In the practical part, students will focuse on investigative techniques, will gain an overview of a comprehensive analysis of blood and biochemical tests, PoCT in practice, learn about the use of various tests available in pharmacies intended for preventive diagnosis and monitoring the safety and efficacy of pharmacotherapy. Students will try basic performance and application techniques on the experimental models of skin or anatomical regions as well as how to obtain material for examination, e.g. capillary blood. Virtually try the model situations of communication with clients in a pharmacy and how a pharmaceutical campaign is prepared.

Recommended literature:

Recommended Literature:
Lecture and exercise materials will be available in Moodle's online system
Thomas J., Monaghan T. Oxford Handbook of Clinical Examination and Practical Skills. Oxford University Press, Oxford, United Kingdom, 2013, ISBN13 9780199593972
Titze KJ. Clinical skills for Pharmacist. Elsevier. 2020 ISBN 9780323077385
Thomas L. Clinical Laboratory Diagnostics 2020, e-edition on www.clinical-laboratory-diagnostics-2020.com

Languages necessary to complete the course:

english

Notes:

The capacity of subject is limited to 20 students

Past grade distribution

Total number of evaluated students: 0

A	ABS	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: prof. PharmDr. Ján Klimas, PhD., MPH, PharmDr. Tomáš Rajtík, PhD., doc. MUDr. Tatiana Stankovičová, CSc., PharmDr. Michal Radik, PhD.

Last change: 21.12.2021

Approved by: doc. MUDr. Tatiana Stankovičová, CSc.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFB/06-Mgr-A/00	Medicinal Plants

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 5.

Educational level: I.II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 20/80

Learning outcomes:

Class syllabus:
Particular interest in the course Medicinal Plants and to their organs that constitute herbal drugs. Other topics are the field production of important domestic species as well as the possibility of introduction of selected foreigin taxa to island conditions, with respect to practical needs.

Recommended literature:
Vaverkova S. et al.: Botany and medicinal plants. Bratislava UK, 1995, 106 pages
Burnie G. et al.: Botanica. Gordon Cheers, Publ. Random Australia, 1998, 920 page

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 538

A	ABS	B	C	D	E	FX
72,49	0,0	20,82	3,72	0,56	0,0	2,42

Lecturers: doc. Ing. Miroslav Habán, PhD., Mgr. Ondrej Ďuriška, PhD.

Last change: 02.06.2015

Approved by: doc. Ing. Miroslav Habán, PhD., prof. Ing. Milan Nagy, CSc.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KChTL/13-Mgr-A/20	Metallodrugs and Nanoparticles as Modern Pharmaceuticals

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 6.

Educational level: I.II.

Prerequisites:

Course requirements:
Final evaluation: examination in the form of a written comprehensive test.
A: 90,01 % – 100,00 %; B: 82,01 % – 90,00 %; C: 74,01 % – 82,00 %; D: 66,01 % – 74,00 %; E: 60,01 % – 66,00 %; Fx: ≤ 60,00 %.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The aim of the course is to apply basic knowledge and skills in bioinorganic/biocoordination chemistry, as well as nanotechnology, in the field of pharmacy.

Class syllabus:
The lectures focus on modern research directions in the development of new medicines with the aid of bioinorganic chemistry. Besides bioactive metal complexes, the current research on applications of nanoparticles in diagnostics and therapy (nanomedicine) is covered as well.
Metal complexes as well as nanoparticles offer new possibilities for the development of bioactive compounds with mechanism of pharmacological action different from purely organic compounds, thus providing medicines with extended spectrum of activity. The first part of the lectures deals with pharmacologically active metal complexes. After a brief historic introduction, main features of current usage of these compounds are presented, especially in antimicrobial and anticancer therapies. Subsequently, new directions and perspectives in the development of metal-based drugs are outlined. The second part of the lectures deals with the modern research area of nanomedicine. Along with the basic physico-chemical properties of nanoparticles, fundamental methods for their synthesis and characterization are described. The lectures conclude with the discussion of various types of bioactivity of nanoparticles and their prospective application in pharmacology.

Recommended literature:
Kaim W., Schwederski B., Klein A. Bioinorganic chemistry: inorganic elements in the chemistry of life. Chichester: John Wiley & Sons Ltd 2013.
Dabrowiak J.C. Metals in Medicine (2nd ed.) Chichester: John Wiley & Sons Ltd 2017.
Lawrance G.A. Introduction to Coordination Chemistry. Chichester: John Wiley & Sons Ltd 2010.

Burgess R. Understanding Nanomedicine – An Introductory Textbook. Boca Raton: CRC Press 2012.

Languages necessary to complete the course:
english

Notes:
The course is held only in summer semester.
Teachers: Ing. Ladislav Habala, PhD., doc. Ing. Martin Pisárčik, CSc.

Past grade distribution
Total number of evaluated students: 9

A	ABS	B	C	D	E	FX
44,44	0,0	33,33	11,11	0,0	0,0	11,11

Lecturers: Ing. Ladislav Habala, PhD., doc. Ing. Martin Pisárčik, CSc.

Last change: 03.04.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KBMBL/11-Mgr-A/19	Microbiology

Educational activities:
Type of activities: lecture / laboratory practicals
Number of hours:
per week: 2 / 1 **per level/semester:** 28 / 14
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 1.

Educational level: I.II.

Prerequisites:

Course requirements:
All laboratory exercises completed by reports, running evaluation by two preliminary tests (successful in at least 50 %) and final examination (combined test with oral).

Learning outcomes:
By passing through the subject the student acquires the basic knowledge of the world of microorganisms, and their role in infectious diseases, as well as their application in pharmacy.

Class syllabus:
- Structure, physiology and genetics of bacterial cell.
- Pathogenicity and infection.
- Interaction of microorganisms with their environment, particularly with host organism.
- Pathogenic bacteria, viruses, fungi and protozoa
- Comprehensive virology.
- Types and mode of action of antibiotics and other antimicrobial agents.
- Prophylactic vaccines.
- Mechanisms of bacterial resistance to antimicrobial drugs.
- Disinfection, sterilization and preservation.
- Utilization of microorganisms in pharmacy.
- Ecology of microorganisms in pharmaceutical settings.
- Microbial contamination of pharmaceutical products and its control.

Recommended literature:
Talaro K.P., Chess B.: Foundations in Microbiology, 8th Ed., McGraw Hill, New York 2012, ISBN 978-
0-07-131673-6.
Denyer S. P., Hodges N. A, Gorman S. P.: Hugo & Russell´s Pharmaceutical Microbiology, 8th Ed.,
Blackwell, Oxford 2011, ISBN 978-1-4443-3063-2. .
Slonczewski J. L., Foster J. W.: Microbiology. Norton, New York 2009, ISBN
978-0-393-97857-5.

Pemmerville J. C.: Alcamo’s Laboratory Fundamentals in Microbiology, Jones and Bartlett Publ. Sudbury 2007, ISBN-13: 9-780-7637-4303-1.
Actor J. K.: Elsevier’s Integrated: Immunology and Microbiology, Mosby Elsevier, 2007, ISBN-13:
978-0-323-03389-3.

Languages necessary to complete the course:
English language.

Notes:

Past grade distribution
Total number of evaluated students: 87

A	ABS	B	C	D	E	FX
6,9	0,0	17,24	11,49	20,69	28,74	14,94

Lecturers: Mgr. Eva Drobná, PhD., doc. Mgr. Martina Hrčka Dubničková, PhD., doc. Mgr. Andrea Bilková, PhD., PharmDr. Hana Kiňová Sepová, PhD., PharmDr. Gabriela Greifová, PhD.

Last change: 28.06.2021

Approved by: doc. Mgr. Martina Hrčka Dubničková, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFCh/08-Mgr-A/20	Molecular Basis of Drug Development

Educational activities:
Type of activities: practicals / lecture / seminar
Number of hours:
per week: 1 / 1 / 1 **per level/semester:** 14 / 14 / 14
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 6.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
KFCH/05-Mgr.-A/00 Pharmaceutical chemistry I.

Course requirements:
Final Assessment: written final examination.
The evaluation of exam: 100 – 90 % (evaluation level A), 89 – 80 % (B), 79 – 70 % (C), 69 – 60 % (D), 59 – 50 % (E), less than 50 % (FX, not passed).
Scale of assessment (preliminary/final): 0 / 100

Learning outcomes:
To provide an introduction on drug actions and development, the pharmaceutical chemistry and pharmacological activity of drugs acting on lipids, proteins (receptors), enzymes, nucleic acids. QSAR, biotransformation of drugs.

Class syllabus:
The main objective of the subject is to provide new knowledge to students in the field of molecular basics of drug development, focusing mainly on methods of drug design (classical procedures, rational methods, chemical and biological information systems in the field of drug design, structure-activity relationships, methods of molecular modeling and molecular graphics), drug targets (proteins, enzymes, receptors, nucleic acids, lipids), drug-receptor interaction (thermodynamic, kinetic and structural analysis of drug-receptor interaction) and drug development(development of drugs from natural sources, synthetic analogs, receptor theories, 3D structure aided drug development, computer-aided drug development (CADD).
This subject is a part of pharmaceutical chemistry - its general part, whose methods and principles are generally applicable in drug development in any therapeutic group.

Recommended literature:
Text Books (latest edition):
An Introduction to Medical Chemistry, Graham L. Patrick.
Principles of Medicinal Chemistry, W.O. Foye, T. L. Lemke, David A Williams.
Medicinal Chemistry. Principles and Practice. (F. D. King. Ed)

Languages necessary to complete the course:
English.

Notes:

Past grade distribution
Total number of evaluated students: 23

A	ABS	B	C	D	E	FX
8,7	0,0	39,13	43,48	8,7	0,0	0,0

Lecturers: PharmDr. Vladimír Garaj, PhD., Ing. Stanislava Šoralová, PhD.

Last change: 06.07.2021

Approved by: PharmDr. Vladimír Garaj, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KBMBL/22-Mgr-A/20	Molecular Biology of Drug Effects

Educational activities:
Type of activities: practicals / lecture
Number of hours:
per week: 1 / 2 **per level/semester:** 14 / 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 5.

Educational level: I.II.

Prerequisites:

Course requirements:
100% participation on all forms of education. The final exam has a writing form and for successful completion it is necessary to obtain minimal 60%.

Learning outcomes:
After completing of lectures the student is able to understand deeper knowledge about the flow of genetic information and its possible influencing by drugs, about cell signalling systems due to the mechanisms of drug effects, and about the molecular-biological basis of some diseases and their therapy (f.e. influenza, AIDS, Alzheimer's disease). By completing of laboratories the student will acquire basic practical routine in the molecular biology laboratory practise (isolation of nucleic acids from biological material, electrophoretic procedures, PCR).

Class syllabus:
The flow of genetic information – the influencing possibilities of drugs: replication, transcription, translation and posttranslation modifications. Mutations and DNA repair mechanisms. Intracellular compartments and protein transport. Molecular-biological basis of some diseases. Principles of cell communication (cell signalling system). Networking of proteinkinases and integration of signal processing. Transport processes in the cell. Principles of the DNA recombinant technology. Principles of gene manipulations.

Recommended literature:
Elliott W.H., Elliott D.C.: Biochemistry and Molecular Biology. 4th ed. Oxford University Press 2009.
Rudge M.S., Patterson C.: Principles of Molecular Medicine. 2nd ed. Humana Press, 2006.

Languages necessary to complete the course:
English language

Notes:
Subject is opened only in winter term for students in 3rd year.

Past grade distribution
Total number of evaluated students: 43

A	ABS	B	C	D	E	FX
11,63	0,0	18,6	32,56	27,91	9,3	0,0

Lecturers: RNDr. František Bilka, PhD., doc. PharmDr. Marek Obložinský, PhD., Ing. Ľudmila Pašková, PhD.

Last change: 28.06.2021

Approved by: RNDr. František Bilka, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KTV/06-Mgr-A/20	Movement and Health

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 1

Recommended semester: 6., 8.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 12

A	ABS	B	C	D	E	FX
58,33	0,0	0,0	0,0	0,0	0,0	41,67

Lecturers: Mgr. Dalibor Ludvig, PhD., Mgr. Lenka Nagyová, PhD., PaedDr. Martina Tibenská, PhD., Mgr. Michal Tokár, PhD.

Last change: 28.07.2022

Approved by: PaedDr. Martina Tibenská, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFANF/08-Mgr-A/20	New Trends in Analytical Chemistry

Educational activities:
Type of activities: lecture / laboratory practicals
Number of hours:
per week: 1 / 2 **per level/semester:** 14 / 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 4.

Educational level: I.II.

Prerequisites:

Course requirements:
Obligatory elective course.
Final assessment:
after passing laboratory practices – examination. Presence on all forms of education is obligatory. Examination is performed in written form. It is necessary to reach at least 60% of a total score for successful passing of the examination
Scale of assessment (preliminary/final): 30/70

Learning outcomes:
The course expands the knowledge gained in the module Analytical Chemistry II with the latest trends in the procedures of pretreatment and analysis of pharmaceutically relevant samples. In this context, it deals with the automation and miniaturization of the analytical procedure, using new materials (sensors, stationary phases, additives), methodologies (LIF, MS / MS, UHPLC, SFC, CDEKC, etc.), combined techniques (especially LC-MS, CE -MS) and multidimensional (2D LC, 2D-CE) techniques, on-line (e.g. SPE-LC) and miniaturized (microdialysis, microextraction, etc.) sample preparation prior to analysis. The student will learn the importance and the strategy of optimization, and practical application potential of such methods increasingly promoted in the effectiveness of analytical procedures in research and routine pharmaceutical laboratories. When developing a reliable analytical method, students will also become familiar with the basics of validation of methods in the pharmaceutical analysis according to existing guidelines. Laboratory exercises are focused on the use of modern instrumental techniques, which are selected separation methods (liquid chromatography, gas chromatography, capillary zone electrophoresis, isotachophoresis), methods of polycomponent elemental analysis (radionuclide X-ray fluorescence analysis), the latest approaches in electrochemical and spectral analytical methods as well as computer simulation methods and molecular modeling methods. The knowledge and experience that students will gain after completing the course will be a good basis for successful completion of the thesis, as well as in doctoral studies (PhD.).

Class syllabus:
• Advanced sample preparation methods prior to instrumental analysis
o microdialysis

o Microextraction (mSPE, mLLE)
o Ultrafiltration
o Ultracentrifugation
• Development, optimization, and validation of an analytical method for pharmaceutical use.
o Optimization and validation parameters of the method for pharmaceutical analysis
o Validation protocol in pharmaceutical analysis
o National and transnational pharmacopoeias in the process of validation of analytical methods
• New electrochemical methods and their specifics
o Traditional vs. new electrode materials (carbon, metal, nanomaterials)
o Electrode modifications (nanoparticles, enzymes, polymers, mediators, ionic liquids, nucleic acids)
o Electrode formats: traditional, miniaturized, screen-printed
o Advanced electrochemical techniques
o Affinity and biocatalytic biosensors for biomedical research and practice
• New trends in spectral methods
o Advanced Optical Methods (LIF)
o Advanced NMR techniques (2D NMR)
o Trends in mass spectrometry (tandem mass spectrometry, MSn), and ionization techniques (ESI, APPI, APCI, MALDI, ICP, ...)
• New trends in chromatographic separation methods
o New types of stationary phases (monoliths, solid-core particles, functional group modifications)
o Advances in instrumental design (UHPLC, UHTLC, SFC)
o Miniaturization of HPLC systems (micro, nano)
o Peak capacity, orthogonality, and chromatographic modes in the two-dimensional arrangement, LC-LC (heart cut analytical approach), LCxLC (comprehensive analytical approach)
o Combined multidimensional chromatographic techniques LC-GC
• New trends in electrophoretic separation methods
o Principles, advantages, limitations, and possibilities of using online sample pretreatment techniques
o Miniaturization of systems (chips)
o Combined multidimensional techniques (ITP-ITP, ITP-CZE, CZE-CZE)
o Hybrid separation techniques (capillary electrochromatography (CEC), micellar electrokinetic chromatography (MEKC)

Recommended literature:
Mikuš, P., Maráková, K.: Hyphenated electrophoretic techniques in advanced analysis. Bratislava : KARTPRINT, 2012. 217 s. (vedecká monografia)

Languages necessary to complete the course:
english language

Notes:

Past grade distribution
Total number of evaluated students: 11

A	ABS	B	C	D	E	FX
36,36	0,0	0,0	0,0	45,45	18,18	0,0

Lecturers: prof. RNDr. Peter Mikuš, PhD.

Last change: 02.04.2022

Approved by: prof. RNDr. Peter Mikuš, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KChTL/04-Mgr-A/00	Organic Chemistry (1)

Educational activities:
Type of activities: lecture / laboratory practicals / seminar
Number of hours:
per week: 2 / 3 / 1 **per level/semester:** 28 / 42 / 14
Form of the course: on-site learning

Number of credits: 7

Recommended semester: 2.

Educational level: I.II.

Prerequisites:

Course requirements:
Seminars: The student is required during the semester to complete all the seminars. During the course each student must write 4 interim tests (0-20 points) and 1 final test (0-40 points). To fulfill the conditions for the examination the student is to reach more than 60% of the total point value of all tests. The points reached within the seminars are multiplied by the factor of 0,3 and their value is 30% of the exam value in case of a successful completion of the exam. The coefficient obtained from the seminars applies solely to the academic year in which it was obtained.
Laboratory exercises: The student is required during the semester to complete all laboratory exercises and according to the study programme is to write one test from the laboratory techniques (0-40 points) and independently perform four synthetic tasks (0-10 points). To fulfill the conditions needed for the examination the student is to reach from the laboratory exercises more than 60% of the total point value. Gained points are then multiplied by the factor of 0,1 and their value is 10% of the exam value in case of a successful completion of the exam.
Examination: The course examinations are held predominantly in written form in the examination period. Participation at the exam is subject to the full completion of the seminars and acquisition of more than 60% of the total point score from the seminars. It is recommended to pass the exam from Organic Chemistry 1. Successful completion of the exam test is conditional on obtaining more than 60% from each section of the written test. At the successful completion, the test´s average point value obtained from both parts is multiplied by the factor of 0,6. The total mark of the exam is created by the value obtained from seminars (40%) and the examination test (60%). Grading scale of the overall result of the exam (after taking into account the outcome of the interim control): A: 90,01 % – 100,00 %; B: 82,01 % – 90,00 %; C: 74,01 % – 82,00 %; D: 66,01 % – 74,00 %; E: 60,01 % – 66,00 %; Fx: ≤ 60,00 %.
Scale of assessment (preliminary/final): 30+10/60

Learning outcomes:
The course provides a comprehensive preparation of theoretical organic chemistry, as well as practical training in the field of organic synthesis focusing on the field of selected pharmaceutically important compounds. The gained skills are necessary for the completion of further chemical

and also pharmaceutically oriented courses, such as Pharmaceutical Chemistry. The course is comprehensively designed, focusing on Master Degree accredited study programme of Pharmacy.

Class syllabus:
In theoretical teaching the main attention is paid to systematic organic chemistry. According to each group of compounds the course deals with their physical-chemical characteristics, properties, reactivity, types and mechanisms of reactions with emphasis on the importance in chemistry of pharmaceuticals and other following chemical courses of pharmaceutical study. As for natural substances only basic knowledge is provided. Mastering the knowledge of theoretical teaching and their application is the subject of seminars. The course of Organic Chemistry 2 is one of the fundamental courses in a comprehensive chemical preparation of students of pharmacy. When teaching the subject emphasis is placed on the use of acquired knowledge of organic chemistry in pharmacy and medicine. The course is comprehensively designed, focusing on Master Degree accredited study programme of Pharmacy.

Recommended literature:
1. Devínsky F. et al. Organic Chemistry for Pharmacy Students. Comenius University Press, Bratislava, 2010
2. McMurry, J.W., Begley, T.P.: The Organic Chemistry of biological Pathways, W. H. Freeman, 2nd ed., 2015
3. Čižmáriková R.: Laboratory manual for practice in organic chemistry. Comenius University Press, Bratislava, 2012

Languages necessary to complete the course:
English language

Notes:
The course is held only in summer semester.
Teachers: Natalia Miklášová, PhD., Assoc. prof. PharmDr. Jindra Valentová, PhD.

Past grade distribution
Total number of evaluated students: 730

A	ABS	B	C	D	E	FX
4,52	0,0	10,96	25,21	35,48	12,6	11,23

Lecturers: doc. PharmDr. Jindra Valentová, PhD., Mgr. Natalia Lucia Miklášová, PhD., Mgr. Lucia Lintnerová, PhD., Mgr. Anna Miňo, PhD., Mgr. Peter Herich, PhD.

Last change: 03.04.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KChTL/05-Mgr-A/00	Organic Chemistry (2)

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 2 / 2 **per level/semester:** 28 / 28
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 3.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
Recommendation: Organic Chemistry 1

Course requirements:
Seminars: The student is required during the semester to complete all the seminars. During the course each student must write all seminars tests. To fulfill the conditions for the examination the student is to reach more than 60% of the total point value of all the tests. The points reached within the seminars are multiplied by the factor of 0,4 and their value is 40% of the exam value in case of a successful completion of the exam. The coefficient obtained from the seminars applies solely to the academic year in which it was obtained. Examination: The course examinations are held predominantly in written form in the examination period. Participation at the exam is subject to the full completion of the seminars and acquisition of more than 60% of the total point score from the seminars. It is recommended to pass the exam from Organic Chemistry 1. Successful completion of the exam test is conditional on obtaining more than 60% from each section of the written test. At the successful completion, the test´s average point value obtained from both parts is multiplied by the factor of 0,6. The total mark of the exam is created by the value obtained from seminars (40%) and the examination test (60%). Grading scale of the overall result of the exam (after taking into account the outcome of the interim control): A: 90,01 % – 100,00 %; B: 82,01 % – 90,00 %; C: 74,01 % – 82,00 %; D: 66,01 % – 74,00 %; E: 60,01 % – 66,00 %; Fx: ≤ 60,00 %.
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
The course provides a comprehensive preparation of theoretical organic chemistry, as well as practical training in the field of organic synthesis focusing on the field of selected pharmaceutically important compounds. The gained skills are necessary for the completion of further chemical and also pharmaceutically oriented courses, such as Pharmaceutical Chemistry. The course is comprehensively designed, focusing on Master Degree accredited study programme of Pharmacy

Class syllabus:
In theoretical teaching the main attention is paid to systematic organic chemistry. According to each group of compounds the course deals with their physical-chemical characteristics, properties,

reactivity, types and mechanisms of reactions with emphasis on the importance in chemistry of pharmaceuticals and other following chemical courses of pharmaceutical study. As for natural substances only basic knowledge is provided. Mastering the knowledge of theoretical teaching and their application is the subject of seminars. The course of Organic Chemistry 2 is one of the fundamental courses in a comprehensive chemical preparation of students of pharmacy. When teaching the subject emphasis is placed on the use of acquired knowledge of organic chemistry in pharmacy and medicine. The course is comprehensively designed, focusing on Master Degree accredited study programme of Pharmacy.

Recommended literature:

1. Devínsky F. et al. Organic Chemistry for Pharmacy Students. Comenius University Press, Bratislava, 2010
2. McMurry, J.W., Begley, T.P.: The Organic Chemistry of biological Pathways, W. H. Freeman, 2nd ed., 2015

Languages necessary to complete the course:

English language

Notes:

The course is held only in winter semester.
Teachers: Natalia Miklášová, PhD., Assoc. prof. PharmDr. Jindra Valentová, PhD.

Past grade distribution

Total number of evaluated students: 675

A	ABS	B	C	D	E	FX
3,11	0,0	10,52	26,37	31,41	11,7	16,89

Lecturers: doc. PharmDr. Jindra Valentová, PhD., Mgr. Natalia Lucia Miklášová, PhD., RNDr. Roman Mikláš, PhD.

Last change: 03.04.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/27-Mgr-A/20	Pathology of Rare Diseases

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

A	ABS	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0	0,0

Lecturers:

Last change:

Approved by: PharmDr. Tatiana Foltánová, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFB/03-Mgr-A/00	Pharmaceutical Botany

Educational activities:
Type of activities: lecture / laboratory practicals
Number of hours:
per week: 2 / 3 **per level/semester:** 28 / 42
Form of the course: on-site learning

Number of credits: 6

Recommended semester: 4.

Educational level: I.II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 50/50

Learning outcomes:

Class syllabus:
Main attention in the field of systematic botany and ecology is paid to basic taxonomical units with respect to diacritical characteristic of medicinal plants. In the field of plant cytology the course focuses on morphological and functional differences of plant cells and on cell inclusions that present determinant characteristic in plant/drug description. The anatomy of individual types of plant tissues is detail in accordance with their development stage attributes and function. In the field of organology the course focuses on the anatomy and morphology of particular plant tissues with respect to specific characteristics of pharmaceutically important species.

Recommended literature:
Simpson M.: Plant Systematics. Ed.Amsterdam, Elsevier, 2006, 589 pages
Weier E., Stocking R., Barbour M.: Botany an Introduction to plant Biology. Ed. Wilez-Sons Publ. Comp. New York, 1984, 693 pages
Vaverkova S. et al.: Botany and medicinal plants. Bratislava UK, 1995, 106 pages

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 713

A	ABS	B	C	D	E	FX
26,65	0,0	25,11	23,0	17,11	5,47	2,66

Lecturers: doc. Ing. Miroslav Habán, PhD., Mgr. Ondrej Ďuriška, PhD.

Last change: 02.06.2015

Approved by: doc. Ing. Miroslav Habán, PhD., prof. Ing. Milan Nagy, CSc.

STATE EXAM DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF/500-Mgr-A/15	**Course title:** Pharmaceutical Chemistry
Number of credits: 4	
Educational level: I.II.	
State exam syllabus:	
Last change:	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFCh/05-Mgr-A/00	Pharmaceutical Chemistry (1)

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 2 / 1 **per level/semester:** 28 / 14
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 5.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
Recommendation. The KCHTL/01-Mgr-A/00 Organic Chemistry (1), KCHTL/02-Mgr-A/00 Organic Chemistry (2), KFANF/01-Mgr-A/00 Analytical Chemistry (1), KFANF/02-Mgr-A/00 Analytical Chemistry (2) and KBMBL/03-Mgr-A/00 Biochemistry courses are very strongly recommended to be successfully passed (with the final evaluation A-E) for the Pharmaceutical Chemistry (1) course.

Course requirements:
Conditions for successful completion of lectures and seminars from the Pharmaceutical Chemistry (1) course
a) Personal attendance at lectures (mandatory part of the education!) – a student is rigorously required to attend to all lectures following the schedule published at an official dashboard/web site of the Department of Pharmaceutical Chemistry CU; personal attendance at seminars – a student si rigorously required to attend to all seminars following the schedule published at an official dashboard/web site of the Department of Pharmaceutical Chemistry CU.
b) Successful course completion based on successful passing of all semestral preliminary evaluations with achievement of adequate (percentage) success
Students´ knowledge will be verified in a written form at 3rd and 5th seminar, respectively (two prelininary tests have to be passed); the content of preliminary tests, their evaluation as well as granting of preliminary evaluation will be the competence of the teachers responsible for teaching (supervising) of the seminars.
Each preliminary evaluation (each test) will constist of the questions following the topics listed in Syllabus of Lectures as well as Syllabus of Seminars. To pass all scheduled Seminars and semestral preliminary evaluations (2 preliminary tests), 60% or higher rate of the maximum point score must be achieved from each test.
c) The Granting of the Final Evaluation (Exam) from the Pharmaceutical Chemistry (1) Course
The final written exam from the Pharmaceutical Chemistry (1) course will last 120 minutes; particular terms, times and rooms for the exams will be listed in AIS-2.

Student is obliged to register for a particular term of the exam from the Pharmaceutical Chemistry (1) course via AIS-2 only. Only a student who is properly registered for the final exam via given electronic system will be allowed to take the exam.
The attendance of a student at the exam from the Pharmaceutical Chemistry (1) course is allowed only when all requirements listed in both a) and b) sections are fulfilled.
The exam from the Pharmaceutical Chemistry (1) course will be in a written form, i.e., a student will complete the test consisting of 25 questions. Each question will be evaluated by 2 points (the maximum number of points from the exam: 50 pts.).
The set of questions will be based on the topics listed in Syllabus of Lectures as well as Sylabus of Seminars. Thus, the questions will cover i) knowledge from general Pharmaceutical Chemistry, ii) definitions and chemical classifications (divisions) of particular pharmacodynamic classes (with a very precise chemical division of particular compounds – drugs), iii) chemical structures of selected compounds – drugs, iv) structure-biological activity relationships, structure-pharmacokinetics relationships as well as structure–toxicity relationships in detail (including a general chemical structure the compounds belonging into a relevant pharmacodynamic group as well as one drug, which chemical structure is precisely drawn), and (v) general biotransformation pathways related to particular compounds – drugs.
Evaluation of the exam from the Pharmaceutical Chemistry (1) course will be as follows: 50–47 points (evaluation level „A“), 46–44 points („B“), 43–39 points („C“), 38–35 points („D“), 34–30 points („E“), less than 30 points („FX“; not passed).
Thus, minimal requirements for the Pharmaceutical Chemistry (1) course to be successfully passed are as follows: 60% (60% and more) from the maximum point score.
Scale of assessment (preliminary/final): 0 / 100. a) Seminars from the Pharmaceutical Chemistry (1) course.Successful completion of Seminars, thus, the opportunity to participate in the final evaluation (exam) from the Pharmaceutical Chemistry (1) course, is based on successful completion of two preliminary evaluations. There is the requirement to obtain at least 60% or more of the maximum point score from each preliminary evaluation. The obtained (point) evaluation from the preliminary ones is not explicitly taken into account in the final evaluation (exam).b) Exam from the Pharmaceutical Chemistry (1) - weight in the final evaluation: 100%.
The evaluation of exam from the Pharmaceutical Chemistry (1) course and the assignment of relevant classification grades is given in the „Conditions for Successful Completion of Lectures and Seminars from the Pharmaceutical Chemistry (1) Course“ section. The exact point score from the seminars will be considered in the final evaluation (exam) from the Pharmaceutical Chemistry (1) course.

Learning outcomes:
Pharmaceutical/Medicinal Chemistry (the Pharmaceutical Chemistry (1) course) is a science unto itself, a central science positioned to provide a molecular bridge between basic science of biology and clinical science of medicine (analogous to chemistry being the (central) science between traditional disciplines of biology and physics). From a very broad perspective, a drug design may be divided into two phases fundamental concepts about: a) drugs, receptors, and drug–receptor interactions; b) drug–receptor interactions applied to human disease.
Pharmaceutical/Medicinal Chemistry is interdisciplinary, drawing very suitably on theoretical chemistry, organic chemistry, analytical chemistry, molecular biology, pharmacology, and biochemistry. Despite these complexities, Pharmaceutical/Medicinal Chemistry has its own clear line – the design and discovery of drug molecules with a comprehensive and precise definition and characterization of their properties, taking into account i) structural integrity of the drug molecules (in pharmaceutical, pharmacokinetic and pharmacodynamic phase, respectively), ii) their structural fragments (pharmacophore, toxicophore, metabophore, biophore; interchangeable bioisosteres), iii) their structural properties, iv) physicochemical features (solubility, surface activity, acid-

base and lipohydrophilic properties), v) shape properties (geometric, conformational, topological, steric), vi) stereochemical properties (optical isomers, enantiomers, geometric isomers), vii) electronic properties. Following that knowledge, structure–biological activity relationships are comprehensively investigated (SAR, QSAR).
horough and deep knowledge, understanding and correct interpretation of all relationships that are explained via this course is extremely important for (almost) all fields of pharmaceutical study.

Class syllabus:

Syllabus of Lectures

1st WEEK: Pharmaceutical Chemistry – General Principles, Current Concepts and Prospectives. Definitions of Terms Used in Pharmaceutical Chemistry (drug, prodrug, drug-like, ligand, receptor, bioavailability, structure–activity relationships (SAR), quantitative structure–activity relationships (QSAR), biotransformation, etc.). Classification of Drugs. Basic Principles in Lead (Drug) Development and Optimization (including some strategies of the optimization). Some Requirements for an „Ideal“ Drug.

The Fate of a Drug in the Body (pharmaceutical, pharmacokinetic and pharmacodynamic aspects).

2nd WEEK: Ligand–Biomacromolecule Interactions, part 1. Types of Interactions Between Ligand and Receptor; Definitions of Some Fundamental Terms (bioactive structural part of a drug, pharmacophore, metabophore, toxicophore, etc.); Enzymes; Interactions Between a Ligand and Enzyme; Interactions Between Lingand and Nucleic Acid, Orthosteric and Allosteric Interactions; Allosteric Modulators (examples of drugs); Interactions from a Chemical Point of View (interactions involved in molecular recognition, non-bonded interactions, i.e., hydrogen bonding, ionic interactions, van der Waals interactions, interactions CH–π, interactions cation–π, hydrophobic interactions, metal chelation interactions, halogen bonding; all issues explained using examples of drugs from various pharmacodynamic groups).

3rd WEEK: Ligand–Biomacromolecule Interactions, part 2. Covalent Interactions; Covalent Bonds; Comparison of Non-Covalent, Irreversible Covalent and Reversible Covalent Inhibitors; Design of Covalent Drugs – Inhibitors; Potential Benefits and Risks Associated with Covalent Inhibitors; Mechanism of Covalent Bond Formation Between a Ligand and Effector Site (all issues explained using examples of drugs from various pharmacodynamic groups); Types of Reactive Functional Groups (irreversible covalent inhibitors, reversible covalent inhibitors); Covalent Inhibitors used in Therapeutic Practice; Covalent Inhibitors in Clinical Trials (all issues explained using examples of drugs from various pharmacodynamic groups).

4th WEEK: Prodrugs; Definition of Some Fundamental Terms; Prodrug Concepts; Basics of Prodrug Design; Purpose of Designing Prodrugs; Classification of Prodrugs; Optimization of Bioavailability (all issues explained using examples of drugs from various pharmacodynamic groups); Advantages of Prodrugs with Optimized Pharmacokinetic Properties. Some Newly Approved Drugs.

Stereochemical Aspects of Drug Development; Definition of Some Fundamental Terms (constitution, configuration, chirality, torsion angles, isomerisms, etc.); Importance of Stereochemical Properties of Drugs for Their Biological Activity (all issues explained using examples of drugs from various pharmacodynamic groups);

Hybrid Molecules, the Privileged Scaffold for Various Pharmaceuticals. Ideal Hybrid Drug Molecules´ Characteristics; Different Strategies of Hybrid Design (all issues explained using examples of drugs from various pharmacodynamic groups); Some Hybrid Drugs in Clinical Practice; Brief Introduction into Structure–Activity Relationships within Some Pharmacotherapeutic Classes of Drugs.

5th WEEK: General Anesthetics; Sedatives; Hypnotics; Anticonvulsant Drugs (Definitions, drugs - systematic chemical classification, chemical structures of chosen drugs, mechanisms of action, structure–activity relationships, biotransformation pathways).

6th WEEK: Psychoactive Drugs, part 1. – Psycholeptic Drugs. Neuroleptics; Anxiolytics (Definitions, drugs - systematic chemical classification, chemical structures of chosen drugs, mechanisms of action, structure–activity relationships, biotransformation pathways).
7th WEEK: Psychoactive Drugs, part 2. – Psychoanaleptic Drugs. Antidepressants; Psychostimulants; Nootropics (Definitions, drugs - systematic chemical classification, chemical structures of chosen drugs, mechanisms of action, structure–activity relationships, biotransformation pathways).
Psychoactive Drugs, part 3. – Psychodysleptic Drugs. Psychedelics (Definitions, drugs - systematic chemical classification, chemical structures of chosen drugs, mechanisms of action, structure–activity relationships, biotransformation pathways).
8th WEEK: Antiparkinsonian Drugs; Emetic Agents; Anti-Emesis Drugs; Antivomitics (Definitions, drugs - systematic chemical classification, chemical structures of chosen drugs, mechanisms of action, structure–activity relationships, biotransformation pathways).
9th WEEK: Analgesics. Centrally-Acting (Opioid) Analgesics; Analgesics–Antipyretics; Antitussive Drugs; Drugs for the Treatment of Migraine (Definitions, drugs - systematic chemical classification, chemical structures of chosen drugs, mechanisms of action, structure–activity relationships, biotransformation pathways).
10th WEEK: Non-Steroidal Anti-Inflammatory Drugs (Definitions, drugs - systematic chemical classification, chemical structures of chosen drugs, mechanisms of action, structure–activity relationships, biotransformation pathways).
11th WEEK: Local Anesthetics; Muscle Relaxants (Definitions, drugs - systematic chemical classification, chemical structures of chosen drugs, mechanisms of action, structure–activity relationships, biotransformation pathways).
Discussion connected with the topics lectured previously.
12th WEEK: Adrenergics; Antiadrenergics; Antiarrhythmic Agents (Definitions, drugs - systematic chemical classification, chemical structures of chosen drugs, mechanisms of action, structure–activity relationships, biotransformation pathways).
13th WEEK: Parasympathomimetics; Parasympatholytics; Spasmolytics; Antihistamine Drugs (Definitions, drugs - systematic chemical classification, chemical structures of chosen drugs, mechanisms of action, structure–activity relationships, biotransformation pathways).
Syllabus of Seminars
1st - 2nd WEEK: Physicochemical Properties of Drugs. Solubility – Increase or Decrease in Solubility of Drugs in Aqueous or Lipophilic Environment; Lipophilic Properties of Drugs; Parameters Describing Lipophilicity. Acid-Base Properties of Drugs; Parameters Describing Acid-Base Properties; Surface Activity of Drugs; Micellar Properties of Drugs.
3rd - 4th WEEK: Biotransformation of Drugs. Phases of the Biotransformation; Biotransformation Pathways and Their Significance (all issues explained using examples of drugs from various pharmacodynamic groups).
5th - 6th WEEK: Vitamins Soluble in Water or Fat (Definitions, fundamental functions of vitamins, chemical structures of chosen vitamins, vitamins´ mechanisms of actions, structure–activity relationships, biotransformation pathways).
7th - 8th WEEK: Hormones, part 1. Hormones Derived from Amino Acids; Peptide Hormones and Proteohormones – Hypothalamic Hormones, Pituitary Hormones, Placental Hormones, Ovarian Hormones, Thyroid Hormones, Antithyroideal Compounds – Thyreostatics, Parathyroid Hormones, Pancreatic Hormones, Tissue Hormones (Definitions, fundamental functions of hormones, chemical structures of chosen hormones, hormones´ mechanisms of actions, structure–activity relationships, biotransformation pathways).
Eicosanoids (Prostacyclins, Thromboxanes, Prostaglandins, Dihydroxyleukotrienes, Peptidoleukotrienes, Lipoxins)

Peroral Antidiabetic Drugs (Definitions, drugs - systematic chemical classification, chemical structures of chosen drugs, mechanisms of action, structure–activity relationships, biotransformation pathways).
Pharmacotherapy of Osteoporosis (Definitions, drugs – systematic chemical classification, chemical structures of chosen drugs, mechanisms of action, structure–activity relationships, biotransformation pathways).
9th - 10th WEEK: Hormones, part 2. Steroidal Hormones – Sexual Hormones and Their Regulators; Hormones of Adrenal Cortex (Definitions, drugs – systematic chemical classification, chemical structures of chosen hormones, mechanisms of action, structure–activity relationships, biotransformation pathways).
11th - 12th WEEK Pharmaceutical Chemistry of Excipients.
Discussion connected with the topics lectured previously.

Recommended literature:

The Lectures from the Pharmaceutical Chemistry (1) Course
Beale, J. M., & Block, J. H. (2011). Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry. 12th Ed. Wolters Kluwer Health (Lippincott Williams & Wilkins), Philadelphia, United States of America, 1022 pp.
Chackalamannil, S., Rotella, D., Ward, S. (2017). Comprehensive Medicinal Chemistry III, 3rd Ed. Elsevier, Amsterdam, Netherlands, 4536 pp.
Patrick, G. L. (2017). An Introduction to Medicinal Chemistry. 6th Ed. Oxford University Press, New York, United States of America, 832 pp.
Pearson, P. G., & Wienkers, L. C. (2019). Handbook of Drug Metabolism. 3rd Ed. (Drugs and the Pharmaceutical Sciences). CRC Press, New York, United States of America, 616 pp.
Roche, V. F., Zito, S. V., Lemke, T. L., & Williams, D. A. (2019). Foye´s Principles of Medicinal Chemistry, 8th Ed. Wolters Kluwer Health Adis (ESP), Baltimore, United States of America, 1168 pp.
Silverman, R.B., Holladay, M.W. (2015). The Organic Chemistry of Drug Design and Drug Action. 3rd Ed. Academic Press (Elsevier), San Diego, United States of America, 536 pp.
Strømgaard, K., Krogsgaard-Larsen, P., & Madsen, U. (2016). Textbook of Drug Design and Discovery. 5th Ed. CRC Press, Taylor & Francis Group, Boca Raton, FL, United States of America, 541 pp.
Wermuth, C., Aldous, D., Raboisson, P., & Rognan, D. (2015). The Practice of Medicinal Chemistry. 4th Ed. Academic Press is imprint of Elsevier, San Diego, CA, United States of America; Kidlington, Oxford, United Kingdom, 903 pp.

Languages necessary to complete the course:
English language

Notes:

Past grade distribution
Total number of evaluated students: 619

A	ABS	B	C	D	E	FX
17,61	0,0	22,78	31,02	16,8	9,85	1,94

Lecturers: doc. PharmDr. Ivan Malík, PhD., Mgr. Stanislav Bilka, PhD., PharmDr. Jana Čurillová, PhD.

Last change: 22.03.2022

Approved by: doc. PharmDr. Ivan Malík, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFCh/06-Mgr-A/20	Pharmaceutical Chemistry (2)

Educational activities:
Type of activities: lecture / laboratory practicals
Number of hours:
per week: 2 / 5 **per level/semester:** 28 / 70
Form of the course: on-site learning

Number of credits: 8

Recommended semester: 6.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
Recommendation. The KCHTL/04-Mgr-A/00 Organic Chemistry (1), KCHTL/05-Mgr-A/00 Organic Chemistry (2), KBMBL/03-Mgr-A/00 Biochemistry and KFCH/05-Mgr-A/00 Pharmaceutical Chemistry (1) courses are very strongly recommended to be successfully passed (with the final evaluation A-E) for the Pharmaceutical Chemistry (2) course.

Course requirements:
a) The Attendance at All Required Forms of Education
Attendance at Lectures - active participation is strongly required (Lectures are the mandatory form of education!);
Attendance at Laboratory Practicals - Student is obliged to complete all Laboratory Practicals following the schedule published at an official dashboard/web site of the Department of Pharmaceutical Chemistry FPharm CU (100% attendance at the Laboratory Practicals).
b) Successful Course Completion Based On Successful Passing of All Semestral Preliminary Evaluations with Achievement of Adequate (Percentage) Success
Students´ knowledge will be verified in a written form at 3rd and 5th Laboratory Practical, respectively (two prelininary tests have to be passed); the content of preliminary tests, their evaluation as well as granting of preliminary evaluation will be the competence of particular teachers responsible for the teaching (supervising) of the Practicals.
To pass sucessfully all scheduled Laboratory Practicals and semestral preliminary evaluations (2 preliminary tests), 60% or higher rate of the maximum evaluation score must be achieved from each test (in other words, 60% and more).
The attendance of a student at a final evaluation (exam) from the Pharmaceutical Chemistry (2) course is based on successful passing of the requirements listed in both a) and b) sections.
c) Successful Passing of the Final Evaluation (Exam) from the Pharmaceutical Chemistry (2) Course
The exam from the Pharmaceutical Chemistry (2) couse will be in a written form, i.e., a student will complete the test consisting of 25 questions. Each question will be evaluated by 2 points (the maximum number of poinst from the exam: 50 pts.).

The set of questions will be based on the content of all pharmacodynamic groups listed in Syllabus of Lectures as well as Syllabus of Laboratory Practicals. Thus, the questions will cover i) definitions, chemical classifications of particular pharmacodynamic classes (with a very precise division of particular compounds – drugs), ii) chemical structures of selected compounds – drugs, iii) structure–(biological) activity, structure–pharmacokinetics as well as structure–toxicity relationships in detail (including comprehensible general chemical structure of the compounds from a relevant pharmacodynamic group as well as chemical structure one relevant compound at least) using the knowledge from general Pharmaceutical Chemistry as well as iv) knowledge regarding general biotransformation pathways applied for particular compounds – drugs.
The final written exam from Pharmaceutical Chemistry (2) course will last 120 minutes; particular terms, times and rooms for the exam will be listed in AIS-2.
Evaluation of the exam from the Pharmaceutical Chemistry (2) course will be as follows: 50–47 points (evaluation level „A“), 46–44 points („B“), 43–39 points („C“), 38–35 points („D“), 34–30 points („E“), less than 30 points („FX“; not passed).
Thus, minimal requirements for the Pharmaceutical Chemistry (2) course to be successfully passed are as follows: 60% (60% and more of the maximum point score.
Scale of assessment (preliminary/final): 0 / 100.a) Laboratory Practicals from the Pharmaceutical Chemistry (2) course.Successful completion of Laboratory Practicals, thus, the opportunity to participate in the final evaluation (exam) from the Pharmaceutical Chemistry (2) course, is based on successful completion of two preliminary evaluations. There is a requirement to obtain at least 60% or more of the maximum point score from each preliminary evaluation. The obtained (point) evaluation from the preliminary ones is not explicitly taken into account in the final evaluation (exam).b) Exam from the Pharmaceutical Chemistry (2) course - weight in the final evaluation: 100%.The evaluation of the exam from the Pharmaceutical Chemistry (2) course and the assignment of relevant classification grades is provided in the „Conditions for Successful Completion of Lectures and Laboratory Practicalss from the Pharmaceutical Chemistry (2) Course“ section. The exact score from the Laboratory Practicals will be not taken into consideration in the final evaluation (exam) from the Pharmaceutical Chemistry (2) course.

Learning outcomes:
Pharmaceutical/Medicinal Chemistry (the Pharmaceutical Chemistry (2) course) is a science unto itself, a central science positioned to provide a molecular bridge between basic science of biology and clinical science of medicine (analogous to chemistry being the (central) science between traditional disciplines of biology and physics). From a very broad perspective, a drug design may be divided into two phases fundamental concepts about: a) drugs, receptors, and drug–receptor interactions; b) drug–receptor interactions applied to human disease.
Pharmaceutical/Medicinal Chemistry is interdisciplinary, drawing very suitably on theoretical chemistry, organic chemistry, analytical chemistry, molecular biology, pharmacology, and biochemistry. Despite these complexities, Pharmaceutical/Medicinal Chemistry has its own clear line – the design and discovery of drug molecules with a comprehensive and precise definition and characterization of their properties, taking into account i) structural integrity of the drug molecules (in pharmaceutical, pharmacokinetic and pharmacodynamic phase, respectively), ii) their structural fragments (pharmacophore, toxicophore, metabophore, biophore, etc.; interchangeable bioisosteres), iii) structural properties, iv) physicochemical features (solubility, surface activity, acid-base and lipohydrophilic properties), v) shape properties (geometric, conformational, topological, steric), vi) stereochemical properties (optical isomers, enantiomers, geometric isomers), vii) electronic properties. Following that knowledge, structure–biological activity relationships, structure-pharmacokinetics relationships as well as structure-toxicity relationships are comprehensively investigated (SAR, QSAR).

Thorough and deep knowledge, understanding and correct interpretation of all relationships that are explained via this course is extremely important for (almost) all fields of pharmaceutical study.

Class syllabus:

Syllabus of Lectures

1ST WEEK: Drugs Influencing a Cardiovscular System. Cardiotonics, Cardiostimulants. Vasodilating Agents (Definitions, drugs - systematic chemical division, chemical structures of some compounds, mechanisms of action, structure–activity relationships, biotransformation pathways).

2ND WEEK: Antihypertensives. Drugs Influencing Veins (Definitions, drugs - systematic chemical division, chemical structures of some compounds, mechanisms of action, structure–activity relationships, biotransformation pathways).

3RD WEEK: Drugs Regulating Blood Coagulation Processes. Blood Substitutes. Lipid-Lowering Drugs – Treatment of Hypercholesterolemia. Treatment of Hypertriglyceridemia (Definitions, drugs - systematic chemical division, chemical structures of some compounds, mechanisms of action, structure–activity relationships, biotransformation pathways).

4TH WEEK: Hepatoprotective Agents. Diuretics, Anti-Diuresis Drugs. Ligands of Vasopressin Receptors (Definitions, drugs - systematic chemical division, chemical structures of some compounds, mechanisms of action, structure–activity relationships, biotransformation pathways).

5TH WEEK: Anthelmintics. Isecticidal Agents (Definitions, drugs - systematic chemical division, chemical structures of some compounds, mechanisms of action, structure–activity relationships, biotransformation pathways).

Discussion connected with the topics lectured previously

6TH WEEK: Cystic Fibrosis. Emerging Cystic Fibrosis Transmembrane Conductance Regulator Modulators as New Drugs for Cystic Fibrosis (Definitions, drugs - systematic chemical division, chemical structures of some compounds, mechanisms of action, structure–activity relationships, biotransformation pathways).

7TH WEEK: Antifungal Drugs. Anti-Protozoal Agents (Definitions, drugs - systematic chemical division, chemical structures of some compounds, mechanisms of action, structure–activity relationships, biotransformation pathways).

8TH WEEK: Antimalarial Drugs. Anti-Tuberculosis Drugs. Anti-Leprosy Drugs (Definitions, drugs - systematic chemical division, chemical structures of some compounds, mechanisms of action, structure–activity relationships, biotransformation pathways).

9TH WEEK: Antibacterial Chemotherapeutics/Antibiotics, part 1. beta-Lactam Antibiotics, beta-Lactamase Inhibitors (Definitions, drugs - systematic chemical division, chemical structures of some compounds, mechanisms of action, structure–activity relationships, biotransformation pathways).

10TH WEEK: Antibacterial Chemotherapeutics/Antibiotics, part 2. Diaminopyrimidines. Quinolones (Gyrase Inhibitors). Nitrofurans (Definitions, drugs - systematic chemical division, chemical structures of some compounds, mechanisms of action, structure–activity relationships, biotransformation pathways).

Discussion connected with the topics lectured previously.

11TH WEEK: Antiviral Agents (Definitions, drugs - systematic division, chemical structures of some compounds, mechanisms of action, structure–activity relationships, biotransformation pathways).

12TH WEEK: Cytostatics, part 1. Alkylating Agents. Compounds Forming Complexes with DNA. Compounds Generating Reactive Entities. Antimetabolites. Protein Synthesis Inhibitors. Antimitotic Drugs (Definitions, drugs - systematic division, chemical structures of some compounds, mechanisms of action, structure–activity relationships, biotransformation pathways).

13TH WEEK: Cytostatics, part 2. Angiogenesis Inhibitors. PROTAC Technology, PROTAC Molecules. Inhibitors of Histone Deacetylases and Other Protein Deacetylases. Inhibitors

of Histone Methyltransferases. MAPK Signaling Pathway Inhibitors. Proteasome Inhibitors (Definitions, drugs - systematic chemical division, chemical structures of some compounds, mechanisms of action, structure–activity relationships, biotransformation pathways).

Syllabus of Laboratory Practicals

1ST-12TH WEEK – PART A

At the Laboratory Practicals, students will calculate theoretical yields of particular reactions steps from convenient syntheses of biologically active compounds – drugs.

Selected drugs to be synthesized: Acetylsalicylic Acid, Paracetamol, Phenacetine, Methyl Salicylate, Parabens (Methyl Paraben, Ethyl Paraben, Propyl Paraben, Isopropyl Paraben, Butyl Paraben etc.), Benzocaine, Lidocaine (Lignocaine), Trimecaine, Sulfanilamide, Phthalylsulfathiazole, Succinylsulfathiazole, Disulfiram, Isoniazid.

Knowledge about the methods, which can be used to purify synthesized compounds (crystallization, adsorption thin-layer chromatography, distillation), purity verification (TLC), methods to determine their melting points; practical using of the knowledge.

Principles of spectral methods to confirm structural identity of compounds (Nuclear Magnetic Resonance (1H NMR, 13C NMR), Infrared Spectrometry, Ultraviolet/Visible Spectrophotometry, etc.), and chromatographic methods (High-Performance Liquid Chromatography; HPLC); spectral identification of syntesized compounds.

Knowledge about the determinations of some physicochemical properties and/or physicochemical constants related to reaction intermediates and final compounds – drugs, i.e., solubility in various solvents, melting point values, surface properties – surface tension γ (Traube stalagmometric method), electronic properties – log ε values (UV/Visible Spectrophotometry), electronic properties – acid-base dissociation constants pKa (titration methods), lipohydrophilic properties – retention factor log k (Reveresd-Phase High-Performance Liquid Chromatography), partition coefficient log Pexp (shake-flask method), stability properties in acidic, alkaline and oxidizing media as well as kinetics studies; estimation of relevant parameters.

1ST-12TH WEEK – PART B

Extended knowledge regarding pharmacodynamic classes / particular drugs (introduced by a teacher; structure of the presentation: definitions, division of a pharmacodynamic class from a chemical point of view, chemical structures of particular compounds, brief but precise mechanisms of action, structure–activity relationships, structure–pharmacokinetics or structure–toxicity relationships eventually, biotransformation pathways of particular compounds) as follows:

a) Analgesics–Antipyretics,

b) Disulfiram,

c) Drugs Supporting Acidosis. Antacids and Anti-Ulcer Drugs,

d) Disinfectants and Antiseptics,

e) Sulfonamides.

Recommended literature:

The Lectures from the Pharmaceutical Chemistry (2) Course

Abraham, D.J., & Rotella, D.P. (2010). Burger's Medicinal Chemistry and Drug Discovery, 8 Volume Set. 7th Ed. Wiley, Hoboken, NY, United States of America, 6416 pp.

Avendaño, C., & Menéndez, J.C. (2015). Medicinal Chemistry of Anticancer Drugs. 2nd Ed. Elsevier, Amsterdam, the Netherlands; Elsevier, Kidlington, Oxford, United Kingdom; Elsevier, Waltham, MA, United States of America, 744 pp.

Beale, J.M., & Block, J.H. (2011). Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry. 12th Ed. Wolters Kluwer Health (Lippincott Williams & Wilkins), Philadelphia, United States of America, 1022 pp.

Chackalamannil, S., Rotella, D., & Ward, S. (2017). Comprehensive Medicinal Chemistry III, 3rd Ed. Elsevier, Amsterdam, Netherlands, 4536 pp.

Desai, M.C., Meanwell, N.A., Thurston, D.E., Ganellin, R., Fox, D., Guccione, S., Martinez, A., Rotella, D., Belema, M., Sperandio, D.,ʃShi, P.-Y.,ʃJordan, R., Halcomb, R., Roberts, Ch., Johns, B.A., Griffin, S., Beaulieu, P.L., McCauley, J.A., Sofia, M., Xu, L., Guyer, B., & Peel, M.R. (2013). Successful Strategies for the Discovery of Antiviral Drugs: RSC (Drug Discovery). Drug Discovery Series No. 32, Royal Society of Chemistry, Cambridge, United Kingdom, 533 pp.
Firestine, S.M., Lister, T., Abel-Santos, E., Hedstrom, L., Melander, Ch., Fisher, S., Khursigara, C., Lazarides, L., Garneau-Tsodikova, S., & Balibar, C.J. (2017). Antibiotic Drug Discovery: New Targets and Molecular Entities. 1st Ed., Kindle Ed. Drug Discovery Series No. 58, Royal Society of Chemistry, Cambridge, United Kingdom, 285 pp.
Chackalamannil, S., Rotella, D., & Ward, S. (2017). Comprehensive Medicinal Chemistry III, 3rd. Ed. Elsevier, Amsterdam, Netherlands, 4536 pp.
Kos, J., & Garaj, V. (2020). Laboratory Practices from Pharmaceutical Chemistry. 1st Ed. Faculty of Pharmacy, Comenius University in Bratislava, 184 pp.
Patrick, G.L. (2017). An Introduction to Medicinal Chemistry. 6th Ed. Oxford University Press, New York, USA, 832 pp.
Roche, V.F., Zito, S.V., Lemke, T.L., & Williams, D.A. (2019). Foye´s Principles of Medicinal Chemistry. 8th Ed. Wolters Kluwer Health Adis (ESP), Baltimore, USA, 1168 pp.
Silverman, R.B., & Holladay, M.W. (2015). The Organic Chemistry of Drug Design and Drug Action. 3rd. Ed. Elsevier, Waltham, USA, 521 pp.
Silverstein, R.M., Webster, F.X., Kiemle, D., & Bryce, D.L. (2014). Spectrometric Identification of Organic Compounds. 8th Ed. John Wiley & Sons, Hoboken, United States of America, 464 pp.
Wermuth, C., Aldous, D., Raboisson, P., & Rognan, D. (2015). The Practice of Medicinal Chemistry. 4th Ed. Academic Press (Elsevier), San Diego, CA, USA; Kidlington, Oxford, Great Britain, 903 pp.

Languages necessary to complete the course:
English language

Notes:

Past grade distribution
Total number of evaluated students: 23

A	ABS	B	C	D	E	FX
17,39	0,0	26,09	13,04	30,43	8,7	4,35

Lecturers: doc. PharmDr. Ivan Malík, PhD., Mgr. Stanislav Bilka, PhD., PharmDr. Jana Čurillová, PhD., PharmDr. Matej Maruniak, PhD.

Last change: 22.03.2022

Approved by: doc. PharmDr. Ivan Malík, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/06-Mgr-A/20	Pharmaceutical Informatics

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 1 / 2 **per level/semester:** 14 / 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 4.

Educational level: I.II.

Prerequisites:

Course requirements:
3 continuous tests, Conclusive Appreciation: Semestral examination.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
After completing the course the student is able to work independently and creatively with the information systems of medicines and drugs, interpret the data on pharmaceuticals in their broad front pharmaceutical and clinical issues. Student is capable of understanding drug therapy as an information process , is able to use a computer at work as a clinical tool for decision making in treatment , generate and interpret outputs is able to communicate with databases of drugs , including searches in the digital space (including Evidence - based pharmacy) and use progress e - pharmacy and e - health . Successful Student is qualified for use practices and techniques of working with pharmaceutical databanks and understand information flow of drugs and pharmaceuticals, including the ability to work with bibliographic databases as a source of new knowledge. Students are able to use current versions of application software in their professional activities.

Class syllabus:
Subject to the discipline of Pharmacy Informatics as pharmaceuticals and complex structure the data on them. Subject conveniently synthesized Pharmaceutical professional knowledge on pharmaceuticals with the current essential electronic edition collection, treatment and routine use of pharmaceutical data and information.
• Information system as a central concept for Pharmacoinformatics,
• Pharmaceutical computing,
• The computer as an organization of professional pharmacist requirements for the handling of specialized pharmaceutical data and media,
• Current information systems , data banks medicines and drugs,
• Compatibility of pharmaceutical data , their current types and shapes.
• Drugs and medicines, their characteristics in terms of their specificity and informatics to the needs formulated information processes,
• Local and network technologies in the field of medicines and drugs , and work with them ,

• Creating of skills, knowledge and skills to solve theoretical and practical information problems associated with drugs and medicines
• Virtual libraries, bibliographic databases.

Recommended literature:
Lectures in ppt presentation.

Languages necessary to complete the course:
English language

Notes:

Past grade distribution
Total number of evaluated students: 37

A	ABS	B	C	D	E	FX
72,97	0,0	13,51	10,81	2,7	0,0	0,0

Lecturers: doc. PharmDr. Tomáš Tesař, PhD., MBA, PharmDr. Zuzana Koblišková, PhD.

Last change: 02.08.2021

Approved by: doc. PharmDr. Tomáš Tesař, PhD., MBA

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFChL/21-Mgr-A/21	Pharmaceutical Physics

Educational activities:
Type of activities: lecture / laboratory practicals
Number of hours:
per week: 2 / 2 **per level/semester:** 28 / 28
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 1.

Educational level: I.II.

Prerequisites:

Course requirements:
Students are obliged to perform all laboratory experiments prescribed by the teacher and hand in all reports (assessment 0-8 points per report). Students will write at least two tests during semester regarding preparedness to experiment (assessment 0-6 points per test). In the middle and at the end of semester special tests will be written - problem solving regarding preparation and composition of solutions (assessment 0-3 points per test). The total assessment of laboratory practical is the sum of the average value of reports, average value of tests plus two special tests. Laboratory practical is successfully completed when the student achieves at least 10 points, the highest evaluation is 20 points.
During examination period students will take an exam with max. points 80. The assessment of this exam is added to the assessment of the laboratory practical and this sum determines the final mark. Applications MS Teams and Moodle may be utilized in the case of distance exam. Students will be given details of the exam in the first week of the semester.
The total assessment of the subject: A 92-100 %, B 84-91 %, C 76-83 %, D 68-75, E 60-67, Fx 59% and less.
Scale of assessment (preliminary/final): 20/80

Learning outcomes:
By the completion of the subject Pharmaceutical Physics student will achieve basic knowledge from these areas of physics that are necessary for understanding logical relationships in other subjects especially Physical Chemistry and Pharmaceutical Technology. Student will acquire skills needed for successful experimental work in laboratory. Student acquaints with simple physical methods described in pharmacopeia (measurement of density of liquids, surface tension of liquids, viscosity, measurement of meting and boiling point, electrical conductance of liquids, etc.). Emphasis is placed on elaboration, evaluation and interpretation of measured data.

Class syllabus:
Lectures:
Physical quantities and units.
Kinematics and dynamics of mass point: uniform motion, accelerated motion, circular motion, harmonic vibrations.

Newton’s laws. Mass and gravity. Mechanical work and power. Kinetic and potential energy.
Solid body mechanics: rotational motion, friction, distortion.
Hydrostatics: Pascal law, hydrostatic pressure, Archimedes principle, density and its measurement, surface tension and its measurement.
Hydrodynamics: flow of ideal liquid, continuity principle, Bernoulli's principle. flow of nonideal liquid. Poiseuille’s law.
Heat and temperature: absolute temperature scale, thermal expansion, processes in ideal gas, state equation of ideal gas, van der Waals equation of real gas, Dalton principle, Avogadro principle, Calorimetry. Transport of heat. 1. Fick's principle.
Reversible thermodynamics: internal energy and other thermodynamic potentials. Zero, first, second and third 0, I., II. and III. law of thermodynamics.
Electrostatics: Coulomb law. Intensity and potential of electric field. electrical properties of matter. Electrical current. Ohm's law. Galvanic cells.
Magnetism: Induction of magnetic field. Magnetic properties of matter Mass spectrometry. Electromagnetic radiation and its dual nature. Geometrical optics, refraction index and its measurement. Interference and polarization of light. RTG radiation. Absorption of electromagnetic radiation. Lambert-Beer law.
List of laboratory exercises:
Mass and weight – Weighing on the analytical balance.
Weighing and preparation of aqueous solutions.
Density determination by pycnometer.
Density determination by densimeter.
Polarimetry.
Conductometry – determination of the conductivity of acetic acid solutions.
Boiling point and melting point.
Surface tension of liquids measured by stalagmometer.
Determination of viscosity using Hőppler viscosimeter.
Calorimetry – determination of the specific melting heat of ice.
Refractometry.
UV VIS spectrometry.

Recommended literature:
Nicholas Giordano: College Physics, Reasoning &Relationship, Volume 1 and 2, Purdue University, BROOK/COLE Gengage Learning., Boston 2013
Lectures (PowerPoint) accessible on MS Teams
Study materials for Laboratory Practical from Physics, https://www.fpharm.uniba.sk/en/divisions/department-of-physical-chemistry-of-drugs/education/
Videos for Laboratory Practical from Physics accessible on MS Teams

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 25

A	ABS	B	C	D	E	FX
4,0	0,0	32,0	16,0	24,0	4,0	20,0

Lecturers: RNDr. Alexander Búcsi, PhD., doc. RNDr. Jana Gallová, CSc., Mgr. Mária Klacsová, PhD., Mgr. Lukáš Hubčík, PhD.

Last change: 30.03.2022
Approved by: doc. RNDr. Jana Gallová, CSc.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/07-Mgr-A/00	Pharmaceutical Propaedeutics

Educational activities:
Type of activities: practicals / lecture / seminar
Number of hours:
per week: 0 / 2 / 0 **per level/semester:** 0 / 28 / 0
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: I.II.

Prerequisites:

Course requirements:
Compulsory Course. Presence at lectures & passing through e-test: min threshold of success 65 %. Evaluation scale: A: 93–100 %, B: 86–92 %, C: 79–85 %, D: 72–78 %, E: 65–71 %, FX: 64 % and less.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
Pharmaceutical Propaedeutics is an introductory course to a five-year study program leading to Master of Pharmacy. Students receive basic information about pharmaceutical education, its disciplines, structure and organization. Students will also know how to utilize traditional and electronic information resources available for study at the University. The insight into history of medicine and pharmacy, enrich students´ knowledge on how the profession and medicines have evolved. Nowadays prospects of pharmaceutical sciences are demonstrated with an emphasis on developing knowledge, acquired skills and behavior within pharmaceutical professions. The course underlines a uniqueness of pharmacy as an interdisciplinary field, which remarkably interlaces with social, humanistic and natural sciences. With regards to such interconnectivity and applied knowledge to professional life of pharmacists, the course discusses wide spectrum of job opportunities for pharmacists. Learning objectives are aimed on better understanding of pharmacists ´ roles and responsibilities as well as on their continuing and long-life professional development. Students also explore how pharmacists play an integral role in improving health outcomes for patients, and which pharmaceutical services represent value added contribution to health.

Class syllabus:
- Higher education in Slovakia, studying at university.
- Comenius University in Bratislava - history and present.
- Overview of history of pharmacy.
- Pharmaceutical education towards a qualified pharmacist (7-star Pharmacist).
- New paradigm in changing pharmaceutical environment.
- Pharmaceutical sciences and pharmaceutical industries.
- Healthcare systems - organizational structure.
- Positioning of pharmacy in healthcare system.

- Health strategy - political, legislative and financial aspects.
- Development, trends and present profession of a pharmacist.
- Health legislation and pharmacy. Ethical Code for Pharmacists.
- Intro to regulatory affairs.
- Libraries, classical and electronic information resources, the basics of information.

Recommended literature:

Kelly, W. N. Pharmacy. What It Is and How It Works. 2012, third edition. CRC Press, Taylor & Francis Group, LLC. 2012, 452p. ISBN 978-1-4398-5305-4.
· Royal Pharmaceutical Society. Medicines, Ethics and Practice. The professional guide for pharmaceuticals. Edition 39, July 2015, 202p.
· Other references – available online – to be specified at lectures

Languages necessary to complete the course:
English language

Notes:

Past grade distribution
Total number of evaluated students: 792

A	ABS	B	C	D	E	FX
31,44	0,0	8,71	18,31	12,12	26,89	2,53

Lecturers: doc. PharmDr. Tomáš Tesař, PhD., MBA, PharmDr. Ľubica Lehocká, PhD.

Last change: 02.08.2021

Approved by: doc. PharmDr. Tomáš Tesař, PhD., MBA

STATE EXAM DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF/600-Mgr-A/15	**Course title:** Pharmaceutical Technology
Number of credits: 4	
Educational level: I.II.	
State exam syllabus:	
Last change:	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KGF/05-Mgr-A/00	Pharmaceutical Technology (1)

Educational activities:
Type of activities: lecture / laboratory practicals / seminar
Number of hours:
per week: 4 / 5 / 0 **per level/semester:** 56 / 70 / 0
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 7.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
KFCHL/08-Mgr-A/00 Physical Chemistry, KFANF/02-Mgr-A/00 Analytical Chemistry (2)
KFB/05-Mgr-A/00 Pharmacognosy (2); KFCH/06-Mgr-A/00 Pharmaceutical Chemistry (2)

Course requirements:
Assessment through a written examination, for successful completion at least 70 %.
Assessment A: 95-100%, B: 88-94%, C: 82-87%, D: 76-81%, E: 70-75%.
Scale of assessment (preliminary/final): 20/80

Learning outcomes:
By passing the course, the student will have a complex theoretical knowledge of the drugs as dispersion and application systems and practical experience with the preparation of dosage forms.
Assessment of the courses:
A= 12 %, B= 19 %, C=21 %, D=22 %, E=20 % Fx=6 %

Class syllabus:
Medicines have dosage form which is given by the necessity of their administration and coexistence of present drugs and additives (pharmaceutical ingredients). Pharmaceutical technology (galenics) is a field of pharmaceutical science dealing with the design and formulation of medicines (dosage form design), the manufacture of these medicines on both a small (compounding) and a large (pharmaceutical technology) scale, evaluation and safety of the medicines. It studies the conditions how drugs and additives (pharmaceutical ingredients) can be converted into medicines, then the regularities which rule the relations between medicines and the effect of administered drugs. In compliance with the given definition of the subject of pharmaceutical technology as a science and as educational discipline “Pharmaceutical technology” concerns these fields:
Drug Technology, biotechnology
The drug as a dispersion and an application system
Systematic classification of the drugs and dosage forms
Technological procedures and equipments for the preparation and production of the drugs
Pharmaceutical adjuvants - excipients
Colloidal dispersion systems, lyophobic and lyophilic colloids

Dispersion system liquid in liquid and solid in liquid
Preparations obtained by extraction methods
Liquid preparations for oral use
Preparations for inhalation
Parenteral preparations - injections, infusions – production, use
Parenteral controlled release drug delivery systems
Eye and nasal preparations
Liposomes and microemulsion as a new drug delivery systems

Recommended literature:

Aulton, M. E.: Aulton's Pharmaceutics: the design and manufacture of medicines. Edinburgh: Churchill Livingstone, 2018 European Pharmacopoeia 10th edition
Lectures in Pharmaceutical technology
Tichý E., Starýchová L., Čuchorová M.: Solid dosage forms – Laboratory practices, Bratislava UK, 2015
Tichý E., Špaglová M., Bartoníková K.: Liquid dosage forms – Laboratory practices, Bratislava UK, 2016
Tichý E., Šimunková V., Halenárová A.: Emulsions, suspensions, ointments, creams, pastes, suppositories and pessaries – Laboratory practices, Bratislava UK, 2017

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 604

A	ABS	B	C	D	E	FX
9,11	0,0	14,57	19,21	25,5	30,46	1,16

Lecturers: PharmDr. Alžbeta Lengyelová, PharmDr. Veronika Šimunková, PhD., PharmDr. Milica Molitorisová, PhD., PharmDr. Mária Raučinová, PhD., Mgr. Jana Selčanová, PharmDr. Veronika Mikušová, PhD., PharmDr. Mária Čuchorová, PhD., PharmDr. Miroslava Špaglová, PhD., PharmDr. Miroslava Potúčková, PhD., PharmDr. Desana Matušová, PhD.

Last change: 06.07.2021

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KGF/05-Mgr-A/20	Pharmaceutical Technology (1)

Educational activities:
Type of activities: lecture / laboratory practicals / seminar
Number of hours:
per week: 4 / 5 / 0 **per level/semester:** 56 / 70 / 0
Form of the course: on-site learning

Number of credits: 9

Recommended semester: 6.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
KFCHL/08-Mgr-A/00 Physical Chemistry, KFANF/02-Mgr-A/00 Analytical Chemistry (2)
KFB/05-Mgr-A/00 Pharmacognosy (2); KFCH/06-Mgr-A/00 Pharmaceutical Chemistry (2)

Course requirements:
Assessment through a written examination, for successful completion at least 70 %.
Assessment A: 95-100%, B: 88-94%, C: 82-87%, D: 76-81%, E: 70-75%.
Scale of assessment (preliminary/final): 20/80

Learning outcomes:
By passing the course, the student will have a complex theoretical knowledge of the drugs as dispersion and application systems and practical experience with the preparation of dosage forms.

Class syllabus:
Medicines have dosage form which is given by the necessity of their administration and coexistence of present drugs and additives (pharmaceutical ingredients). Pharmaceutical technology (galenics) is a field of pharmaceutical science dealing with the design and formulation of medicines (dosage form design), the manufacture of these medicines on both a small (compounding) and a large (pharmaceutical technology) scale, evaluation and safety of the medicines. It studies the conditions how drugs and additives (pharmaceutical ingredients) can be converted into medicines, then the regularities which rule the relations between medicines and the effect of administered drugs. In compliance with the given definition of the subject of pharmaceutical technology as a science and as educational discipline “Pharmaceutical technology” concerns these fields:
Drug Technology, biotechnology
The drug as a dispersion and an application system
Systematic classification of the drugs and dosage forms
Technological procedures and equipments for the preparation and production of the drugs
Pharmaceutical adjuvants - excipients
Colloidal dispersion systems, lyophobic and lyophilic colloids
Dispersion system liquid in liquid and solid in liquid
Preparations obtained by extraction methods

Liquid preparations for oral use
Preparations for inhalation
Parenteral preparations - injections, infusions – production, use
Parenteral controlled release drug delivery systems
Eye and nasal preparations
Liposomes and microemulsion as a new drug delivery systems

Recommended literature:

Aulton, M. E.: Aulton´s Pharmaceutics: the design and manufacture of medicines. Edinburgh: Churchill Livingstone, 2007
European Pharmacopoeia 8 th Ed. Strasbourg: EDQM, 2013
Lectures from Pharmaceutical technology
Tichý E., Starýchová L., Čuchorová M.: Solid dosage forms – Laboratory practices, Bratislava UK, 2015

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 13

A	ABS	B	C	D	E	FX
0,0	0,0	7,69	15,38	23,08	53,85	0,0

Lecturers: PharmDr. Alžbeta Lengyelová, PharmDr. Veronika Šimunková, PhD., PharmDr. Milica Molitorisová, PhD., PharmDr. Mária Raučinová, PhD., Mgr. Jana Selčanová, PharmDr. Terézia Haršányová, PhD., PharmDr. Veronika Mikušová, PhD., PharmDr. Mária Čuchorová, PhD., PharmDr. Miroslava Špaglová, PhD., PharmDr. Desana Matušová, PhD.

Last change: 05.08.2020

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KGF/06-Mgr-A/00	Pharmaceutical Technology (2)

Educational activities:
Type of activities: lecture / laboratory practicals / seminar
Number of hours:
per week: 4 / 5 / 0 **per level/semester:** 56 / 70 / 0
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
KFCHL/08-Mgr-A/00 Physical Chemistry, KFANF/02-Mgr-A/00 Analytical Chemistry (2)
KFB/05-Mgr-A/00 Pharmacognosy (2); KFCH/06-Mgr-A/00 Pharmaceutical Chemistry (2)

Course requirements:
Assessment through an oral examination.
Scale of assessment (preliminary/final): 30/70

Learning outcomes:
By passing the course, the student will have a complex theoretical knowledge of the drugs as dispersion and application systems and practical experience with the preparation of dosage forms.
Assessment of the courses: 2020/2021
A = 28%, B = 39%, C = 17%, D = 11%, E = 5%, Fx = 0%

Class syllabus:
Medicines have dosage form which is given by the necessity of their administration and coexistence of present drugs and additives (pharmaceutical ingredients). Pharmaceutical technology (galenics) is a field of pharmaceutical science dealing with the design and formulation of medicines (dosage form design), the manufacture of these medicines on both a small (compounding) and a large (pharmaceutical technology) scale, evaluation and safety of the medicines. It studies the conditions how drugs and additives (pharmaceutical ingredients) can be converted into medicines, then the regularities which rule the relations between medicines and the effect of administered drugs. In compliance with the given definition of the subject of pharmaceutical technology as a science and as educational discipline “Pharmaceutical technology” concerns these fields:
Semisolids preparations for cutaneous application
Rectal and vaginal preparations
Transdermal therapeutic systems
Solid preparations for oral administration (granules, tablets, coated tablets, capsules)
Controlled release drug delivery systems targeting
Drug microforms
Drug liberation from dosage forms, release kinetics, absorption

Biopharmacy, mechanism of the transport across biological membranes, bioavailability
Stability and stabilization of the preparations
Quality assurance in drug production
Pharmaceutical packaging materials

Recommended literature:

Aulton, M. E.: Aulton's Pharmaceutics: the design and manufacture of medicines. Edinburgh: Churchill Livingstone, 2018 European Pharmacopoeia 10th edition

Lectures in Pharmaceutical technology

Tichý E., Starýchová L., Čuchorová M.: Solid dosage forms – Laboratory practices, Bratislava UK, 2015

Tichý E., Špaglová M., Bartoníková K.: Liquid dosage forms – Laboratory practices, Bratislava UK, 2016

Tichý E., Šimunková V., Halenárová A.: Emulsions, suspensions, ointments, creams, pastes, suppositories and pessaries – Laboratory practices, Bratislava UK, 2017

Languages necessary to complete the course:

English

Notes:

Past grade distribution

Total number of evaluated students: 605

A	ABS	B	C	D	E	FX
12,73	0,0	19,83	22,31	19,5	21,49	4,13

Lecturers: PharmDr. Alžbeta Lengyelová, PharmDr. Veronika Šimunková, PhD., PharmDr. Veronika Mikušová, PhD., PharmDr. Mária Raučinová, PhD., Mgr. Jana Selčanová, PharmDr. Miroslava Špaglová, PhD., Ing. Michael Kenneth Lawson, PhD., PharmDr. Mária Čuchorová, PhD., PharmDr. Miroslava Potúčková, PhD., PharmDr. Desana Matušová, PhD.

Last change: 10.12.2021

Approved by:

STATE EXAM DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF/700-Mgr-A/15	**Course title:** Pharmacognosy
Number of credits: 4	
Educational level: I.II.	
State exam syllabus:	
Last change:	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFB/04-Mgr-A/00	Pharmacognosy (1)

Educational activities:
Type of activities: lecture / laboratory practicals
Number of hours:
per week: 2 / 3 **per level/semester:** 28 / 42
Form of the course: on-site learning

Number of credits: 6

Recommended semester: 5.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
FaF.KFB/03-Mgr-A/00 - Pharmaceutical Botany and FaF.KChTL/05-Mgr-A/00 - Organic Chemistry (2) and FaF.KFANF/02-Mgr-A/00 - Analytical Chemistry (2) and FaF.KBMBL/03-Mgr-A/00 - Biochemistry and FaF.KFANF/01-Mgr-A/00 - Analytical Chemistry (1)

Course requirements:
Scale of assessment (preliminary/final): 10/90

Learning outcomes:

Class syllabus:
During lectures the students become familiar with parts of existing pharmacognostical pharmacopoeial monographs with particular plant sources of medicinal substances, with the biogenesis of primary and secondary plant metabolites, their function and significance in the plant body, systems of classification and characteristics of each group of secondary metabolites in terms of their chemical properties. Students will gain an overview of drug use and its main biologically active substances that can be part of mass-produced phytopharmaceuticals.
The content of macroscopic and microscopic analysis forms practical exercises with anatomical and morphological characteristics of drugs, drug recognition as macroscopic components of tea mixtures and microscopic identification of the diacritical characteristics.

Recommended literature:
Nagy, M. et al.: Teaching texts from Pharmacognosy.
European Pharmacopoeia 7th Edition.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 615

A	ABS	B	C	D	E	FX
16,26	0,0	16,1	26,18	20,98	18,7	1,79

Lecturers: prof. PharmDr. Pavel Mučaji, PhD., prof. Ing. Milan Nagy, CSc., doc. PharmDr. Szilvia Czigle, PhD., doc. PharmDr. Silvia Bittner Fialová, PhD., Mgr. Jaroslav Tóth, PhD., PharmDr. Vladimír Forman, PhD., PharmDr. Zuzana Scheerová Kontšeková, PhD.

Last change: 13.09.2017

Approved by: prof. Ing. Milan Nagy, CSc.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFB/05-Mgr-A/00	Pharmacognosy (2)

Educational activities:
Type of activities: lecture / laboratory practicals
Number of hours:
per week: 2 / 5 **per level/semester:** 28 / 70
Form of the course: on-site learning

Number of credits: 8

Recommended semester: 6.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
FaF.KFB/04-Mgr-A/00 - Pharmacognosy (1)

Course requirements:
Scale of assessment (preliminary/final): 10/90

Learning outcomes:

Class syllabus:
Students shall receive informations related to the classification of drugs according to their pharmacological effects, or use in the prevention and treatment of diseases, including basic information on side effects and interactions with the participation of individual active ingredients of natural origin. The emphasis is on drugs and their active substances, which are part of phytopharmaceuticals registered in EU countries, or which are recorded in the current issue of the European Pharmacopoeia.
During the chemical part of practical exercises, students are familiarized with the test methodologies of selected pharmacopoeial drugs and with the identification and determination of active substances. They also work out basic procedures of extraction and isolation of substances from plant material with emphasis on chromatographic methods.

Recommended literature:
Nagy M., Mučaji P.: Pharmacognosy. Natural remedies. FPharm CU 2002, 70 p.
Mučaji P., Nagy, M.: Pharmacognosy. Analytical and chromatographic practice. FPharm CU 2001, 44 p.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 585

A	ABS	B	C	D	E	FX
19,49	0,0	23,25	29,91	14,19	6,5	6,67

Lecturers: prof. Ing. Milan Nagy, CSc., prof. PharmDr. Pavel Mučaji, PhD., doc. PharmDr. Szilvia Czigle, PhD., doc. PharmDr. Silvia Bittner Fialová, PhD., Mgr. Jaroslav Tóth, PhD., PharmDr. Vladimír Forman, PhD., PharmDr. Zuzana Scheerová Kontšeková, PhD.
Last change: 13.09.2017
Approved by: prof. Ing. Milan Nagy, CSc.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFChL/16-Mgr-A/20	Pharmacokinetic Modelling and Drug Development

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 2 / 1 **per level/semester:** 28 / 14
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
Recommended prerequisites: Pharmaceutical Chemistry (1), Pharmacology and Toxicology (1), Clinical Pharmacology and Pharmacotherapy (1)

Course requirements:
At the exam, students will present the assigned seminar paper on the topic of scientific literature (max. 40 points) and at the oral interview the student will answer questions from the lectured issues (max. 20 points). A total of at least 55 points must be obtained to obtain an A rating, at least 51 points to obtain a B rating, a minimum of 47 points for a C rating, a minimum of 42 points for a D rating and a minimum of 37 points for an E rating.
Scale of assessment (preliminary/final): Presentation and questions during final examination: maximum of 60 points

Learning outcomes:
The course is suitable for students of Pharmacy program who are aiming to pursue a research carrier. Students will hear about mathematical models of disposition kinetics of chemicals in the body and will master physicochemical principles of relationships between pharmacokinetic profile and molecular structure of potential drugs. After passing the course the students will be familiar with methods of determination and in silico prediction of transport properties of drugs. They will obtain a broader picture of the complex issue of research and optimization of properties of compounds undergoing pharmaceutical development. The student will be able to use the acquired skills in drug discovery programs.

Class syllabus:
Phenomenological approach to transport and fate of a drug in the organism. Principles and mathematical models of kinetics of absorption, disposition and biological effect of a drug. Pharmacokinetic compartmental models of distribution based on the physiology of human body. Kinetic parameters and their significance in drug design. Methods for prediction of physicochemical properties and kinetic parameters of bioactive compounds from their molecular structure. Optimization of biological screening tests and interpretation of experimental data.

Recommended literature:

M. Boroujerdi: Pharmacokinetics: Principles and Applications, McGraw-Hill, New York, NY, U.S.A., 2002.
E. H. Kerns, L. Di: Drug-like Properties: Concepts, Structure Design and Methods, Elsevier, Burlington, MA, U.S.A., 2008.
G. Keserü, D. C. Swinney: Thermodynamics and Kinetics of Drug Binding, Vol. 65, Series: Methods and Principles in Medicinal Chemistry, Wiley-VCH Verlag, Weinheim, Germany, 2015.
G. L. Patrick: An Introduction to Medicinal Chemistry, 5th Ed., Oxford University Press, Oxford, UK, 2013.

Languages necessary to complete the course:
English

Notes:
The capacity of the course is restricted to 10 - 15 students. Priority will be given to students with better grades (superior weighted study average determined according to the Study Code of the Faculty of Pharmacy). Please consult the teacher before signing up for this course.

Past grade distribution
Total number of evaluated students: 17

A	ABS	B	C	D	E	FX
52,94	0,0	11,76	17,65	5,88	11,76	0,0

Lecturers: prof. Ing. Vladimír Frecer, DrSc., Mgr. Mária Klacsová, PhD.

Last change: 10.12.2021

Approved by: prof. Ing. Vladimír Frecer, DrSc.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/09-Mgr-A/20	Pharmacology

Educational activities:
Type of activities: lecture / laboratory practicals
Number of hours:
per week: 4 / 2 **per level/semester:** 56 / 28
Form of the course: on-site learning

Number of credits: 7

Recommended semester: 5.

Educational level: I.II.

Prerequisites:

Course requirements:
During the semester, students pass 2 midterm tests; to pass the test at least 60% of maximum score is required.
Successful completion of the semester is followed by a comprehensive oral exam.
The student must demonstrate mastery of at least 60% of the required knowledge. The exam result is graded: A (at least 92%), B (at least 83%), C (at least 76%), D (at least 68%), E (at least 60%) and Fx (less than 60% of the maximum number points).
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
Pharmacology is a profile subject of pharmaceutical study which is linked with both pharmacy and medicine. The subject is part of five leading subjects included into a complex state exam finishing the study at Faculty of Pharmacy.

Class syllabus:
Specific part of pharmacology deals with drugs affecting major organ systems and with their effects on subcellular and cellular structures and/or tissues, including adverse and toxic effects of drugs.
Pharmacology of pain – General and Local anesthetics, analgesic drugs. Anti-inflammatory drugs.
Drugs influencing CNS – neurotransmitters, classification. Drugs of neurodegenerative diseases. Antiparkinsonics. Antiepileptics. Anxiolytic and Hypnotic drugs. Antipsychotics. Antidepressants. CNS stimulants and psychotomimetic drugs.
Cardiovascular system – therapy of heart failure. Antianginal drugs. Lipid lowering drugs. Antihypertensives. Antidysrhythmics. Vasoactive drugs. Anticoagulant and Antiplatelet drugs.
Pharmacology of respiratory system (antiasthmatics, drugs against cough).
Drugs influencing gastrointestinal system.
Pharmacology of endocrine and reproductive system.
Antibacterial, antiviral antifungal and antiprotozoal drugs.
Cancer therapy. Biopharmaceuticals.

Recommended literature:
Ritter J., Flower R. et al..: Rang and Dale´s Pharmacology, 9th ed. London, Elsevier, 2019

Lűllmann, H., Mohr, K., Wehling, M.: Pharmacology and Toxicology. Thieme, 2004
Katzung, B. G.: Basic and Clinical pharmacology. 14e McGraw-Hill, 2018

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 26

A	ABS	B	C	D	E	FX
3,85	0,0	26,92	23,08	34,62	11,54	0,0

Lecturers: prof. RNDr. Magdaléna Kuželová, CSc., prof. PharmDr. Ján Klimas, PhD., MPH, PharmDr. Elena Ondriašová, CSc., doc. PharmDr. Peter Křenek, PhD., doc. PharmDr. Marek Máťuš, PhD., Mgr. Diana Vavrincová, PhD., Mgr. Peter Vavrinec, PhD., PharmDr. Zuzana Kiliánová, PhD., doc. PharmDr. Anna Paul Hrabovská, PhD., prof. PharmDr. Adriana Duriš Adameová, PhD., Mgr. Lenka Bies Piváčková, PhD., Mgr. Gabriel Dóka, PhD., PharmDr. Tomáš Rajtík, PhD.

Last change: 01.12.2021

Approved by: doc. PharmDr. Marek Máťuš, PhD.

STATE EXAM DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF/800-Mgr-A/15	**Course title:** Pharmacology
Number of credits: 4	
Educational level: I.II.	
State exam syllabus:	
Last change:	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/08-Mgr-A/20	Pharmacology (1)

Educational activities:
Type of activities: lecture / laboratory practicals
Number of hours:
per week: 2 / 3 **per level/semester:** 28 / 42
Form of the course: on-site learning

Number of credits: 6

Recommended semester: 4.

Educational level: I.II.

Prerequisites:

Course requirements:
During the semester, students pass 2 midterm tests; to pass the test at least 60% of maximum score is required.
Successful completion of the semester is followed by a comprehensive exam test.
The student must demonstrate mastery of at least 60% of the required knowledge. The exam result is graded: A (at least 92%), B (at least 83%), C (at least 76%), D (at least 68%), E (at least 60%) and Fx (less than 60% of the maximum number points).
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
Pharmacology is a profile subject of pharmaceutical study which is linked with both pharmacy and medicine. The subject is part of five leading subjects included into a complex state exam finishing the study at Faculty of Pharmacy.

Class syllabus:
Introduction to the study, general principles how drugs act. Drug toxicity. Pharmacodynamics and pharmacokinetics as basic parts of pharmacology. Receptor theory. Agonism, antagonism, receptor proteins, cellular mechanism of intercellular signal transduction. Desensitization and tachyphylaxis. Drug interactions. Adverse reactions to drugs. Basic pharmacokinetic processes and parameters. Autonomic nervous system. Adrenergic and cholinergic transmission. Neuromuscular blocking drugs, skeletal muscle relaxants. Peripheral autacoids.

Recommended literature:
Ritter J., Flower R. et al..: Rang and Dale´s Pharmacology, 9th ed. London, Elsevier, 2019
Lűllmann, H., Mohr, K., Wehling, M.: Pharmacology and Toxicology. Thieme, 2004
Katzung, B. G.: Basic and Clinical pharmacology. 14e McGraw-Hill, 2018

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 33

A	ABS	B	C	D	E	FX
3,03	0,0	33,33	33,33	9,09	18,18	3,03

Lecturers: Mgr. Peter Vavrinec, PhD., Mgr. Diana Vavrincová, PhD., doc. PharmDr. Marek Máťuš, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, doc. PharmDr. Peter Křenek, PhD., PharmDr. Zuzana Kiliánová, PhD., doc. PharmDr. Anna Paul Hrabovská, PhD., doc. RNDr. Ingrid Tumová, CSc., prof. RNDr. Magdaléna Kuželová, CSc., prof. PharmDr. Adriana Duriš Adameová, PhD., Mgr. Lenka Bies Piváčková, PhD., Mgr. Gabriel Dóka, PhD., PharmDr. Tomáš Rajtík, PhD.

Last change: 01.12.2021

Approved by: doc. PharmDr. Marek Máťuš, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/09-Mgr-A/00	Pharmacology and Toxicology (2)

Educational activities:
Type of activities: lecture / laboratory practicals / seminar
Number of hours:
per week: 4 / 3 / 0 **per level/semester:** 56 / 42 / 0
Form of the course: on-site learning

Number of credits: 6

Recommended semester: 7.

Educational level: I.II.

Prerequisites:

Course requirements:
During the semester, students pass 2 midterm tests; to pass the test at least 60% of maximum score is required.
Successful completion of the semester is followed by a comprehensive oral exam.
The student must demonstrate mastery of at least 60% of the required knowledge. The exam result is graded: A (at least 92%), B (at least 83%), C (at least 76%), D (at least 68%), E (at least 60%) and Fx (less than 60% of the maximum number points).
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
Pharmacology is a profile subject of pharmaceutical study which is linked with both pharmacy and medicine. The subject is part of five leading subjects included into a complex state exam finishing the study at Faculty of Pharmacy.

Class syllabus:
Specific part of pharmacology deals with drugs affecting major organ systems and with their effects on subcellular and cellular structures and/or tissues, including adverse and toxic effects of drugs.
Pharmacology of pain – General and Local anesthetics, analgesic drugs. Anti-inflammatory drugs.
Drugs influencing CNS – neurotransmitters, classification. Drugs of neurodegenerative diseases. Antiparkinsonics. Antiepileptics. Anxiolytic and Hypnotic drugs. Antipsychotics. Antidepressants. CNS stimulants and psychotomimetic drugs.
Cardiovascular system – therapy of heart failure. Antianginal drugs. Lipid lowering drugs. Antihypertensives. Antidysrhythmics. Vasoactive drugs. Anticoagulant and Antiplatelet drugs.
Pharmacology of respiratory system (antiasthmatics, drugs against cough).
Drugs influencing gastrointestinal system.
Pharmacology of endocrine and reproductive system.
Antibacterial, antiviral antifungal and antiprotozoal drugs.
Cancer therapy. Biopharmaceuticals.

Recommended literature:
Ritter J., Flower R. et al..: Rang and Dale´s Pharmacology, 9th ed. London, Elsevier, 2019

Lűllmann, H., Mohr, K., Wehling, M.: Pharmacology and Toxicology. Thieme, 2004
Katzung, B. G.: Basic and Clinical pharmacology. 14e McGraw-Hill, 2018

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 590

A	ABS	B	C	D	E	FX
13,9	0,0	20,51	24,07	20,68	17,8	3,05

Lecturers: prof. RNDr. Magdaléna Kuželová, CSc., prof. PharmDr. Ján Klimas, PhD., MPH, PharmDr. Elena Ondriašová, CSc., doc. PharmDr. Peter Křenek, PhD., doc. PharmDr. Marek Máťuš, PhD., Mgr. Diana Vavrincová, PhD., Mgr. Peter Vavrinec, PhD., PharmDr. Zuzana Kiliánová, PhD., doc. PharmDr. Anna Paul Hrabovská, PhD., prof. PharmDr. Adriana Duriš Adameová, PhD.

Last change: 01.12.2021

Approved by: doc. PharmDr. Marek Máťuš, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/29-Mgr-A/20	Pharmacology of Orphan Drugs

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 6.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

A	ABS	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0	0,0

Lecturers:

Last change:

Approved by: PharmDr. Tatiana Foltánová, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFChL/22-Mgr-A/21	Physical Chemistry

Educational activities:
Type of activities: practicals / lecture
Number of hours:
per week: 2 / 2 **per level/semester:** 28 / 28
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 2.

Educational level: I.II.

Prerequisites:

Course requirements:
Laboratory practicals: An accomplishment of all experiments assigned by the teacher and completed by experimental reports is compulsory. Reports are evaluated (0 – 4 points/report). The student's preparation for the assigned experiment is monitored by short tests (0 – 6 points/test). Final evaluation of laboratories (10 points maximum) is assessed as a sum of both averages, from reports and tests. Five point score is the minimum for successful completion of laboratories.
Final exam is by written form and is worth maximally 60 points, including the points gained from laboratories. Grade expressed by percentage: A 92-100%, B 84-91%, C 76-83%, D 68-75%, E 60-67%, Fx< 59%
Scale of assessment (preliminary/final): 10/50

Learning outcomes:
The course is addressed to selected areas of physical chemistry to achieve the necessary theoretical background for professional qualifications of pharmacists and their competences according to European pharmacopoeia. The aim of the course is to provide understanding of theoretical principles and methods applied in specialized pharmaceutical areas like:
-technology of preparation of pharmaceutics, drug formulae optimization and quality control
-analysis and control of drugs, pharmaceutics, radiopharmaceuticals, and excipients
-action of drugs on the molecular level, drug absorption, transport through biological membranes, its distribution in living body, pharmaco-dynamics and pharmaco-kinetics.
Students will acquire necessary skills for proper experimental work in the laboratory. Emphasis is put on elaboration, evaluation and interpretation of measured data.

Class syllabus:
Introduction to physical chemistry, chapters selected for pharmacists, terminology
Structure of matter, atoms and molecules, forces and interactions
Stability of elements, nuclear decay, kinetics of nuclear decay
Basic principles of molecular spectroscopy (UV-VIS, luminescence, IR, Raman, NMR spectroscopy). Chemical thermodynamics. Gibb's free energy, entropy, spontaneity of processes. Chemical potential, activity.
Phase equilibria, Gibb's phase rule, phase diagrams. Mono-, di- and multi-compounds systems.

Solutions. Ideal and real solutions. Osmotic pressure, isotonic solutions. Condensed systems, eutectic mixtures in pharmacy
Chemical equilibria, standard thermodynamic functions
Electrochemistry. Strong and weak electrolytes, solubility product constant. Acid-base equilibria.
Chemical kinetics. Simple and complex reactions. Catalysis. Enzymatic catalysis.
Colloidal systems. Surfactants. Sedimentation and diffusion. Membranes and related phenomena. Donnan's equilibria.
The lectures from physical chemistry are completed by practical exercises, where the students verify their theoretical knowledge in practice. We put the accent on acquiring the basic knowledge necessary for professional qualifications of pharmacists and their competences according to European pharmacopoeia, and additional subjects, mainly pharmaceutical technology.

Recommended literature:

Atkins, P. W.: Physical Chemistry, 6th edition, Oxford University Press, 1998
Connors, K. A.: Thermodynamics of Pharmaceutical Systems : an Introduction for Students of Pharmacy. Hoboken : Wiley Interscience, 2002. 344 s.
Amiji M.M., Sandmann B.J.: Applied Physical Pharmacy. New York : McGraw-Hill, 2003. 462 s.
Laboratory Manual for Physical Chemistry, compiled by teachers of the Department of Physical Chemistry of Drugs.

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 10

A	ABS	B	C	D	E	FX	N/a
0,0	0,0	0,0	10,0	10,0	10,0	70,0	0,0

Lecturers: prof. RNDr. Daniela Uhríková, CSc., prof. Ing. Vladimír Frecer, DrSc., doc. RNDr. Jana Gallová, CSc., Mgr. Lukáš Hubčík, PhD., Mgr. Mária Klacsová, PhD., Ing. Jarmila Oremusová, CSc.

Last change: 29.03.2022

Approved by: prof. RNDr. Daniela Uhríková, CSc.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KTV/01-Mgr-A/19	Physical Education and Sport (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 1

Recommended semester: 1.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 78

A	ABS	B	C	D	E	FX
62,82	0,0	11,54	5,13	0,0	1,28	19,23

Lecturers: Mgr. Lenka Nagyová, PhD., PaedDr. Martina Tibenská, PhD., Mgr. Dalibor Ludvig, PhD., Mgr. Michal Tokár, PhD.

Last change: 19.11.2021

Approved by: PaedDr. Martina Tibenská, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KTV/02-Mgr-A/19	Physical Education and Sport (2)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 1

Recommended semester: 2.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 62

A	ABS	B	C	D	E	FX
67,74	0,0	12,9	0,0	0,0	0,0	19,35

Lecturers: Mgr. Lenka Nagyová, PhD., Mgr. Dalibor Ludvig, PhD., PaedDr. Martina Tibenská, PhD., Mgr. Michal Tokár, PhD.

Last change: 19.11.2021

Approved by: PaedDr. Martina Tibenská, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KTV/03-Mgr-A/20	Physical Education and Sport (3)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 1

Recommended semester: 3.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 31

A	ABS	B	C	D	E	FX
58,06	0,0	3,23	0,0	0,0	3,23	35,48

Lecturers: Mgr. Michal Tokár, PhD., Mgr. Dalibor Ludvig, PhD., Mgr. Lenka Nagyová, PhD., PaedDr. Martina Tibenská, PhD.

Last change: 19.11.2021

Approved by: PaedDr. Martina Tibenská, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KTV/04-Mgr-A/20	Physical Education and Sport (4)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 1

Recommended semester: 4.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 25

A	ABS	B	C	D	E	FX
52,0	0,0	4,0	4,0	0,0	0,0	40,0

Lecturers: Mgr. Dalibor Ludvig, PhD., PaedDr. Martina Tibenská, PhD., Mgr. Lenka Nagyová, PhD., Mgr. Michal Tokár, PhD.

Last change: 19.11.2021

Approved by: PaedDr. Martina Tibenská, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KTV/05-Mgr-A/20	Physical Education and Sport (5)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 1

Recommended semester: 5.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

A	ABS	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: Mgr. Dalibor Ludvig, PhD., Mgr. Lenka Nagyová, PhD., PaedDr. Martina Tibenská, PhD., Mgr. Michal Tokár, PhD.

Last change: 28.07.2022

Approved by: PaedDr. Martina Tibenská, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/08-Mgr-A/00	Practice in Community Pharmacy (1)

Educational activities:
Type of activities: practice
Number of hours:
per week: **per level/semester:** 4t
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
KORF/12- Mgr-A/00 Social Pharmacy and Pharmacoeconomics

Course requirements:
The student after one month internship in a pharmacy has an obligation to complete and send an electronic protocol record (e-protocol) within the set deadline. Not sent in time protocol, not-sent e-protocolat all and an e-protocol that does not meet the formal and content criteria is considered a reason for not completing the course. The necessary formal and content criteria of the e-protocol are published at the beginning of the summer semester and are available in the moodle application or on the course website. At the end of the internship a pharmacy worker responsible for the student's internship will issue a written assessment of the student's knowledge, skills and activities during practice (Evaluation).
The exam is written. Rating A: 100-93%, B: 92-85%, C: 84-77%, D: 76-69%, E: 68-60%, Fx: 59% and less.The condition for passing the exam is sending the e-protocol via Moodle (in compliance with its formal and content criteria) and obtaining at least 60% of the pharmacy evaluation.

Learning outcomes:
By completing the course, the student is familiar with the environment of the pharmacy, knows and is able to sort the assortment of pharmacies, can use the acquired skills in basic pharmacy activities under management of authorized person of the pharmacy.

Class syllabus:
Health and safety at work, personal data protection, operational order, hygienic regime and sanitation program, spatial, material and personnel equipment of the pharmacy, pharmacy assortment, authentication of medicines, work with pharmacy software, overview of individual and bulk drugs, self-medication (non-prescription drugs, nutritional supplements, additional assortment).

Recommended literature:
1. Hungman, B.: Healthcare Communication, London, Pharmaceutical Press, 2009, 304 p.

2. Veatch, R.M., Haddad, A.: Case studies in pharmacy ethics, Oxford, Univesity Press, 2008, 331 p.
3. Bissel, P., Traulsen, J.M.: Sociology and pharmacy practice, London, Pharmaceutical Press, 2005, 226 p.
4. Wingfield, J., Badcott, D.: Pharmacy ethics and decision making, London, Pharmaceutical Press, 2007, 313 p.
5. Appelbe, G.E., Wingfield, J.: Dale and Appelbe s Pharmacy Law and Ethics, London, Pharmaceutical Press, 2005, 593 p.
6. Sexton, J., Nickless G., Green, Ch.: Pharmaceutical Care Made Easy, London, Pharnaceuticl Press, 2006, 178 p.
7. Edwards, C., Stillman, P.: Minor Illness or Major Disease? The clinical pharmacist in the community.Fourth edition, London, Pharmaceutical Press, 2006, 285 p.
8. Stephens, M.: Hospital Pharmacy, London, Pharmaceutical Press, 2006, 285 p.
9. Harman, R.J.: Patient Care in Community Practice, London, Pharmaceutical Press, 2002, 203 p.
10. Harman, R.J.: Handbook of Pharmacy Health Education, second edition, London, Pharmaceutical Press, 2001, 299 p.
11. European Pharmacopoeia – Ph. Eur. 10th Edition.

Languages necessary to complete the course:
English language.

Notes:
During the internship, the student prepares and after completing a one-month internship sends via electronic application (e-learning UK - moodle) e-protocol. The e-protocol is a formal document about completion of the prescribed length of professional pharmacy practice in accordance with the valid wording of Act no. 131/2002 Coll. on higher education institutions, as amended, in accordance with the legislation in force in the European Union,
requirements for the study of pharmacy and the recognition of professional qualifications.
A week of practice is a time period characterized by five calendar days, including public holidays and non-working days. Public holidays and non-working days are included in the internship period, a student does not have to overwork them.
The one-month internship takes place in the summer semester according to the approved schedule.

Past grade distribution
Total number of evaluated students: 523

A	ABS	B	C	D	E	FX
94,26	0,0	4,78	0,57	0,0	0,0	0,38

Lecturers: PharmDr. Ľubica Lehocká, PhD., PharmDr. Miroslava Snopková, PhD.

Last change: 09.12.2021

Approved by: doc. PharmDr. Tomáš Tesař, PhD., MBA

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/09-Mgr-A/15	Practice in Community Pharmacy (2)

Educational activities:
Type of activities: practice
Number of hours:
per week: **per level/semester:** 20t
Form of the course: on-site learning

Number of credits: 20

Recommended semester: 9.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
KORF/12- Mgr-A/00 Social Pharmacy and Pharmacoeconomics,
KORF/10- Mgr-A/00 Retail Pharmacy, Legislation and Ethics

Course requirements:
The student after each month of the five-months internship in a pharmacy has an obligation to complete and send an electronic protocol record (e-protocol) within the set deadline. Not sent in time protocol, not-sent e-protocolat all and an e-protocol that does not meet the formal and content criteria is considered a reason for not completing the course. The necessary formal and content criteria of the e-protocol are published at the beginning of the summer semester and are available in the moodle application or on the course website. At the end of the internship a pharmacy worker responsible for the student's internship will issue a written assessment of the student's knowledge, skills and activities during practice (Evaluation).
The exam is written. Rating A: 100-93%, B: 92-85%, C: 84-77%, D: 76-69%, E: 68-60%, Fx: 59% and less.The condition for passing the exam is sending the e-protocol via Moodle (in compliance with its formal and content criteria) and obtaining at least 60% of the pharmacy evaluation.

Learning outcomes:
By completing the course, the student is familiar with the environment of the pharmacy, knows and is able to sort the assortment of pharmacies, can use the acquired skills in basic pharmacy activities under management of authorized person of the pharmacy.

Class syllabus:
Warehouse management, functionality of pharmaceutical software, individual and mass manufactured drugs, prescription and prescription record requirements, dispensation care and consultancy in the provision of pharmaceutical care, over-the-counter drugs and self treatment, nutritional supplements, supplementary assortment, medical devices, basic economic skills, ethical aspects of the profession of a pharmacist, code of ethics of a healthcare professional, legal responsibilities.

Recommended literature:

1. Hungman, B.: Healthcare Communication, London, Pharmaceutical Press, 2009, 304 p.
2. Veatch, R.M., Haddad, A.: Case studies in pharmacy ethics, Oxford, Univesity Press, 2008, 331 p.
3. Bissel, P., Traulsen, J.M.: Sociology and pharmacy practice, London, Pharmaceutical Press, 2005, 226 p.
4. Wingfield, J., Badcott, D.: Pharmacy ethics and decision making, London, Pharmaceutical Press, 2007, 313 p.
5. Appelbe, G.E., Wingfield, J.: Dale and Appelbe s Pharmacy Law and Ethics, London, Pharmaceutical Press, 2005, 593 p.
6. Sexton, J., Nickless G., Green, Ch.: Pharmaceutical Care Made Easy, London, Pharnaceuticl Press, 2006, 178 p.
7. Edwards, C., Stillman, P.: Minor Illness or Major Disease? The clinical pharmacist in the community.Fourth edition, London, Pharmaceutical Press, 2006, 285 p.
8. Stephens, M.: Hospital Pharmacy, London, Pharmaceutical Press, 2006, 285 p.
9. Harman, R.J.: Patient Care in Community Practice, London, Pharmaceutical Press, 2002, 203 p.
10. Harman, R.J.: Handbook of Pharmacy Health Education, second edition, London, Pharmaceutical Press, 2001, 299 p.
11. European Pharmacopoeia – Ph. Eur. 10th Edition.

Languages necessary to complete the course:

Notes:
During the internship, the student prepares and after each month of the internship sends via electronic application (e-learning UK - moodle) e-protocols. The e-protocol is a formal document about completion of the prescribed length of professional pharmacy practice in accordance with the valid wording of Act no. 131/2002 Coll. on higher education institutions, as amended, in accordance with the legislation in force in the European Union,requirements for the study of pharmacy and the recognition of professional qualifications.
A week of practice is a time period characterized by five calendar days, including public holidays and non-working days. Public holidays and non-working days are included in the internship period, a student does not have to overwork them.
The five-months internship takes place in the summer semester according to the approved schedule.

Past grade distribution
Total number of evaluated students: 502

A	ABS	B	C	D	E	FX
31,67	0,0	39,84	26,29	1,99	0,2	0,0

Lecturers: PharmDr. Ľubica Lehocká, PhD., PharmDr. Miroslava Snopková, PhD.

Last change: 09.12.2021

Approved by: doc. PharmDr. Tomáš Tesař, PhD., MBA

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KChTL/10-Mgr-A/00	Principles of Molecular Modelling

Educational activities:
Type of activities: practicals / lecture
Number of hours:
per week: 1 / 1 **per level/semester:** 14 / 14
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I.II.

Prerequisites:

Course requirements:
preliminary evaluation: project elaboration from practicals
final evaluation: final test
A: 90,01 % – 100,00 %; B: 82,01 % – 90,00 %; C: 74,01 % – 82,00 %; D: 66,01 % – 74,00 %; E: 60,01 % – 66,00 %; Fx: ≤ 60,00 %.
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
The course should educate the students about the basic principles of computer chemistry and the methods of computer aided molecular design.

Class syllabus:
To master the subject Principes of Molecular Modeling at a sufficient level, knowledge of the subject Organic Chemistry 1 is required. The students work with the programs available at the Department of Chemical Theory of Drugs – Alchemy, Chemwind or Chemsketch, Rasmol, MS Word, with the use of the internet network and available databases (PDB). Primarily students work on the tasks on molecules designed as potential drugs, such as finding the optimal conformation of the molecule, electron distribution in the molecule, the relationship between the structure and properties. They learn how to browse the PDB database and the principle of docking of molecules in enzyme active site. During the tuition students will elaborate their given project, each on their own molecule.

Recommended literature:
Alan Hinchliffe : Molecular Modeling for Beginners, Wiley, 2003.

Languages necessary to complete the course:
English language

Notes:
The course is held only in summer semester. Minimum of 2 students must be signed up for the course to take place.

Past grade distribution
Total number of evaluated students: 41

A	ABS	B	C	D	E	FX
26,83	0,0	19,51	26,83	7,32	7,32	12,2

Lecturers: Mgr. Lucia Lintnerová, PhD., doc. Ing. Martin Pisárčik, CSc., Mgr. Peter Herich, PhD.

Last change: 03.04.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFChL/13-Mgr-A/19	Problem solving in Physics (1)

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 1

Recommended semester: 1.

Educational level: I.II.

Prerequisites:

Course requirements:
Student writes at least two tests during semester and the assessment of these tests determines the final mark. The limit for successful completion of the subject is 60%.
Conditions for Course Completion could be changed in the case of distance form of study.
Assessment: A 92-100 %, B 84-91 %, C 76-83 %, D 68-75, E 60-67, Fx 59% and less.
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
By completion of the subject student acquires skills in solving problems in physics in the extent needed for pharmacy students. Physical principles are applied to problems regarding different parts of pharmacy, medicine and daily life.

Class syllabus:
Problems solved during seminar are related to the topic of lectures in the subject Pharmaceutical physics:
Physical quantities and units. Kinematics and dynamics of mass point. Newton's laws. Mass and gravity. Mechanical work and energy. Solid body mechanics. Hydrostatics and hydrodynamics. Heat, thermodynamics. Electrostatics. Electrical current. Magnetism. Radiation.

Recommended literature:
Nicholas Giordano: College Physics, Reasoning & Relationship, Volume 1 and 2, Purdue University, BROOK/COLE Gengage Learning., Boston 2013
Study materials for Laboratory Practical from Physics, http://www.fpharm.uniba.sk/index.php?id=2850

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 26

A	ABS	B	C	D	E	FX
30,77	0,0	38,46	15,38	3,85	0,0	11,54

Lecturers: RNDr. Alexander Búcsi, PhD., prof. Ing. Vladimír Frecer, DrSc., doc. RNDr. Jana Gallová, CSc.

Last change: 11.12.2021

Approved by: RNDr. Alexander Búcsi, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFChL/14-Mgr-A/19	Problem solving in Physics (2)

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 1

Recommended semester: 2.

Educational level: I.II.

Prerequisites:

Course requirements:
Continuous assessment by tests (minimum 2 per semester) and final test. Evaluation/grade: A 92-100 %, B 84-91 %, C 76-83 %, D 68-75, E 60-67 %, Fx <60 %
Scale of assessment (preliminary/final): 30/70

Learning outcomes:
The course help students to acquire skill in solving selected problems in Physical chemistry using adequate mathematics and numerical calculation. At the same time this course provides understanding of theoretical principles applied in specialized pharmaceutical areas like analysis of drugs, drug formulae quality control, pharmacokinetics, action of drugs on the molecular level, drug absorption, etc.

Class syllabus:
Students will improve their theoretical knowledge obtained at lectures on Physical chemistry by solving problems related to selected chapters as structure of molecules and spectral methods (UV-VIS, IR, NMR), kinetics of radioactive decay, chemical thermodynamics esp. phase equilibriums and solutions, electrochemistry and acid-base equilibriums, chemical kinetics, colloids and surfaces.

Recommended literature:
Atkins, P. W.: Physical Chemistry, 6th edition, Oxford University Press, 1998
Connors, K. A.: Thermodynamics of Pharmaceutical Systems : an Introduction for Students of Pharmacy. Hoboken : Wiley Interscience, 2002. 344 s.
Amiji M.M., Sandmann B.J.: Applied Physical Pharmacy. New York : McGraw-Hill, 2003. 462 s.
Laboratory Manual for Physical Chemistry, compiled by teachers of the Department of Physical Chemistry of Drugs.

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 15

A	ABS	B	C	D	E	FX
13,33	0,0	20,0	46,67	13,33	0,0	6,67

Lecturers: prof. Ing. Vladimír Frecer, DrSc., prof. RNDr. Daniela Uhríková, CSc.

Last change: 10.12.2021

Approved by: prof. Ing. Vladimír Frecer, DrSc.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFANF/13-Mgr-A/20	Radiopharmaceuticals

Educational activities:
Type of activities: practicals / lecture
Number of hours:
per week: 1 / 2 **per level/semester:** 14 / 28
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 5.

Educational level: I.II.

Prerequisites:

Course requirements:
Compulsory participation on the course educational activities is one of the conditions. For the admission to the final exam, it is necessary to complete the continuous assessment from laboratory practicals to at least 60% of total points (consisting of fulfilment of all assigned tasks, submission of protocol (report) from every topic, as well as 1 control written test).
The final exam (in written form) - it is necessary to obtain at least 60% of total points for successful passing the exam. Exam evaluation: A = 100-92%; B = 91.99-83%; C = 82.99-74%; D = 73.99-66%; E = 65.99-60%; FX = less than 60%.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The completion of the course contributes to the achievement of a comprehensive qualification and knowledge of a pharmacist and is connected with the laboratory of the faculty with distinctive requirements. The student acquires a basic theoretical knowledge about the rules of radioactivity, ionizing radiation, specifics of radioactive sources, diagnostic/therapeutic radiopharmaceuticals and related procedures as well as practical skills in a radiopharmaceutical preparation, quality control using proper analytical methods, as well as in ensuring radiation protection and safety.
The acquired skills can be utilized in the field of preparation, quality control, and the use of radiopharmaceuticals (as a specific category of drugs) in the departments of nuclear medicine and other specialized departments in the diagnostic and/or therapeutic process of various diseases.

Class syllabus:
The content and syllabus of the course is in compliance with requirements of the International and European Pharmacopoeia, which include several monographs on Radiopharmaceutical Preparations, as well as with current guidelines and requirements for radiation protection.
• Radiopharmaceuticals: fundamentals, characteristics, importance.
• Radiation protection.
• Production of radionuclides.
• Dosimetry and radiation detection.
• Effects of ionizing radiation on human organism.
• Preparation and quality control of radiopharmaceuticals.

• Radiopharmaceuticals in the clinical practice (diagnostics and therapy).
• Nuclear medicine imaging techniques.

Recommended literature:
SAHA, G.P. Fundamentals of Nuclear Pharmacy. New York : Springer, 2010, p.409. (textbook)
SAMPSON, C.B. Textbook of Radiopharmacy. Yverdon : Gordon and Breach Science Publishers, 1994.
Council of Europe. European Pharmacopoeia online, current version. Strasbourg : EDQM.
Current laws/ordinances/guidelines on radiation protection and on handling of the radioactive materials and substances.

Languages necessary to complete the course:
english laguage

Notes:

Past grade distribution
Total number of evaluated students: 13

A	ABS	B	C	D	E	FX
15,38	0,0	15,38	46,15	15,38	7,69	0,0

Lecturers: PharmDr. Mária Bodnár Mikulová, PhD., RNDr. Jozef Motyčka

Last change: 02.04.2022

Approved by: PharmDr. Mária Bodnár Mikulová, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF/VP-1-A/20	Research Project

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 1

Recommended semester: 1., 2.., 3., 4.., 5., 6.., 7., 8.., 9., 10..

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 1

A	ABS	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: prof. Ing. Vladimír Frecer, DrSc.

Last change:

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF/PVP-A/20	Research Project and Presentation

Educational activities:
Type of activities: practicals
Number of hours:
per week: 4 **per level/semester:** 56
Form of the course: on-site learning

Number of credits: 2

Recommended semester:

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 1

A	ABS	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0	100,0

Lecturers: prof. Ing. Vladimír Frecer, DrSc., PharmDr. Andrea Balažová, PhD.

Last change:

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/10-Mgr-A/15	Retail Pharmacy, Legislation and Ethics

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 2 / 2 **per level/semester:** 28 / 28
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
KORF/12- Mgr-A/00 Social Pharmacy and Pharmacoeconomics

Course requirements:
During semester there will be two written examinations with 100 points each, for grade A it is necessary to score at least 93 points, for grade B at least 85 points, for grade C at least 77 points, for grade D at least 69 points, and for grade E at least 60 points. Student, who scores less than 59 points from either examination will get no credits.

Learning outcomes:
After finishing the study course „Retail Pharmacy“ students must have knowledge and skills in the pharmaceutical care, and understand the overall content of the course, role of retail pharmacy in the pharmaceutical practice, which focuses on work with medicines and their disposing to patients under certain conditions. They will be able to work with a medical prescription and information gained from it and also with information gained from literature and electronic databases. They will understand means of storage of substances and medicines , preparing of individually prepared medicines and basics of control of pharmaceutical raw materials. After successful finishing of this educational process students have to be able to responsibly and efficiently withstand in all aspects of pharmaceutical care.

Class syllabus:
Retail pharmacy is a basic subject of pharmacy that in theoretical and practical way deals with providing of pharmaceutical care to general public. This subject has close connection with subject Social pharmacy. These two subjects are interconnected by basic categories like active substance and medicine and their place in pharmacy, in society, as well as within pharmaceutical care. Social pharmacy – Retail pharmacy as a whole is a study subject at the Faculty for doctoral study and approved specialization program of pharmacy for postgraduate study.
Teaching of subject Retail pharmacy is done by means of lectures and seminars. Syllabus of lectures and seminars consists of the following topics:
Legislature in retail pharmacy, pharmaceutical operations, controlling, preparatory, dispensing, supplying, administrative, public and hospital pharmacies economies, information and consulting

activities. Quality of doctor’s communication with a pharmacist. Development of e-prescribing. Electronic drug card. Document creation and processing.

Recommended literature:

1. Hungman, B.: Healthcare Communication, London, Pharmaceutical Press, 2009, 304 p.
2. Veatch, R.M., Haddad, A.: Case studies in pharmacy ethics, Oxford, Univesity Press, 2008, 331 p.
3. Bissel, P., Traulsen, J.M.: Sociology and pharmacy practice, London, Pharmaceutical Press, 2005, 226 p.
4. Wingfield, J., Badcott, D.: Pharmacy ethics and decision making, London, Pharmaceutical Press, 2007, 313 p.
5. Appelbe, G.E., Wingfield, J.: Dale and Appelbe s Pharmacy Law and Ethics, London, Pharmaceutical Press, 2005, 593 p.
6. Sexton, J., Nickless G., Green, Ch.: Pharmaceutical Care Made Easy, London, Pharnaceuticl Press, 2006, 178 p.
7. Edwards, C., Stillman, P.: Minor Illness or Major Disease? The clinical pharmacist in the community.Fourth edition, London, Pharmaceutical Press, 2006, 285 p.
8. Stephens, M.: Hospital Pharmacy, London, Pharmaceutical Press, 2006, 285 p.
9. Harman, R.J.: Patient Care in Community Practice, London, Pharmaceutical Press, 2002, 203 p.
10. Harman, R.J.: Handbook of Pharmacy Health Education, second edition, London, Pharmaceutical Press, 2001, 299 p.
11. European Pharmacopoeia – Ph. Eur. 8th Edition

Languages necessary to complete the course:
English language.

Notes:
Obligatory course taught in the 8th semester of study only.

Past grade distribution
Total number of evaluated students: 537

A	ABS	B	C	D	E	FX
14,9	0,0	23,65	21,6	19,18	20,3	0,37

Lecturers: PharmDr. Miroslava Snopková, PhD., PharmDr. Ľubica Lehocká, PhD., PharmDr. Lucia Masaryková, PhD.

Last change: 02.08.2021

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFB/12-Mgr-A/20	Safety of Herbal Medicines and Food Supplements

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 2 / 1 **per level/semester:** 28 / 14
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 7.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 6

A	ABS	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	100,0	0,0

Lecturers: doc. PharmDr. Szilvia Czigle, PhD., Mgr. Jaroslav Tóth, PhD.

Last change:

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KChTL/07-Mgr-A/19	Selected Chapters in Inorganic Chemistry

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 1 / 1 **per level/semester:** 14 / 14
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: I.II.

Prerequisites:

Course requirements:
final evaluation: examination in form of the summary test
A: 90,01 % – 100,00 %; B: 82,01 % – 90,00 %; C: 74,01 % – 82,00 %; D: 66,01 % – 74,00 %; E: 60,01 % – 66,00 %; Fx: ≤ 60,00 %.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The aim of the course is to apply basic knowledge of bioinorganic and biocoordination chemistry in the field of pharmacy.

Class syllabus:
Metal ions under in vivo conditions. Brief basics of coordination chemistry of metal complexes. Stereochemistry of coordination compounds. Which metal ions react with which ligands (creation of complexes). Biologically significant complex compounds. The role and importance of transitional metals in biological systems. Bioinorganic chemistry of oxygen. Trace element in living organisms – their deficiency and excess. Trace element supplementation. Antitumor activity of some metal complexes and their stereochemical requirements. Bioinorganic chemistry and its essential pharmaceutical applications.

Recommended literature:
1. W. Kaim, B. Schwederski, A. Klein: Bioinorganic Chemistry - Inorganic Elements in the Chemistry of Life. 4th Edition, Wiley 2013.
2. E. Crabb, E. A. Moore: Metals and Life. RSC Publishing 2010
3. E.-I. Ochiai: Bioinorganic Chemistry. Elsevier 2008
4. G. A. Lawrance: Introduction to Coordination Chemistry. Wiley 2009

Languages necessary to complete the course:
English language

Notes:
The course is held only in winter semester.
Teachers: Ing. Ladislav Habala, PhD., Assoc.prof. Martin Pisárčik, CSc

Past grade distribution
Total number of evaluated students: 28

A	ABS	B	C	D	E	FX
39,29	0,0	42,86	14,29	0,0	0,0	3,57

Lecturers: Ing. Ladislav Habala, PhD., doc. Ing. Martin Pisárčik, CSc.

Last change: 03.04.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KChTL/08-Mgr-A/19	Selected Chapters in Organic Chemistry

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 1 / 1 **per level/semester:** 14 / 14
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I.II.

Prerequisites:

Course requirements:
Examination in the form of a summary test. Successful completion of the test is conditional on obtaining more than 60% of the written test.
A: 90,01 % – 100,00 %; B: 82,01 % – 90,00 %; C: 74,01 % – 82,00 %; D: 66,01 % – 74,00 %; E: 60,01 % – 66,00 %; Fx: ≤ 60,00 %.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The course provides a comprehensive preparation in the field of nomenclature, stereochemistry and chemical-physical properties of organic and pharmaceutical compounds with biological activity.

Class syllabus:
Nomenclature (common and IUPAC) of pharmaceutical organic compounds. Isomerism and stereochemistry of organic compounds (conformers, E, Z isomers). The relationship stereoisomers-biological activity. Chirality and symmetry of pharmaceutical compounds. Enantiomerism (S, R-enantiomers), diasteromerism, meso compounds. Biological activity of optically active drugs. Hybridization types in organic compounds. Single and multiple covalent bonds in organic molecules. Intermolecular interactions and their importance in pharmaceutical activity. Electronic effects of functional groups attached to organic compounds, resonance effects, and hyperconjugation phenomenon. Tautomerism of organic compounds. Aromaticity of organic molecules. Organic acids and bases and their importance in pharmacy. Classification of organic reactive intermediates and chemistry reactions (substitutions, eliminations, additions, molecular rearrangements.

Recommended literature:
Devínsky F. et al. Organic chemistry for pharmacy students, Comenius University 2010;
McMurry J. E. Organic Chemistry;
A.David Baker and R. Engel Organic Chemistry 1992.

Languages necessary to complete the course:
English language

Notes:
The course is held only in summer semester.

Past grade distribution
Total number of evaluated students: 53

A	ABS	B	C	D	E	FX
7,55	0,0	22,64	18,87	22,64	16,98	11,32

Lecturers: RNDr. Roman Mikláš, PhD., Mgr. Natalia Lucia Miklášová, PhD.

Last change: 03.04.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KJ/05-Mgr-A/00	**Course title:** Slovak Language for International Students (1)
Educational activities: **Type of activities:** seminar **Number of hours:** **per week:** 2 **per level/semester:** 28 **Form of the course:** on-site learning	
Number of credits: 2	
Recommended semester: 1.	
Educational level: I.II.	
Prerequisites:	
Course requirements: - active presence at seminars - final test with evaluation scale – A (100 – 91 %), B (90 – 81 %), C (80 – 73 %), D (72 – 66 %), E (65 – 60 %), FX (59 – 0 %) Scale of assessment (preliminary/final): 100 %	
Learning outcomes: After completing the seminars a student obtains basic communication skills and grammar structures needed for everyday life in Slovakia.	
Class syllabus: The lessons concentrate on the following topics: slovak alphabet, social phrases, greetings and farewells, basic dialogues, interior (house, flat, office), countries.	
Recommended literature: Kamenárová, R. a kol.: Krížom-krážom, Slovenčina A1. Bratislava: Univerzita Komenského, 2018 Ivorníková, H. a kol.: Krížom-krážom, Slovenčina A1 + A2, Cvičebnica. Bratislava: Univerzita Komenského, 2009	
Languages necessary to complete the course: Slovak and English languages	
Notes: Slovak Language for Foreign Students (1-4) within Master Study Programme is carried out in English study programme in four semesters. It is recommended to take the courses gradually from the 1st to the 4th semester of the study, i.e., Slovak Language for International Students (1) in the 1st (winter) semester of study.	

Past grade distribution Total number of evaluated students: 778						
A	ABS	B	C	D	E	FX
33,29	0,0	16,84	16,45	15,17	15,17	3,08
Lecturers: PhDr. Darina Kližanová						
Last change: 25.03.2022						
Approved by: doc. PhDr. Ľudmila Ozábalová, PhD.						

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KJ/06-Mgr-A/00	Slovak Language for International Students (2)

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I.II.

Prerequisites:

Course requirements:
- active presence at seminars
- final test with evaluation scale – A (100 – 91 %), B (90 – 81 %), C (80 – 73 %), D (72 – 66 %), E (65 – 60 %), FX (59 – 0 %)

Scale of assessment (preliminary/final): 100 %

Learning outcomes:
After completing the seminars a student obtains basic communication skills and grammar structures needed for the work in a pharmacy.

Class syllabus:
The lessons concentrate on the following topics: Bratislava - capital city of Slovakia, life in the town and the country, professions, shopping, pharmacy.

Recommended literature:
Kamenárová, R. a kol.: Krížom-krážom, Slovenčina A1. Bratislava: Univerzita Komenského, 2018
Ivorníková, H. a kol.: Krížom-krážom, Slovenčina A1 + A2, Cvičebnica. Bratislava: Univerzita Komenského, 2009

Languages necessary to complete the course:
Slovak and English languages

Notes:
Slovak Language for Foreign Students (1-4) within Master Study Programme is carried out in English study programme in four semesters. It is recommended to take the courses gradually from the 1st to the 4th semester of the study, i.e., Slovak Language for International Students (2) in the 2nd (summer) semester of study.

Past grade distribution Total number of evaluated students: 705						
A	ABS	B	C	D	E	FX
21,42	0,0	16,17	19,15	15,6	19,86	7,8
Lecturers: PhDr. Darina Kližanová						
Last change: 25.03.2022						
Approved by: doc. PhDr. Ľudmila Ozábalová, PhD.						

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KJ/07-Mgr-A/20	**Course title:** Slovak Language for International Students (3)
Educational activities: **Type of activities:** seminar **Number of hours:** **per week:** 2 **per level/semester:** 28 **Form of the course:** on-site learning	
Number of credits: 1	
Recommended semester: 3.	
Educational level: I.II.	
Prerequisites:	
Course requirements: - active presence at seminars - final test with evaluation scale – A (100 – 91 %), B (90 – 81 %), C (80 – 73 %), D (72 – 66 %), E (65 – 60 %), FX (59 – 0 %) Scale of assessment (preliminary/final): 100 %	
Learning outcomes: After completing the seminars a student obtains basic communication skills and grammar structures useful for formal oral and written communication.	
Class syllabus: The lessons concentrate on the following topics: foods, daily routines, telling the time, school system, study at the University, study of pharmacy.	
Recommended literature: Kamenárová, R. a kol.: Krížom-krážom, Slovenčina A1. Bratislava: Univerzita Komenského, 2018 Ivorníková, H. a kol.: Krížom-krážom, Slovenčina A1 + A2, Cvičebnica. Bratislava: Univerzita Komenského, 2009	
Languages necessary to complete the course: Slovak and English languages	
Notes: Slovak Language for Foreign Students (1-4) within Master Study Programme is carried out in English study programme in four semesters. It is recommended to take the courses gradually from the 1st to the 4th semester of the study, i.e., Slovak Language for International Students (3) in the 3rd (winter) semester of study.	

Past grade distribution
Total number of evaluated students: 25

A	ABS	B	C	D	E	FX
80,0	0,0	8,0	4,0	0,0	0,0	8,0

Lecturers: PhDr. Darina Kližanová

Last change: 25.03.2022

Approved by: doc. PhDr. Ľudmila Ozábalová, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KJ/08-Mgr-A/20	Slovak Language for International Students (4)

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 1

Recommended semester: 4.

Educational level: I.II.

Prerequisites:

Course requirements:
- active presence at seminars
- final test with evaluation scale – A (100 – 91 %), B (90 – 81 %), C (80 – 73 %), D (72 – 66 %), E (65 – 60 %), FX (59 – 0 %)
Scale of assessment (preliminary/final): 100 %

Learning outcomes:
After completing the seminars a student deepens communication skills specific grammar structures.

Class syllabus:
The lessons concentrate on the following topics: work place, correspondance and telephoning, reading newspaper articles.

Recommended literature:
Kamenárová, R. a kol.: Krížom-krážom, Slovenčina A1. Bratislava: Univerzita Komenského, 2018
Ivorníková, H. a kol.: Krížom-krážom, Slovenčina A1 + A2, Cvičebnica. Bratislava: Univerzita Komenského, 2009

Languages necessary to complete the course:
Slovak and English languages

Notes:
Slovak Language for Foreign Students (1-4) within Master Study Programme is carried out in English study programme in four semesters. It is recommended to take the courses gradually from the 1st to the 4th semester of the study, i.e., Slovak Language for International Students (4) in the 4th (winter) semester of study.

Past grade distribution
Total number of evaluated students: 17

A	ABS	B	C	D	E	FX
29,41	0,0	29,41	11,76	0,0	0,0	29,41

Lecturers: PhDr. Darina Kližanová
Last change: 25.03.2022
Approved by: doc. PhDr. Ľudmila Ozábalová, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/12-Mgr-A/00	Social Pharmacy and Pharmacoeconomics

Educational activities:
Type of activities: practicals / lecture / seminar
Number of hours:
per week: 0 / 2 / 2 **per level/semester:** 0 / 28 / 28
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 4.

Educational level: I.II.

Prerequisites:

Course requirements:
Compulsory Course. Presence at lectures & seminars. Elaboration (ppt.) and successful oral presentation of seminar works + passing through oral exam. Assessment scale: A = 100-95%, B = 94-85%, C = 84-75%, D = 74-70%, E = 69-60%, FX = 59% and less.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The Course aims on integration of medicines into broader perspective such as social, legal, ethical, economic and political aspects. It enables students to understand the basics of healthcare system/s, regulatory affairs - aiming research and development of medicines, marketing authorization, pharmacovigilance, life-cycle of medicines and their utilization in society. Students become familiar with pharmacoepidemiology, pharmacoeconomics and health technology assessment, and health informatics and medicinal databases. All in all, the Course in Social Pharmacy, as an applied multidisciplinary science, offers to study the role of medicines, patients and pharmacists within the health care sector and society at large.

Class syllabus:
1. Role of social pharmacy in health care system and in a society.
2. Legal, economic, and political specifics of healthcare environment. . Health economy – financial management. Health insurance, cross-border health care.
3. Sociology, health psychology and ethics in social pharmacy.
4. Pharmacoepidemiology - characteristics, methods and applications.
5. Health and medicines informatics. Health literacy.
6. Research and development of medical products - R&D. Good Clinical Practice, Good Manufacturing Practice, Good Distribution Practice, Good Pharmacovigilance Practice.
7. Regulatory affairs in pharmacy (National, European) - medical product´s quality - efficacy - patient´s safety. Marketing Authorization. Pharmacovigilance. Falsified medicines.
8. National drug policy – categorization, reimbursement by payers and patient´s co-payment.
9. Health Technology Assessment (HTA) and Pharmacoeconomy – characteristics and applications.
10. Utilization of medicine – value outcomes. Social pharmacy as a part of public health - going beyond prescription to improve health outcomes by serving the patient needs.

Recommended literature:

1. Kelly, W. N. Pharmacy. What It Is and How It Works. 2012, third edition. CRC Press, Taylor & Francis Group, LLC. 2012, 452p. ISBN 978-1-4398-5305-4.
2. Royal Pharmaceutical Society. Medicines, Ethics and Practice. The professional guide for pharmaceuticals. Edition 39, July 2015, 202p.
3. Desselle, S. P., Zgarrick, D P., Alston, G. L. Pharmacy Management. 2010, 3rd ed., American Society of Health-System Pharmacists, Med Graw Hill Inc. 2010, 715p, ISBN 978-0-07-177431-4.
4. Donyai, P. Social and Cognitive Pharmacy. Theory and Case Studies. 2012. PhP Pharm. Press, UK. 2012, 229p. ISBN-978-0-8536-9-899-9.
5. Carter, J., Slack M., Pharmacy in Public Health. Basics and Beyond. 2010. American Soc. Health-System Pharmacists, Inc. 2010, 390p. ISBN 978-1-58528-172-5.
6. Berger, M. L. et al. Health Care Cost, Quality, and Outcomes.2003. International Society for Pharmacoeconomics and Outcomes Research. 2003, 264p. ISBN 0-9743289-0-1.

Languages necessary to complete the course:
English language

Notes:

Past grade distribution
Total number of evaluated students: 626

A	ABS	B	C	D	E	FX
31,79	0,0	13,42	17,73	11,18	23,96	1,92

Lecturers: doc. PharmDr. Tomáš Tesař, PhD., MBA, PharmDr. Slávka Porubcová

Last change: 04.12.2021

Approved by: doc. PharmDr. Tomáš Tesař, PhD., MBA

STATE EXAM DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF/900-Mgr-A/15	**Course title:** Social Pharmacy and Retail Pharmacy
Number of credits: 4	
Educational level: I.II.	
State exam syllabus:	
Last change:	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/13-Mgr-A/20	Systemic and Pathological Physiology

Educational activities:
Type of activities: lecture / laboratory practicals / seminar
Number of hours:
per week: 2 / 2 / 0 **per level/semester:** 28 / 28 / 0
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 3.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
None

Course requirements:
Personal attendance at all lectures and practical classes, justified absence (max 2x) is replaced according to the instructions of the teacher; to pass 2 scheduled pre-tests, each minimally 60% rate. The final exam test is completed by students in computer by written form (distant), of examination. To pass the final exam test by students in minimally 60% rate. Evaluation (mark and score): A 91-100%, B 81-90%, C71-80%, D 66-70%, E 60-65%, FX < 60%.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
In the newly created subject, the student will get a comprehensive conception of the arrangement and activity of the human organism as a whole, about the functions of individual systems, regulatory, coordination and integration relationships between individual anatomical systems. Student will learn about pathophysiology at the systemic level in the context of basic pathophysiological principles leading to damage of the physiological functions of systems. Student will understand the causes, course, symptoms of pathological conditions and subsequent complications, which are a prerequisite for the study of pharmacology and clinically oriented disciplines. Student will be extended and completed the spectrum of diseases and syndromes from selected systems, in more detailed way, he will recognize new or experimentally detected pathomechanisms. Student will become oriented in the current knowledge, which he will use in other profile biomedically oriented subjects of pharmaceutical studies.

Class syllabus:
Function and pathophysiology of the central, peripheral somatic and autonomic nervous system, neurological and psychiatric diseases. Control, regulation and disorders of cardiac activity, blood circulation and pathophysiology of vascular diseases and blood. Physiology and pathophysiology of breathing and pulmonary ventilation, digestive tube, liver, gallbladder, pancreas. Formation and disorders of the regulation of endocrine glands. Physiology and pathophysiology of the reproductive system of a man and a woman, hormonal regulation and its disturbances. Pathophysiology of

inflammatory diseases of the skin (eczema, erythema, lupus, psoriasis, atopic dermatitis), allergic and autoimmune diseases. Pathophysiology of inflammatory and degenerative diseases of the joints, disorders of bone metabolism and inflammation. Infectious diseases caused by bacteria, viruses, rickettsia, chlamydia, parasites, fungi, protozoa. Children's infectious diseases.
During practical training students will focused on practicing basic terminology, pathophysiology of symptoms, cases in selected systems, diagnostic tests e.g. Cognitive ability testing, analysis of records of pathologically altered functions of selected organs, investigative techniques, biochemical examinations. Pathophysiology of skin changes in childhood, adulthood, old age. and infectious diseases. Diets and advice for special diets.

Recommended literature:

Textbook of pathology, 7th edition, by H. Mohan. Ed. Jaypee Brothers Medical Publishers (P) Ltd, New Delhi, India, 2014, ISBN 978-9351523697
Vander`s Human Physiology 12th Ed, McGraw/Hill, Ed., NY, by EP Widmaier, H Raff, KT Strang, 2011, ISBN 978/0/07/122215/0
Essentials of Human Physiology for Pharmacy, CEC Press, 2008, by LK McCorry (e-version)
Essentials of Pathophysiology, 3rd edition, by C.M. Porth. Ed. Lippincott and Wilkins: Philadelphia, 2011, ISBN 0781770874
General and Systemic Pathology, 4th edition, by J.C.E. Underwood. Ed. Churchill Livingstone: NY, 2004 ISBN 0443073341/9780443073342
Essentials of Pathophysiology for Pharmacy, 1st edition, MM Zdanovicz, CRC Press, 2002, by ISBN 781587160363 (e-version)
Pathophysiology, by I Hulín, Bratislava: Slovak Academis Press, 1997, ISBN 80-85665-90-5
Lecture and exercise handouts will be available in Moodle's online system 2220,2021.

Languages necessary to complete the course:
english

Notes:
new subject SAPF introduced in the winter course 2020

Past grade distribution
Total number of evaluated students: 38

A	ABS	B	C	D	E	FX
0,0	0,0	2,63	21,05	13,16	34,21	28,95

Lecturers: doc. MUDr. Tatiana Stankovičová, CSc., prof. PharmDr. Ján Klimas, PhD., MPH, PharmDr. Tatiana Foltánová, PhD., PharmDr. Stanislava Kosírová, PhD., PharmDr. Eva Kráľová, PhD., PharmDr. Tomáš Rajtík, PhD., doc. PharmDr. Anna Paul Hrabovská, PhD., PharmDr. Attila Kulcsár, PhD., PharmDr. Dominika Dingová, PhD.

Last change: 13.12.2021

Approved by: doc. MUDr. Tatiana Stankovičová, CSc.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFB/08-Mgr-A/20	Technology of Natural Drugs

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 2 / 1 **per level/semester:** 28 / 14
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 7.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 9

A	ABS	B	C	D	E	FX
33,33	0,0	0,0	0,0	22,22	33,33	11,11

Lecturers: PharmDr. Vladimír Forman, PhD., doc. PharmDr. Szilvia Czigle, PhD.

Last change:

Approved by: prof. PharmDr. Pavel Mučaji, PhD., prof. Ing. Milan Nagy, CSc.

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF/999/Eplus/20	**Course title:** Trends in the European pharmaceutical education
Educational activities: **Type of activities:** **Number of hours:** **per week: per level/semester:** **Form of the course:** on-site learning	
Number of credits: 2	
Recommended semester: 7., 8..	
Educational level: I.II.	
Prerequisites:	
Course requirements: After the production of evidence about completing the course at the foreign university (Transcript of Records), a student graduating ERASMUS plus is graduated with the credit assessment of the imported subject to the faculty, according to academic results at the host university / institution (Table E) and to protocol of the recognition of studies by Faculty / University - recognition of the results at the home institution (Table F).	
Learning outcomes: The Erasmus plus student gets obtained knowledges from the selected course offered from the curriculum of the host university / institution that belongs to the so-called educational component of the study program student. The student by the studying abroad obtains the knowledges in the indispensable subjects that are not in the curriculum at the home university / institution.	
Class syllabus: The student of Erasmus plus graduate under the Learning Agreement for Studies intended subject at another faculty of a university on which has not be completed undergraduate courses of - according to the current curriculum of subject.	
Recommended literature: the recommended reading for the student to the subject at the host university / institution - the topical source for present problems	
Languages necessary to complete the course: the language or combination of languages, knowledge of which is necessary to pass the subject at the host university / institution	
Notes: subject is provided, according to interest, only students who are sent to the host university / institution participating in foreign ERASMUS mobility plus	

Past grade distribution
Total number of evaluated students: 0

A	ABS	B	C	D	E	FX	N/a
0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. PharmDr. Jindra Valentová, PhD.

Last change: 06.08.2020

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFANF/12-Mgr-A/20	Validation in Analytical and Pharmaceutical Practice

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 1 / 1 **per level/semester:** 14 / 14
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: I.II.

Prerequisites:

Course requirements:
Presence on lectures and seminars. After completion of the lectures and seminars, students will have to prepare a validation report based on received model data. The course assessment will be based on the quality of individually prepared validation reports. The minimum grade requirement to pass the course is 60%.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
Course objectives:
• Purposefully develop and apply knowledge in the field of statistics in the process of validation of analytical instrumental methods.
• Briefly acquaint with special statistical methods (eg. biostatistics, or biometrics, which is the application of statistics to biological problems; chemometrics, which is used in the processing of chemical data, etc.).
• Familiarize with standard validation protocols for pharmaceutical and biomedical analysis (ICH, FDA, EMA) and principles of good laboratory practice (GLP).
• Demonstrate applications in pharmaceutical and clinical practice.

Class syllabus:
• Statistical parameters related to the validation of instrumental analytical methods.
• Validation of laboratory methods, types of validation protocols.
• Good laboratory practice.
• Accreditation of chemical / biochemical laboratory.
• Analytical control in practice. Quality control, quality assessments, quality assurance.
• Case studies.

Recommended literature:
• M. Otto: Chemometrics: Statistics and Computer Application in Analytical Chemistry, 3rd Edition. Wiley-VCH Verlag, Weinheim, 2016. ISBN: 978-3-527-34097-2
• J. Miller, J.C. Miller: Statistics and Chemometrics for Analytical Chemistry, 6th Edition. Pearson Education Canada, Newmarket, 2010. ISBN: 978-0273730422

• Mikuš, Peter; Maráková, Katarína: HYPHENATED ELECTROPHORETIC TECHNIQUES IN ADVANCED ANALYSIS, KARTPRINT, Bratislava, 2012
• web pages with appropriate key words and relevant information.

Languages necessary to complete the course:
english language

Notes:

Past grade distribution
Total number of evaluated students: 12

A	ABS	B	C	D	E	FX
41,67	0,0	8,33	8,33	8,33	8,33	25,0

Lecturers: Mgr. Jana Havlíková, MSc., PharmDr. Daniel Pecher, PhD.

Last change: 02.04.2022

Approved by: PharmDr. Daniel Pecher, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/17-Mgr-A/00	Veterinary Pharmacology

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 6.

Educational level: I.II.

Prerequisites:

Course requirements:
To be admitted to the exam, student is required to attend all lectures and seminars. The condition for passing the course is passing the final exam test and the oral exam. The test and the oral exam contribute equally to the overall result of the exam and the student must demonstrate mastery of at least 60% of the required knowledge. The exam test result is evaluated on a scale: A (at least 92%), B (at least 83%), C (at least 76%), D (at least 68%), E (at least 60%) and Fx (less than 60% of the maximum number points).
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
By completing the course, the student will gain an overview of the specifics of veterinary medicine and veterinary pharmacology. Student will be familiar with veterinary drugs, which are an important part of pharmaceutical practice.

Class syllabus:
The course pays attention to the specifics of the use of drugs in animals - routes of administration, drug forms, the properties of veterinary drugs, the use of drugs in veterinary practice (medical, biotechnological). Particular attention is paid to drug residues in animal products intended for human consumption and protection periods in animals.
The scope of the course in the form of lectures and seminars is focused on individual specific groups of veterinary drugs:
Specifics of veterinary pharmacology - differences from human pharmacology.
Legislative regulation of veterinary health care.
Veterinary drug forms and routes of administration.
Zoonoses, the most common animal diseases.
Pharmacology of selected groups of veterinary drugs:
- Drugs used in infectious and invasive diseases.
- Drugs affecting the central and peripheral nervous system.
- Medicines that affect the blood circulation.
- Medicinal products acting on the gastrointestinal tract.
- Medicinal products that affect the reproductive organs. Insemination.

- Drugs affecting metabolism.
- Euthanasia, slaughter of livestock.

Recommended literature:

Riviere, J.E. and Papich, M.G. (2009): Veterinary Pharmacology and Therapeutics. 9th Edition, 1524 p.
Cunningham, F., Elliott, J., Lees. P. (2012): Comparative and Veterinary Pharmacology. 348 p.

Languages necessary to complete the course:

English

Notes:

To be open only if at least 6 students enroll into the course.

Past grade distribution

Total number of evaluated students: 30

A	ABS	B	C	D	E	FX
30,0	0,0	23,33	23,33	13,33	10,0	0,0

Lecturers: doc. PharmDr. Marek Máťuš, PhD., Mgr. Peter Vavrinec, PhD.

Last change: 19.04.2022

Approved by: doc. PharmDr. Marek Máťuš, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KBMBL/14-Mgr-A/20	Xenobiochemistry

Educational activities:
Type of activities: lecture / laboratory practicals
Number of hours:
per week: 2 / 1 **per level/semester:** 28 / 14
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 6.

Educational level: I.II.

Prerequisites:

Course requirements:
The course ends with a written exam. The student will be admitted to the written exam after achieving the following requirements:
1. 100% participation in practical exercises
2. submission of seminar work
Scale of assessment (preliminary/final): Written exam. Evaluation A corresponds to obtaining min. 92% of the maximum number of points, B – 84%, C – 76%, D – 68%, E – 60%, Fx less than 60%.

Learning outcomes:
Students after completion of the xenobiochemistry course should identify and outline the main biotransformation way of the production of the metabolites according to the structure of drugs. Moreover, graduates should gain good knowledge about biotransformation enzymes, their isoforms, properties and interactions on the cellular level as well as specifics of human organism on genotypic and phenotypic levels.

Class syllabus:
- Principle of xenobiotic (drug) metabolism and phases of biotransformation reactions based on chemical structure. - Characterization and#function of biotransformation enzymes, mechanism of the 1st phase reaction on CYP-450 level - CYPs isoenzymes – substrate specificity, tissue and subcellular distribution. - Meaning of the second biotransformation phase, drug transporters. - The impact of enzyme induction or inhibition on pharmacotherapeutic effect, Effect of circadian rhythms on the gene expression of biotransformation enzymes, possible interactions or side effects. - Intra- and interindividual variability in biotransformation enzyme activity. - Epigenetic factors affecting the biotransformation of xenobiotics. - Knowledge of xenobiochemistry allows a modern view on safe and efficient pharmacotherapy thus helping with the development and research of the new potential structures of drugs.

Recommended literature:
A Handbook of Bioanalysis and Drug Metabolism, Ed. Gary Evans, CRC Press, London, NewYork, 2004

Bernard Testa and Stefanie D. Kramer: Chemistry and Biodiversity vol.3, Verlag, 2006
Drug Metabolism Handbook, Ed. Ala F. Nassar, Paul F. Hollenberg, and JoAnn Scatina, John Wiley & Sons, Inc., Hoboken, New Jersey, 2009

Languages necessary to complete the course:
English language.

Notes:

Past grade distribution
Total number of evaluated students: 20

A	ABS	B	C	D	E	FX
10,0	0,0	20,0	30,0	20,0	15,0	5,0

Lecturers: PharmDr. Andrea Balažová, PhD.

Last change: 22.03.2022

Approved by: PharmDr. Andrea Balažová, PhD.