Course descriptions

TABLE OF CONTENTS

COURSE DESCRIPTION

University: Comenius University in 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:** practicals / lecture / seminar **Number of hours:** **per week:** 0 / 0 / 2 **per level/semester:** 0 / 0 / 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 - 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: 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, 2016. Grammar Workbook I	
Languages necessary to complete the course: English language	
Notes: Academic English Language Preparation (1-4) within Master Study Programme is obligatory elective and is carried out in English study programme in four semesters. The contents of these specialized 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 5th 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: 698

A	B	C	D	E	FX
16,62	12,03	17,77	17,91	28,37	7,31

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

Last change: 05.03.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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:** practicals / lecture / seminar **Number of hours:** **per week:** 0 / 0 / 2 **per level/semester:** 0 / 0 / 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 - 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: 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, 2017. Grammar Workbook II	
Languages necessary to complete the course: English language	
Notes: Academic English Language Preparation (1-4) within Master Study Programme is obligatory elective and is carried out in English study programme in four semesters. The contents of these specialized 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 5th 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: 594

A	B	C	D	E	FX
21,04	12,79	17,17	20,71	23,57	4,71

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

Last change: 05.03.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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:** practicals / lecture / seminar **Number of hours:** **per week:** 0 / 0 / 2 **per level/semester:** 0 / 0 / 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 - 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: 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 (1-4) within Master Study Programme is obligatory elective and is carried out in English study programme in four semesters. The contents of these specialized 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 5th 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: 9

A	B	C	D	E	FX
44,44	22,22	22,22	0,0	11,11	0,0

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

Last change: 05.03.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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:** practicals / lecture / seminar **Number of hours:** **per week:** 0 / 0 / 2 **per level/semester:** 0 / 0 / 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 - 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: 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 (1-4) within Master Study Programme is obligatory elective and is carried out in English study programme in four semesters. The contents of these specialized 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 5th semester (including) of the study, i.e. Academic English Language Preparation (4) in the 5th (summer) semester of study.

Past grade distribution
Total number of evaluated students: 0

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

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

Last change: 05.03.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KJ/15-Mgr-A/20	**Course title:** 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:	
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	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: PhDr. Darina Kližanová, PaedDr. Viera Žufková, PhD.	
Last change:	
Approved by:	

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KJ/19-Mgr-A/19	**Course title:** 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: 2

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

Lecturers:	
Last change:	
Approved by:	

COURSE DESCRIPTION

University: Comenius University in 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	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0
Lecturers:					
Last change: 30.07.2020					
Approved by:					

COURSE DESCRIPTION

University: Comenius University in 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	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0
Lecturers:					
Last change: 30.07.2020					
Approved by:					

COURSE DESCRIPTION

University: Comenius University in 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	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0
Lecturers:					
Last change: 30.07.2020					
Approved by:					

COURSE DESCRIPTION

University: Comenius University in 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	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0

Lecturers:

Last change:

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KBMBL/18-Mgr-A/20	**Course title:** 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: 0					
A	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0
Lecturers: Ing. Ľudmila Pašková, PhD.					
Last change: 25.06.2021					
Approved by:					

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KFANF/14-Mgr-A/20	**Course title:** 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: Obligatory elective course. Continuous assessment : students prepare a semester work on a given topic. Final assessment: examination combined with oral defense of the semester work	
Learning outcomes: The course builds on the basic and advanced knowledge gained in the courses Analytical Chemistry II 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 esential 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: • Pretreatment of biological samples o Biological material - characteristics, distribution, correct collection and storage o Matrix effects and how to prevent them o Pretreatment of biological samples - basic specifics and selection of a suitable method	

o Pre-treatment procedures for isolation and preconcentration of analyte from a complex matrix (homogenization, hydrolysis, filtration, centrifugation, extraction - focusing on their use for small amounts of biological material)
o Deproteinization of biological material
Precipitation and salting out
Membrane techniques
Affinity precipitation
o Specifics of sample pretreatment for analysis of proteomic biomarkers and biotherapeutics
• Validation of the analytical method for bioanalyses.
o Validation parameters of the method (specificity, sensitivity, accuracy, precision, repeatability, reproducibility, robustness, LOD, LOQ, LLOQ, working range, linear dynamic range, recovery) with regard to the specifics of validation in biological systems
o Validation protocol
o FDA and EMA guidelines for bioanalysis
• Enzyme and immunochemical analytical methods
o Enzymes as analytical reagents
o Use of enzymatic methods in diagnostics
o Precipitation immunochemical methods
o Non-precipitation immunochemical methods
o Use of immunochemical methods in diagnostics
• Biosensors
o Characteristics of biosensors
o Classification of biosensors (electrochemical, enzyme, optical, immunoaffinity)
o Biosensors for biomedical research and practice
• Spectral methods in bioanalysis
o Use of optical methods (UV-VIS, LIF) in the analysis of substances in biological systems
o Mass spectrometry and its use in the analysis of biological samples (specifics of ionization techniques for the analysis of biological material, tandem mass spectrometry in bioanalysis)
o Spectral methods in proteomics
• Chromatographic separation methods in bioanalysis
o Bioaffinity, immunoaffinity and non-specific affinity chromatography
o Specifics of chromatographic analysis of small molecules in biological samples
o Specifics of chromatographic analysis of biomolecules (proteins, DNA, RNA)
o Multidimensional comprehensive and heart-cut chromatographic procedures for qualitative and quantitative analysis in biological systems
• Electrophoretic separation methods in bioanalysis
o Planar electrophoresis for purification and separation of biomolecules
o Immunochemical methods based on the principle of electrophoresis
o Capillary electromigration methods in the analysis of substances in biological samples
o Multidimensional techniques in bioanalysis
o Microfluidic systems in the analysis of peptides and proteins
• Analytical methods in therapeutic drug monitoring (the study of pharmacokinetics, biodistribution, and elimination of drugs)
• Analytical methods in metabolomics
o analysis of small molecules (metabolites, potential biomarkers) in biological material
• Application of analytical methods in the analysis of peptides and proteins
o Qualitative analysis (analysis of intact proteins, development of proteomic biomarkers, characterization of biotherapeutics)

o Quantitative analysis (proteolysis, monitoring of small peptides and proteins as potential biomarkers in biological material, evaluation of biosimilarity in biotherapeutics)

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

Languages necessary to complete the course:
english

Notes:

Past grade distribution
Total number of evaluated students: 18

A	B	C	D	E	FX
11,11	11,11	72,22	0,0	5,56	0,0

Lecturers: prof. RNDr. Peter Mikuš, PhD.

Last change: 14.07.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KFANF/01-Mgr-A/19	**Course title:** 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: 59

A	B	C	D	E	FX
8,47	3,39	28,81	33,9	10,17	15,25

Lecturers: PharmDr. Katarína Maráková, PhD., RNDr. Svetlana Dokupilová, PhD., PharmDr. Daniel Pecher, PhD., Mgr. Michal Hanko, PhD., prof. RNDr. Peter Mikuš, PhD.

Last change: 14.07.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KFANF/02-Mgr-A/20	**Course title:** 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:

Notes:

Past grade distribution
Total number of evaluated students: 24

A	B	C	D	E	FX
0,0	0,0	16,67	29,17	41,67	12,5

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

Last change: 14.07.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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:
FaF.KFT/08-Mgr-A/00 - Pharmacology and Toxicology (1) and FaF.KORF/12-Mgr-A/00 - Social Pharmacy and Pharmacoeconomics

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	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0

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

Last change: 26.09.2017

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Pharmacy

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

Educational activities:
Type of activities: lecture / laboratory practicals / seminar
Number of hours:
per week: 3 / 4 / 0 **per level/semester:** 42 / 56 / 0
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: 609

A	B	C	D	E	FX
11,66	11,99	19,21	24,47	29,56	3,12

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: 28.06.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KBMBL/09-Mgr-A/20	**Course title:** Biology and Physiology of Immunity
Educational activities: **Type of activities:** lecture / laboratory practicals / seminar **Number of hours:** **per week:** 2 / 1 / 0 **per level/semester:** 28 / 14 / 0 **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 Biology and Physiology of Immunity 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., Javor. J: Basic and clinical immunology for dentistry students, Comenius University, Bratislava, 2017. 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:
English language.

Notes:

Past grade distribution
Total number of evaluated students: 23

A	B	C	D	E	FX
4,35	17,39	4,35	26,09	34,78	13,04

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

Last change: 28.06.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KChTL/01-Mgr-A/00	**Course title:** Bioorganic Chemistry

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: 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 50 % of the points.
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: 21

A	B	C	D	E	FX
66,67	14,29	4,76	9,52	4,76	0,0

Lecturers: doc. PharmDr. Jindra Valentová, PhD.

Last change: 24.06.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Pharmacy

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

Educational activities:
Type of activities: practicals / lecture / seminar
Number of hours:
per week: 0 / 1 / 2 **per level/semester:** 0 / 14 / 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
Lectures: 1. Introduction to Biophysics. 2. Membrane biophysics, Lipid rafts. 3. Membrane channels – general introduction I. 4. Membrane channels – general introduction II. 5. Methods of isolation and detection of voltage dependent ion channels. 6. Biophysics and pharmacology of voltage dependent sodium and calcium channels. 7. Biophysics and pharmacology of voltage dependent potassium channels. Hereditary diseases caused by mutation of voltage dependent ion channels. 8. Channels with input and output rectification. Channels modulated by ATP, G-proteins, cyclic nucleotides and calcium. 9. Pulmonary surfactant and antiviral drugs. 10. Computational drug design. 11. Lipoplexes – nonviral DNA vectors. 12. Anaesthesia and solitons.
Seminars: During the semester students will deliver their own presentations.

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 3

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

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

Last change: 08.07.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KFChL/01-Mgr-A/20	**Course title:** Biostatistics for Pharmacists
Educational activities: **Type of activities:** practicals / lecture / seminar **Number of hours:** **per week:** 0 / 1 / 2 **per level/semester:** 0 / 14 / 28 **Form of the course:** on-site learning	
Number of credits: 3	
Recommended semester: 4.	
Educational level: I.II.	
Prerequisites:	
Course requirements:	
Learning outcomes:	
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:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 4

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

Lecturers: RNDr. Tomáš Fazekaš, PhD.

Last change: 06.07.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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%.

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.

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

Notes:

Past grade distribution
Total number of evaluated students: 0

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

Lecturers: Ing. Dáša Kružlicová, PhD.

Last change: 14.07.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 561

A	B	C	D	E	FX
13,19	13,01	19,43	25,13	28,7	0,53

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

Last change: 02.06.2015

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 556

A	B	C	D	E	FX
20,14	20,32	22,84	18,17	12,95	5,58

Lecturers: prof. RNDr. Magdaléna Kuželová, CSc., PharmDr. Elena Ondriašová, CSc., PharmDr. Eva Kráľová, PhD., PharmDr. Stanislava Kosírová, PhD., Mgr. Peter Vavrinec, PhD., Mgr. Diana Vavrincová, PhD., PharmDr. Tatiana Foltánová, PhD., Mgr. Gabriel Dóka, PhD., PharmDr. Zuzana Kiliánová, PhD.

Last change: 02.06.2015

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KORF/14-Mgr/A/00	**Course title:** 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: 595

A	B	C	D	E	FX
30,76	10,76	23,53	10,76	21,51	2,69

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

Last change: 02.08.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

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

Lecturers: Ing. Michael Kenneth Lawson, PhD., PharmDr. Veronika Šimunková, PhD., Mgr. Jana Selčanová

Last change: 06.07.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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: 4

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

Lecturers: doc. PharmDr. Silvia Bittner Fialová, PhD., prof. Ing. Milan Nagy, CSc.

Last change:

Approved by:

STATE EXAM DESCRIPTION

University: Comenius University in 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

University: Comenius University in 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, co-operation 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:
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/our-work/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/health-knowledge-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: 11

A	B	C	D	E	FX
36,36	18,18	18,18	18,18	9,09	0,0

Lecturers: doc. PharmDr. Daniela Mináriková, PhD.

Last change: 29.06.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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: 43

A	B	C	D	E	FX
97,67	2,33	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

University: Comenius University in 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	B	C	D	E	FX
80,36	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

University: Comenius University in 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:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 56

A	B	C	D	E	FX
94,64	5,36	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: 09.06.2016

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KChTL/03-Mgr-A/16	**Course title:** 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:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 57

A	B	C	D	E	FX
85,96	12,28	0,0	0,0	0,0	1,75

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: 09.06.2016

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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	B	C	D	E	FX
64,44	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. Oľga Lukačovičová, PhD.

Last change: 15.07.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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:

Notes:

Past grade distribution
Total number of evaluated students: 44

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

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

Last change: 15.07.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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	B	C	D	E	FX
76,92	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:

COURSE DESCRIPTION

University: Comenius University in 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	B	C	D	E	FX
69,23	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:

COURSE DESCRIPTION

University: Comenius University in 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: 1

A	B	C	D	E	FX
100,0	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., 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:

COURSE DESCRIPTION

University: Comenius University in 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	B	C	D	E	FX
62,5	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., 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:

COURSE DESCRIPTION

University: Comenius University in 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	B	C	D	E	FX
84,21	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., doc. 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

University: Comenius University in 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	B	C	D	E	FX
35,29	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., doc. 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

University: Comenius University in 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: 129

A	B	C	D	E	FX
70,54	14,73	9,3	3,88	1,55	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., 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

University: Comenius University in 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: 129

A	B	C	D	E	FX
37,21	30,23	19,38	7,75	5,43	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

University: Comenius University in 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: 21

A	B	C	D	E	FX
90,48	0,0	9,52	0,0	0,0	0,0

Lecturers: PharmDr. Terézia Haršányová, 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.

Last change: 09.06.2016

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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: 20

A	B	C	D	E	FX
75,0	5,0	20,0	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.

Last change: 09.06.2016

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KORF/02-Mgr-A/16	**Course title:** 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: 123

A	B	C	D	E	FX
80,49	14,63	3,25	0,81	0,81	0,0

Lecturers: PharmDr. Ľubica Lehocká, PhD., doc. PharmDr. Daniela Mináriková, PhD., JUDr. Mgr. Petra Capandová, PhD., doc. PharmDr. Tomáš Tesař, PhD., MBA, PharmDr. Miroslava Snopková, PhD., PharmDr. Zuzana Koblišková, PhD., PharmDr. Lucia Masaryková, PhD.

Last change: 02.08.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KORF/03-Mgr-A/16	**Course title:** 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: 121

A	B	C	D	E	FX
66,94	18,18	4,96	1,65	8,26	0,0

Lecturers: PharmDr. Ľubica Lehocká, PhD., PharmDr. Miroslava Snopková, PhD., doc. PharmDr. Daniela Mináriková, PhD., JUDr. Mgr. Petra Capandová, PhD., doc. PharmDr. Tomáš Tesař, PhD., MBA, PharmDr. Zuzana Koblišková, PhD., PharmDr. Lucia Masaryková, PhD., PharmDr. Milica Molitorisová, PhD.

Last change: 02.08.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KFCh/01-Mgr-A/00	**Course title:** Drug Analysis
Educational activities: **Type of activities:** lecture / laboratory practicals / seminar **Number of hours:** **per week:** 3 / 3 / 0 **per level/semester:** 42 / 42 / 0 **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/00 Pharmaceutical Chemistry (2); KFANF/01-Mgr-A/00 Analytical Chemistry (1); KFANF/02-Mgr-A/00 Analytical Chemistry (2)	
Course requirements: Attendance at all laboratory practicals and successful completion of two written preliminary tests (each at least 60 % rate). Successful completion of the written final examination test (at least 60 % rate). The content of all lectures and laboratory practicals of the subject Drug Analysis will be included in the final examination test. Evaluation 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 evaluation of drugs, excipients and medicines in accordance with the currently valid European Pharmacopoeia. Theoretical knowledge is applied in laboratory practicals, where students experimentally perform drug quality control. Students work with the European Pharmacopoeia in order to learn how to orient themselves 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 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 medicinal products.
- Validation in pharmaceutical analysis. Good manufacturing practice. Pharmaceutical analysis in registration of medicinal products. Safety data sheet.

List of concerned general chapters in Ph. Eur.:
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. 10th Ed. Strasbourg: Council of Europe, 2019.
- 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: 537

A	B	C	D	E	FX
6,89	14,53	24,39	17,69	32,77	3,72

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

Last change: 15.07.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. PharmDr. Jindra Valentová, PhD.

Last change:

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Pharmacy

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

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: 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	B	C	D	E	FX
0,0	100,0	0,0	0,0	0,0	0,0

Lecturers: doc. RNDr. Ingrid Tumová, CSc.

Last change: 02.06.2015

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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 / seminar
Number of hours:
per week: 2 / 3 / 0 **per level/semester:** 28 / 42 / 0
Form of the course: on-site learning

Number of credits: 6

Recommended semester: 2.

Educational level: I.II.

Prerequisites:

Course requirements:
Personal attendance at all lectures and practicals. to pass 2 scheduled tests, each minimally 60% rate, Evaluation (mark/success rate): A 91-100%, B 81-90%, C71-80%, D 66-70%, E 60-65%, FX # 60%). The final examtest is completed by students in computer or written form and by oral examination

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 recognise the functions of tissues, organs and also the regulatory, coordination and integration relationships between them. At the same time, he 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 etiopathomechanisms, 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 individual systems.
Etiopathomechanisms of cellular damage, regressive, metabolic and progressive changes, inflammation, local disturbances of blood circulation and lymph. Metabolism disorders of proteins, fats, sugars (carbohydrates), water, vitamins and minerals. Developmental changes, structural lesions, disorders and functional changes in the individual organs of separate systems of the organism – nervous, cardiovascular, endocrine, respiratory, digestive, urogenital, sensory and skin. It acquires knowledge of rational nutrition and nutritional disturbances.

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)
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
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 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 materials are available in Moodle's online system

Languages necessary to complete the course:
english

Notes:

Past grade distribution
Total number of evaluated students: 61

A	B	C	D	E	FX
0,0	1,64	8,2	32,79	45,9	11,48

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: 09.09.2020

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KFT/19-Mgr-A/19	**Course title:** 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:	
Learning outcomes:	
Class syllabus:	
Recommended literature:	
Languages necessary to complete the course:	
Notes:	

Past grade distribution
Total number of evaluated students: 68

A	B	C	D	E	FX
10,29	17,65	8,82	20,59	26,47	16,18

Lecturers: Mgr. Ondrej Sprušanský, PhD., Mgr. Lenka Bies Piváčková, PhD.
Last change: 24.08.2019
Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KChTL/06-Mgr-A/19	**Course title:** 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 during the semester to complete all the seminars. During the course each student must write 3 interim tests (max 20 points each). To fulfill the conditions for the examination the student has to reach more than 50% of the total 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 has to write one test from the laboratory techniques (0-40 points) and independently perform one synthetic work (0-10 points). To fulfill the conditions required for the examination the student has to reach more than 50% from the laboratory exercises of the total point score.
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 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 exclusively in written form during the examination period. Participation at the exam is subject to the full completion of the seminars and laboratory exercises programme and to the acquisition of more than 50% of the total point score from the seminars and more than 50% of the total point score from the laboratory exercises. The written examination consists of two parts, A and B. Successful completion of the test is conditional on obtaining more than 50% 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 0,7. The total mark of the exam is created by the value obtained from seminars and laboratory exercises (30%) and the examination test (70%).
Grading scale of the overall result of the exam (after taking into account the outcome of the interim control): A: 87,01 % – 100,00 %; B: 77,01 % – 87,00 %; C: 67,01 % – 77,00 %; D: 57,01 % – 67,00 %; E: 50,01 % – 57,00 %; Fx: ≤ 50,00 %.
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.
Teachers: Ing. L. Habala, PhD.; assoc. prof. Ing. Martin Pisárčik, CSc.; N. Miklášová, PhD.; Mgr. Lucia Lintnerová, PhD.; Mgr. Anna Miňo, PhD.

Past grade distribution
Total number of evaluated students: 56

A	B	C	D	E	FX
12,5	19,64	30,36	21,43	0,0	16,07

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: 24.06.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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: 17

A	B	C	D	E	FX
35,29	52,94	5,88	0,0	0,0	5,88

Lecturers: PharmDr. Milica Molitorisová, PhD.

Last change: 13.07.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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: 179

A	B	C	D	E	FX
41,9	29,05	7,82	8,94	7,26	5,03

Lecturers: PharmDr. Ľubica Lehocká, PhD.

Last change: 02.08.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 1

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

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

Last change: 23.08.2020

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 1

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

Lecturers: JUDr. Mgr. Petra Capandová, PhD.

Last change: 24.08.2019

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0

Lecturers:

Last change: 12.08.2020

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Pharmacy

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

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: 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: 1

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

Lecturers:

Last change:

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KBMBL/07-Mgr-A/20	**Course title:** Hygiene of Pharmaceutical Facilities

Educational activities:
Type of activities: lecture / laboratory practicals / seminar
Number of hours:
per week: 2 / 1 / 0 **per level/semester:** 28 / 14 / 0
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: 22

A	B	C	D	E	FX
90,91	9,09	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:

COURSE DESCRIPTION

University: Comenius University in 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: 0

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

Last change: 12.07.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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:

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	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0

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

Last change: 23.08.2020

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 63

A	B	C	D	E	FX
34,92	17,46	26,98	7,94	4,76	7,94

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

Last change:

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 48

A	B	C	D	E	FX
33,33	29,17	16,67	12,5	2,08	6,25

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

Last change:

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

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

Lecturers: JUDr. Mgr. Petra Capandová, PhD.

Last change:

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KORF/18-Mgr-A/20	**Course title:** Management Basics in Pharmacy
Educational activities: **Type of activities:** practicals / lecture / seminar **Number of hours:** **per week:** 0 / 2 / 1 **per level/semester:** 0 / 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 55%. The assessment: A = 100-95%, B = 94-85%, C = 84-75%, D = 74-65%, E = 64-55%, FX = less than 55%. 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: 23

A	B	C	D	E	FX
26,09	30,43	17,39	8,7	17,39	0,0

Lecturers: doc. PharmDr. Daniela Mináriková, PhD., doc. PharmDr. Tomáš Tesař, PhD., MBA, Mgr. Zuzana Pagáčová

Last change: 02.08.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 14

A	B	C	D	E	FX
21,43	21,43	0,0	14,29	21,43	21,43

Lecturers: doc. Ing. Vladimír Frecer, DrSc.

Last change: 01.07.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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 practicals and lectures
To pass the final examtest by students in written form or by oral examination, minimally 60% rate.

Learning outcomes:
Medical propedeutics for pharmacists is a new subject designed for pharmacy students focused on selected knowledge from medical disciplines. Fundamental characteristic is the collection of information from the patient, this subject informs the student about the process of diagnosis on the basis of physical examinations, with currently used laboratory and instrumentation procedures. It will provide information on the role and importance of search tests and markers of certain diseases and offer new opportunities and directions of pharmaceutical education.

Class syllabus:
Examination of the patient and summary. Laboratory and instrumentation methods. Screening tests. Molecular markers of selected diseases. Vaccination. Epidemiology. Health education and campaigns.
In the practical part, it will allow future pharmacists to test investigative practices (e.g. aspexia, palpation), basic application techniques, the use of various tests designed for indicative diagnosis and prevention of diseases, calculation of incidence, mortality, morbidity, finding variability, clear first aid options, campaign proposal.

Recommended literature:
Lecture and exercise materials will be available in Moodle's online system

Languages necessary to complete the course:
english

Notes:

Past grade distribution
Total number of evaluated students: 0

A	B	C	D	E	FX
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: 09.09.2020
Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Pharmacy

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

Educational activities:
Type of activities: lecture / laboratory practicals / seminar
Number of hours:
per week: 0 / 0 / 2 **per level/semester:** 0 / 0 / 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: 522

A	B	C	D	E	FX
71,65	21,46	3,83	0,57	0,0	2,49

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

Last change: 02.06.2015

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KChTL/13-Mgr-A/20	**Course title:** 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:	
Learning outcomes:	
Class syllabus:	
Recommended literature:	
Languages necessary to complete the course:	
Notes:	

Past grade distribution
Total number of evaluated students: 8

A	B	C	D	E	FX
50,0	37,5	12,5	0,0	0,0	0,0

Lecturers: Ing. Ladislav Habala, PhD., doc. Ing. Martin Pisárčik, CSc.
Last change: 24.06.2021
Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Pharmacy

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

Educational activities:
Type of activities: lecture / laboratory practicals / seminar
Number of hours:
per week: 2 / 1 / 0 **per level/semester:** 28 / 14 / 0
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: 60

A	B	C	D	E	FX
6,67	20,0	10,0	16,67	35,0	11,67

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:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KFCh/08-Mgr-A/20	**Course title:** 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: 10

A	B	C	D	E	FX
0,0	50,0	40,0	10,0	0,0	0,0

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

Last change: 06.07.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KBMBL/22-Mgr-A/20	**Course title:** 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: 24

A	B	C	D	E	FX
4,17	29,17	29,17	29,17	8,33	0,0

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

Last change: 28.06.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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.

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	B	C	D	E	FX
40,0	0,0	0,0	0,0	0,0	60,0

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

Last change: 24.06.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KFANF/08-Mgr-A/20	**Course title:** New Trends in Analytical Chemistry
Educational activities: **Type of activities:** lecture / laboratory practicals / seminar **Number of hours:** **per week:** 1 / 2 / 0 **per level/semester:** 14 / 28 / 0 **Form of the course:** on-site learning	
Number of credits: 3	
Recommended semester: 4.	
Educational level: I.II.	
Prerequisites:	
Course requirements: Obligatory elective course. Continuous assessment : students prepare a semester work on a given topic. Final assessment: examination combined with oral defence of the semester work 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 (validation parameters: specificity, sensitivity, accuracy, precision, repeatability, reproducibility, robustness, LOD, LOQ, LLOQ, working range, linear dynamic range, recovery)
o Validation protocol
o FDA and ICH guidelines Q2 (R1), EMA
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 - electrochemical impedance spectroscopy (EIS), electrochemiluminescence (ECL), two-pulse chronoamperometry (DPCA), reverse pulse voltammetry (RPV), differential multipulse voltammetric techniques (DMPV, DN
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)
• Specifics of analyzes of multicomponent samples by nuclear analytical methods
• Computer molecular modeling in relation to structural analysis and development of an analytical method.
o Study of metal complexes
o Prediction of analyte behaviour (parameters influencing the result during the analysis

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

Notes:

Past grade distribution
Total number of evaluated students: 9

A	B	C	D	E	FX
33,33	0,0	0,0	55,56	11,11	0,0

Lecturers: prof. RNDr. Peter Mikuš, PhD.

Last change: 14.07.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KChTL/04-Mgr-A/00	**Course title:** 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 all seminars tests. To fulfill the conditions for the examination the student is to reach more than 50% 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 50% 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 50% 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: 87,01 % – 100,00 %; B: 77,01 % – 87,00 %; C: 67,01 % – 77,00 %; D: 57,01 % – 67,00 %; E: 50,01 % – 57,00 %; Fx: ≤ 50,00 %.
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: 699

A	B	C	D	E	FX
4,72	11,16	25,75	36,05	13,16	9,16

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

Last change: 24.06.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KChTL/05-Mgr-A/00	**Course title:** Organic Chemistry (2)

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: 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 50% 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 50% 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 50% 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: 87,01 % – 100,00 %; B: 77,01 % – 87,00 %; C: 67,01 % – 77,00 %; D: 57,01 % – 67,00 %; E: 50,01 % – 57,00 %; Fx: ≤ 50,00 %.
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
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 winter semester.
Teachers: Natalia Miklášová, PhD., Assoc. prof. PharmDr. Jindra Valentová, PhD.

Past grade distribution
Total number of evaluated students: 646

A	B	C	D	E	FX
3,1	10,22	26,16	32,2	12,23	16,1

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

Last change: 24.06.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KBMBL/13-Mgr-A/00	Pathobiochemistry

Educational activities:
Type of activities: lecture / laboratory practicals / seminar
Number of hours:
per week: 2 / 1 / 0 **per level/semester:** 28 / 14 / 0
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 5.

Educational level: I.II.

Prerequisites:

Course requirements:
Assesment: examination /written test + oral examination/.
Conditions:
1. Attendance of all practical exercises and seminars.
2. Preparation of protocols from all practical exercises.
3. Summary achievement of at least 60% from tests.
The conditions of the preliminary evaluation will be specified in practical exercises. Information about the conditions for the participation on the first date of the final exam will be specified by separate announcement.

Learning outcomes:
After attending the course student will receive informations about the causes of changes in metabolism of main biochemical substrates of different diseases, molecular basis of inflammatory processes and biochemical and molecular basis of malignat processes. In laboratories the student will acquire the skills for determination of clinical-biochemical parameters, especially enzymes, isoenzymes and markers important for diagnosis of diseases. Attending the course is necessary for understanding of molecular basis of pathobiochemistry processes.

Class syllabus:
- Characterization of disorders of metabolic pathways of main biological substrates as a response to pathological processes.
- Disorders of regulation of glucose and glycogen metabolism, biochemical picture of diabetes mellitus.
- Disorders of lipid metabolism, production of ketone bodlies.
- Lipoproteines: transport form of lipids, regulation of cholesterol metabolism, dyslipoproteinemias, metabolism of sphingolipids and lipidosis.
- Disorders of protein digestion, absorption of aminoacids, proteolytic enzymes, disorders of aminoacids metabolism.
- Disorders of synthesis and degradation of purine and pyrimidine nucleotides, Lesch-Nyhan syndrome.
- Disorders of heme metabolism, porphyrias, hemoglobinopathias, metabolism of bilirubin.
- Enzymes in diagnosis of diseases, molecular diseases and hereditary enzymes deficiency.

- Disorders of water metabolism, acidobasic balance and mineral metabolism.
- Biochemical principles of inflammation, the role of free radicals and mediators in inflammatory process.
- Biochemical and molecular principles of malignant processes and specific markers.

Recommended literature:

Lieberman M., Marks A.D. (2009): Basic Medical Biochemistry, A Clinical Approach. Wolters Kluver/Lippincott Wiliams and Wilkins, Philadelphia, 3th edition.
Gaw A. et al. (2006): Clinical Biochemistry. Churchil Livingstone, 3th eddition, Reprint.
Baynes J., Dominiczak M.H. (2004): Medical Biochemistry. Mosby International, New York.

Languages necessary to complete the course:
English language.

Notes:

Past grade distribution
Total number of evaluated students: 588

A	B	C	D	E	FX
14,8	18,88	27,72	19,05	19,05	0,51

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

Last change: 24.03.2016

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KFT/27-Mgr-A/20	**Course title:** 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	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0

Lecturers:	
Last change:	
Approved by:	

COURSE DESCRIPTION

University: Comenius University in 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 / seminar
Number of hours:
per week: 2 / 3 / 0 **per level/semester:** 28 / 42 / 0
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: 702

A	B	C	D	E	FX
27,07	25,36	22,65	17,24	5,56	2,14

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

Last change: 02.06.2015

Approved by:

STATE EXAM DESCRIPTION

University: Comenius University in 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

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KFCh/05-Mgr-A/00	**Course title:** Pharmaceutical Chemistry (1)
Educational activities: **Type of activities:** lecture / laboratory practicals / seminar **Number of hours:** **per week:** 2 / 0 / 1 **per level/semester:** 28 / 0 / 14 **Form of the course:** on-site learning	
Number of credits: 5	
Recommended semester: 5.	
Educational level: I.II.	
Prerequisites:	
Recommended prerequisites: 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.	
Course requirements: Conditions for successful completion of lectures and seminars from the Pharmaceutical Chemistry (1) course: a) Personal attendance at lectures – students are rigorously required to attend to 100% of the lectures; personal attendance at seminars – students are rigorously required to attend to 100% of the seminars. b) Successful course completion based on successful passing of all semestral preliminary tests. To pass all scheduled semestral preliminary tests (2 tests), 60% or higher rate must be achieved of each (6 points score or higher of each test is essential). c) Successful course completion based on successful passing of a final (written) exam. The final written exam from Pharmaceutical Chemistry (1) course will last 120 minutes. The exam will consist of a set of 25 questions, in which all intended and lectured pharmacotherapeutic groups will be represented. Each of questions will be evaluated by 2 points. The questions will cover i) knowledge from a field of general Pharmaceutical/Medicinal Chemistry, ii) definitions and „chemical“ classifications (divisions) of particular pharmacodynamic classes, appropriate „chemical“ division of particular compounds iii) mechanisms of action, iv) precise chemical structures of chosen compounds, v) structure-activity relationships in detail, including a general chemical structure the compounds + concrete examples of drugs with precisely drawn chemical structure, and (vi) biotransformation pathways related to the compounds. Evaluation of the exam 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). Scale of assessment (preliminary/final): 0 / 100.	
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: a) fundamental concepts about drugs, receptors, and drug–receptor interactions; b) fundamental concepts about drug–receptor interactions applied to human disease.
Pharmaceutical/Medicinal Chemistry is multidisciplinary, drawing on theoretical chemistry, organic chemistry, analytical chemistry, molecular biology, pharmacology, and biochemistry. Despite these complexities, Pharmaceutical/Medicinal Chemistry has a clear „bottom line" – a design and discovery of drug molecules with a comprehensive definition and characterization of their properties, taking into account i) structural integrity of the drug molecules (in pharmaceutical, pharmacokinetic and pharmacodynamic phases), ii) their structural fragments (pharmacophore, toxicophore, metabophore, biophore; interchangeable bioisosteres), iii) structural properties, iv) physicochemical features (solubility, surface activity, lipophilicity, acid-base properties), v) shape properties (geometric, conformational, topological, steric), vi) stereochemical properties (optical isomers, enantiomers, geometric isomers), vii) electronic properties. Following that knowledge, (quantitative) structure–(biological) activity relationships are comprehensively investigated (SAR, QSAR).

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 pharmacotherapeutic 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 pharmacotherapeutic groups); Types of Reactive Functional Groups (irreversible covalent inhibitors, reversible covalent inhibitors); Covalent Inhibitors used in Therapeutic Practice

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 pharmacotherapeutic groups); Advantages of Prodrugs with Optimized Pharmacokinetic Properties. Some Newly Approved Drugs

Stereochemical Aspects of Drug Development; Definition of Some Fundamental Terms (isomers, enantiomers, diastereoisomers, stereogenic centre, etc.); Importance of Stereochemical Properties of Drugs for Their Biological Activity (all issues explained using examples of drugs from various pharmacotherapeutic 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 pharmacotherapeutic 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, mechanisms of action, systematic „chemical“ classification, chemical structures of chosen drugs, structure–activity relationships + general chemical structure + chemical structure of particular compounds, biotransformation)

6th Week: Psychoactive Drugs, part 1. – Psycholeptic Drugs. Neuroleptics; Anxiolytics (Definitions, mechanisms of action, systematic „chemical“ classification, chemical structures of chosen drugs, structure–activity relationships + general chemical structure + chemical structure of particular compounds, biotransformation)

7th Week: Psychoactive Drugs, part 2. – Psychoanaleptic Drugs. Antidepressants; Psychostimulatns; Nootropics (Definitions, mechanisms of action, systematic „chemical“ classification, chemical structures of chosen drugs, structure–activity relationships + general chemical structure + chemical structure of particular compounds, biotransformation)

Psychoactive Drugs, part 3. – Psychodysleptic Drugs. Psychedelics (Definitions, mechanisms of action, systematic „chemical“ classification, chemical structures of chosen drugs, structure–activity relationships + general chemical structure + chemical structure of particular compounds, biotransformation)

8th Week: Antiparkinsonian Drugs; Emetic Agents; Antiemetic Drugs; Antivomitics (Definitions, mechanisms of action, systematic „chemical“ classification, chemical structures of chosen drugs, structure–activity relationships + general chemical structure + chemical structure of particular compounds, biotransformation)

9th Week: Analgesics. Centrally-Acting (Opioid) Analgesics; Analgesics–Antipyretics; Drugs for the Treatment of Migraine (Definitions, mechanisms of action, systematic „chemical“ classification, chemical structures of chosen drugs, structure–activity relationships + general chemical structure + chemical structure of particular compounds, biotransformation)

10th Week: Non-Steroidal Anti-Inflammatory Drugs (Definitions, mechanisms of action, systematic „chemical“ classification, chemical structures of chosen drugs, structure–activity relationships + general chemical structure + chemical structure of particular compounds, biotransformation)

11th Week: Local Anesthetics; Muscle Relaxants (Definitions, mechanisms of action, systematic „chemical“ classification, chemical structures of chosen drugs, structure–activity relationships + general chemical structure + chemical structure of particular compounds, biotransformation)

12th Week: Adrenergics; Antiadrenergics; Antiarrhythmic Agents (Definitions, mechanisms of action, systematic „chemical“ classification, chemical structures of chosen drugs, structure–activity relationships + general chemical structure + chemical structure of particular compounds, biotransformation)

13th Week: Parasympathomimetics; Parasympatholytics; Spasmolytics; Antihistamine Drugs (Definitions, mechanisms of action, systematic „chemical“ classification, chemical structures of chosen drugs, structure–activity relationships + general chemical structure + chemical structure of particular compounds, biotransformation)

Syllabus of Seminars

1st Week and 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 Week and 4th Week: Biotransformation of Drugs. Phases of the Biotransformation; Biotransformation Pathways and Their Significance (all issues explained using examples of drugs from various pharmacotherapeutic groups)
5th Week and 6th Week: Vitamins Soluble in Water or Fat (Definitions, fundamental functions of vitamins, vitamins´ mechanisms of actions, chemical structures of chosen vitamins, structure–activity relationships, biotransformation)
7th Week and 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, hormones´ mechanisms of actions, chemical structures of chosen hormones, structure–activity relationships, biotransformation)
Eicosanoids (Prostacyclins, Thromboxanes, Prostaglandins, Dihydroxyleukotrienes, Peptidoleukotrienes, Lipoxins)
Peroral Antidiabetic Drugs (Definitions, mechanisms of action, systematic „chemical" classification, chemical structures of chosen drugs, structure–activity relationships + general chemical structure + chemical structure of particular compounds, biotransformation)
Pharmacotherapy of Osteoporosis (Definitions; drugs – mechanisms of action, systematic „chemical" classification, chemical structures of chosen drugs, structure–activity relationships + general chemical structure + chemical structure of particular compounds, biotransformation)
9th Week and 10th Week: Hormones, part 2. Steroidal Hormones – Sexual Hormones and Their Regulators; Hormones of Adrenal Cortex (Definitions; drugs – mechanisms of action, systematic „chemical" classification, chemical structures of chosen hormones, structure–activity relationships + general chemical structure + chemical structure of particular compounds, biotransformation)
11th Week and 12th Week: Pharmaceutical Chemistry of Excipients

Recommended literature:

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, USA, 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, USA, 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

Notes:

Past grade distribution Total number of evaluated students: 594					
A	B	C	D	E	FX
18,35	23,74	29,97	16,67	9,26	2,02
Lecturers: doc. PharmDr. Ivan Malík, PhD., PharmDr. Jana Čurillová, PhD.					
Last change: 29.06.2021					
Approved by:					

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KFCh/06-Mgr-A/00	**Course title:** Pharmaceutical 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: 7	
Recommended semester: 6.	
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), KBMBL/03-Mgr-A/00 Biochemistry and KFCH/05-Mgr-A/00 Pharmaceutical Chemistry (1) courses have been very strongly recommended to be successfully passed for the Pharmaceutical Chemistry (2) course completion.	
Course requirements: Conditions for successful completion of lectures and laboratory practices from the Pharmaceutical Chemistry (2) course: a) Attendance at Lectures and Laboratory Practices, Study of Lectures Student is obliged to complete all lectures and all laboratory practices as essential parts of the Pharmaceutical Chemistry (2) course. b) Successful Course Completion Based On Successful Passing of All Semestral Preliminary Evaluations For passing all the scheduled semestral preliminary tests (2 tests), 60% or higher rate of each test must be achieved. c) Successful Course Completion Based On Successful Passing of a Final (Written) Exam The final written exam will consist of a set of 25 questions, in which all intended and lectured pharmacotherapeutic groups will be represented. The questions will cover i) knowledge from a field of General Pharmaceutical/Medicinal Chemistry, ii) definitions and classifications (divisions) of particular pharmacodynamic classes, iii) a mechanism(s) of action, iv) chemical structures of particular compounds,(v) structure–activity relationships in detail, and vi) metabolic pathways related to the compounds. The final written exam from Pharmaceutical Chemistry (2) course will last 120 minutes. An each of the questions will be evaluated by 2 points. The evaluation of the exam 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 (level E), less than 30 points (FX, not passed). Scale of assessment (preliminary/final): 0/100	
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 the basic science of	

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

Class syllabus:

Syllabus of Lectures

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

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

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

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

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

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

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

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

10TH WEEK: Antibacterial Chemotherapeutics/Antibiotics, part 2. Diaminopyrimidines. Quinolones (Gyrase Inhibitors). Nitrofurans (Definitions, mechanisms of action, systematic

„chemical“ division, chemical structures of some compounds, „structure–activity“ relationships, biotransformation pathways)
Discussion connected with the topics lectured previously
11TH WEEK: Antiviral Agents (Definitions, mechanisms of action, systematic „chemical“ division, chemical structures of some compounds, „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, mechanisms of action, systematic „chemical“ division, chemical structures of some compounds, „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. Proteasome Inhibitors (Definitions, mechanisms of action, systematic „chemical“ division, chemical structures of some compounds, „structure–activity“ relationships, biotransformation pathways)
Syllabus of Laboratory Practices
1ST-12ND WEEK – PART A
At the Laboratory Practices, students will calculate theoretical yields of particular reactions steps from syntheses of biologically active compounds – drugs.
Selected drugs to be synthesized: Acetylsalicylic Acid, Paracetamol, Benzocaine, Parabens (Methyl Paraben, Ethyl Paraben, Propyl Paraben, Isopropyl Paraben, etc.), Disulfiram, Caffeine, Lidocaine, Trimecaine, Sulfanilamide, Isoniazid.
Knowledge about the methods, which can be used to purify synthesized compounds (crystallization, adsorption thin-layer chromatography, distillation), methods to determine their melting points; practical using of the knowledge.
Principles of spectral methods (Nuclear Magnetic Resonance, Infrared Spectrometry, Ultraviolet/ Visible Spectrophotometry), and chromatographic methods (Thin-Layer Chromatography, High-Performance Liquid Chromatography); spectral identification of syntesized compounds.
Knowledge about key physicochemical properties and/or physicochemical constants of reaction intermediates and final compounds (drugs), i.e., solubility in various solvents, melting point values, Rf parameters (Thin-Layer Chromatography), surface properties – surface tension γ (Traube stalagmometric method), electronic properties – log ε values (UV/Visible Spectrophotometry), electronic properties – acid-base dissociation constants pKa (titration techniques), 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; estimation of chosen parameters.
1ST-12ND WEEK – PART B
Extended knowledge regarding chosen pharmacodynamic classes (introduced by a teacher; structure of the presentation: division of a pharmacodynamic class from a chemical point of view, chemical structures of particular compounds, very brief but precise mechanisms of action, structure–activity relationships, and/or structure–toxicity relationships and biotransformation pathways of particular compounds):
a) Analgesics–Antipyretics,
b) Disulfiram,
c) Drugs Against Acidosis. Antacids and Anti-Ulcer Drugs,
d) Disinfectants and Antiseptics,
e) Sulfonamides.

Recommended literature:

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.
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.
Patrick, G.L. (2017). An Introduction to Medicinal Chemistry. 6th Ed. Oxford University Press, New York, USA, 832 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

Notes:

Past grade distribution
Total number of evaluated students: 579

A	B	C	D	E	FX
31,26	18,65	23,14	13,3	12,44	1,21

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

Last change: 01.07.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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: 23

A	B	C	D	E	FX
69,57	17,39	8,7	4,35	0,0	0,0

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

Last change: 02.08.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFChL/17-Mgr-A/19	Pharmaceutical Physics (1)

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: 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: 63

A	B	C	D	E	FX
3,17	17,46	20,63	22,22	17,46	19,05

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

Last change: 24.08.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFChL/19-Mgr-A/19	Pharmaceutical Physics (2)

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: 2.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
The subject Physical chemistry is aimed on the following fields: Structure of matter and grounds of spectral methods (UV-VIS, fluorescence, IR, Raman, NMR spectroscopy). Chemical thermodynamics – fundamental laws, phase equilibrium, solutions and liquid mixtures, condensed systems. Electrochemistry – solvents and solutions of electrolytes, strong and weak electrolytes, acid- base equilibrium, ampholytes, potentiometry. Chemical kinetics – reaction rates and orders, diffusion and kinetics of heterogeneous processes, rate of dissolution. Colloids and surfaces – surface phenomena, adsorption, membranes and membrane phenomena.
The lectures from physical chemistry are supplemented by practical exercises, where the students verify their theoretical knowledge in practice.

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:

Notes:

Past grade distribution
Total number of evaluated students: 64

A	B	C	D	E	FX
1,56	3,13	15,63	15,63	35,94	28,13

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

Last change: 08.07.2021
Approved by:

COURSE DESCRIPTION

University: Comenius University in 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: 769

A	B	C	D	E	FX
29,91	8,97	18,6	12,35	27,7	2,47

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

Last change: 02.08.2021

Approved by:

STATE EXAM DESCRIPTION

University: Comenius University in 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

University: Comenius University in 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: 574

A	B	C	D	E	FX
9,58	15,33	19,34	24,74	29,97	1,05

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

Last change: 06.07.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KGF/06-Mgr-A/00	**Course title:** 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: 569

A	B	C	D	E	FX
11,25	20,04	22,67	20,04	21,62	4,39

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.

Last change: 06.07.2021

Approved by:

STATE EXAM DESCRIPTION

University: Comenius University in 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

University: Comenius University in 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 / seminar
Number of hours:
per week: 2 / 3 / 0 **per level/semester:** 28 / 42 / 0
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: 587

A	B	C	D	E	FX
16,18	15,67	26,24	21,12	19,42	1,36

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:

COURSE DESCRIPTION

University: Comenius University in 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 / 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: 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: 569

A	B	C	D	E	FX
19,86	23,2	30,4	14,24	5,8	6,5

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:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KFChL/16-Mgr-A/20	**Course title:** 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:

Course requirements:
During the examination a written test worth 50 points will be given, followed by an oral examination. To obtain the grade A students need to collect a total of at least 40 test points, to obtain grade B at least 35 points, to obtain grade C at least 30 points, to obtain grade D at least 25 points. To obtain grade E a total of at least 20 points is needed.

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: 7

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

Lecturers: doc. Ing. Vladimír Frecer, DrSc.

Last change: 01.07.2021

Approved by:

STATE EXAM DESCRIPTION

University: Comenius University in 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

University: Comenius University in 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 / seminar
Number of hours:
per week: 2 / 3 / 0 **per level/semester:** 28 / 42 / 0
Form of the course: on-site learning

Number of credits: 6

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: 19

A	B	C	D	E	FX
0,0	42,11	31,58	10,53	10,53	5,26

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

Last change: 11.05.2020

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/08-Mgr-A/00	Pharmacology and Toxicology (1)

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

Number of credits: 8

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: 582

A	B	C	D	E	FX
3,95	15,98	35,57	25,95	15,98	2,58

Lecturers: Mgr. Peter Vavrinec, PhD., Mgr. Diana Vavrincová, PhD., doc. PharmDr. Peter Křenek, PhD., doc. PharmDr. Marek Máťuš, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, PharmDr. Zuzana Kiliánová, PhD., doc. PharmDr. Anna Paul Hrabovská, PhD.

Last change: 02.06.2015

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 571

A	B	C	D	E	FX
14,36	19,61	23,47	21,19	18,21	3,15

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.

Last change: 02.06.2015

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KFT/29-Mgr-A/20	**Course title:** 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	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0

Lecturers:	
Last change:	
Approved by:	

COURSE DESCRIPTION

University: Comenius University in 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: 61

A	B	C	D	E	FX
60,66	14,75	6,56	0,0	1,64	16,39

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

Last change: 23.06.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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: 46

A	B	C	D	E	FX
73,91	13,04	0,0	0,0	0,0	13,04

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

Last change: 23.06.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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 / 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: 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: 21

A	B	C	D	E	FX
57,14	0,0	0,0	0,0	4,76	38,1

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

Last change: 23.06.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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 / 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: 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: 18

A	B	C	D	E	FX
50,0	5,56	5,56	0,0	0,0	38,89

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

Last change: 24.06.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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	B	C	D	E	FX
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: 24.06.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KORF/08-Mgr-A/00	**Course title:** 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: Assessment of students is done electronically during practice and in written form in the end of practice (written assessment is made by pharmacy where the student took practice). The final evaluation is arithmetical average of both, the electronic and written assessment. Grading A: 100-93 %, B: 92-85 %, C: 84-77 %, D: 76-69 %, E: 68-60 %, Fx: 59 % and less.	
Learning outcomes: Getting acquainted with the real pharmacy environment, basic knowledge of the pharmacy's assortment of drugs, mastering of basic pharmaceutical activities under supervision of assigned professional in the pharmacy.	
Class syllabus: Characteristics of medical prescription, pharmaceutical dispensing, assortment of drugs in the pharmacy, handling pharmaceutical software, individually and mass prepared medicines, dispensing care, informing, consulting and counseling activities in providing of pharmaceutical care,selftreatment (drugs dispensed without medical prescription, nutritional additives, additional assortment), medical devices, basic economic knowledge, ethical aspects of the pharmacist's profession, ethical codex of a healthcare professional.	
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:
e-Protocol of the practice is a formal evidence of undertaking of the mandatory extent of professional pharmaceutical practice according to Council Directive 85/432/EHS, 85/433/ EHS, 2001/19/ES – requirements for study of pharmacy and for recognition of professional qualifications.
One week of practice is a time span characterized by five calendar days with 8 working hours per day.
Time period for the practice is set for a period of 25.04.2016 – 20.05.2016.

Past grade distribution
Total number of evaluated students: 504

A	B	C	D	E	FX
94,05	4,96	0,6	0,0	0,0	0,4

Lecturers: PharmDr. Ľubica Lehocká, PhD., PharmDr. Miroslava Snopková, PhD.

Last change: 30.05.2016

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KORF/09-Mgr-A/15	**Course title:** 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: Assessment of students is done electronically during practice and in written form in the end of practice (written assessment is made by pharmacy where the student took practice). The final evaluation is arithmetical average of both, the electronic and written assessment. Grading A: 100-93 %, B: 92-85 %, C: 84-77 %, D: 76-69 %, E: 68-60 %, Fx: 59 % and less.	
Learning outcomes: Getting acquainted with the real pharmacy environment, basic knowledge of the pharmacy's assortment of drugs, mastering of basic pharmaceutical activities under supervision of assigned professional in the pharmacy.	
Class syllabus: Characteristics of medical prescription, pharmaceutical dispensing, assortment of drugs in the pharmacy, handling pharmaceutical software, individually and mass prepared medicines, dispensing care, informing, consulting and counseling activities in providing of pharmaceutical care,self-medication(drugs dispensed without medical prescription, nutritional additives, additional assortment), medical devices, basic economic knowledge, ethical aspects of the pharmacist's profession, ethical codex of a healthcare professional.	
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:

Notes:
e- Protocol of the practice is a formal evidence of undertaking of the mandatory extent of professional pharmaceutical practice according to Council Directive 85/432/EHS, 85/433/ EHS, 2001/19/ES – requirements for study of pharmacy and for recognition of professional qualifications.
One week of practice is a time span characterized by five working days with 8 working hours per day. To fulfill the requirements of Council Directive 85/432/EHS, 85/433/EHS,students must complete 120 days of practice with 8 working hours per day.
Time period for the practice is set for a period of 01.08.2015 – 31.12.2015.

Past grade distribution
Total number of evaluated students: 493

A	B	C	D	E	FX
32,05	39,55	26,17	2,03	0,2	0,0

Lecturers: PharmDr. Ľubica Lehocká, PhD., PharmDr. Miroslava Snopková, PhD.

Last change: 30.05.2016

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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 / seminar
Number of hours:
per week: 1 / 1 / 0 **per level/semester:** 14 / 14 / 0
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I.II.

Prerequisites:

Course requirements:
interim evaluation: project elaboration
final evaluation: project defense and final test
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
The course shall notify the students with the basic principles used in the methods of computer aided molecular design (CAMD).

Class syllabus:
Tuition consists of several blocks of lectures and individual work with the computer. 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 programmes 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 they work on the tasks in the field of medicines, such as finding the optimal conformation of the molecule, electron division, the relationship between the structure and properties of a molecule. They learn how to browse the PDB database. During the tuition they shall work out the project.

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.
Teachers: Mgr. Lucia Lintnerová, PhD; Assoc. prof. Ing. Martin Pisárčik, CSc.

Past grade distribution
Total number of evaluated students: 30

A	B	C	D	E	FX
20,0	23,33	33,33	6,67	10,0	6,67

Lecturers: Mgr. Lucia Lintnerová, PhD., doc. Ing. Martin Pisárčik, CSc., Mgr. Peter Herich, PhD.
Last change: 24.06.2021
Approved by:

COURSE DESCRIPTION

University: Comenius University in 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:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 15

A	B	C	D	E	FX
20,0	33,33	26,67	0,0	0,0	20,0

Lecturers: RNDr. Alexander Búcsi, PhD., doc. RNDr. Jana Gallová, CSc.

Last change: 22.07.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 8

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

Lecturers: doc. Ing. Vladimír Frecer, DrSc.

Last change: 14.07.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFANF/09-Mgr-A/00	Radiopharmaceuticals

Educational activities:
Type of activities: lecture / laboratory practicals / seminar
Number of hours:
per week: 2 / 1 / 0 **per level/semester:** 28 / 14 / 0
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 5.

Educational level: I.II.

Prerequisites:

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

Learning outcomes:

Class syllabus:
• 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
• Radiopharmaceutical Preparation and European Pharmacopoeia
• Radiopharmaceuticals in the clinical practice (diagnosis and therapy)

Recommended literature:
SAMPSON, C.B. Textbook of Radiopharmacy. Yverdon: Gordon and Breach Science Publishers, 1994.
SAHA, G.P. Fundamentals of Nuclear Pharmacy. New York: Springer, 2010, p.409.
Good Radiopharmacy Practice, EANM, the latest version.
European Pharmacopoeia. the latest edition. Strasbourg : Council of Europe.
SÝKOROVÁ, M., HAVRÁNEK, E. Rádiofarmaká laboratórne cvičenia pre farmaceutov. Bratislava: Univerzita Komenského, 2013

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 560

A	B	C	D	E	FX
16,07	27,14	20,36	17,32	17,5	1,61

Lecturers: PharmDr. Mária Bodnár Mikulová, PhD., RNDr. Jozef Motyčka

Last change: 13.08.2020
Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KFANF/13-Mgr-A/20	**Course title:** 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: The laboratory practicals: - to complete all assigned tasks and hand in all reports - to pass one continuous assessment (control test) for at least 60% The exam – written form (at least 60%)	
Learning outcomes: The student acquires a basic theoretical knowledge about the rules of radioactivity, specifics of radioactive sources, radiation protection or diagnostic / therapeutic radiopharmaceuticals and procedures as well as practical skills in a preparation and analytical characterization of radiopharmaceuticals with respect to radiation protection. The acquired skills can be utilized in the field of a preparation and quality control of radiopharmaceuticals as the specific category of drugs; the co-operation with physicians in the departments of nuclear medicine or in the development of new radiolabeled compounds. The content of the course is in compliance with the requirements in Pharmacopoeia (which includes several monographs on Radiopharmaceutical Preparations), as well as with the current laws about radiation protection. The completion of this course contributes to comprehensive qualifications of a pharmacist.	
Class syllabus: • 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 • Radiopharmaceutical preparation and European Pharmacopoeia • Radiopharmaceuticals in the clinical practice (diagnosis and therapy)	
Recommended literature: SAMPSON, C.B. Textbook of Radiopharmacy. Yverdon: Gordon and Breach Science Publishers, 1994. SAHA, G.P. Fundamentals of Nuclear Pharmacy. New York: Springer, 2010, p.409.	

Good Radiopharmacy Practice, EANM, the latest version.
European Pharmacopoeia. the latest edition. Strasbourg : Council of Europe.

Languages necessary to complete the course:
english

Notes:

Past grade distribution
Total number of evaluated students: 0

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

Lecturers: PharmDr. Mária Bodnár Mikulová, PhD., RNDr. Jozef Motyčka

Last change: 30.06.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF/VP-1-A/20	**Course title:** 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: 0

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

Lecturers:	
Last change:	
Approved by:	

COURSE DESCRIPTION

University: Comenius University in 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: 0

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

Lecturers: doc. Ing. Vladimír Frecer, DrSc.

Last change:

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KORF/10-Mgr-A/15	**Course title:** 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: 512

A	B	C	D	E	FX
14,65	23,24	21,88	19,34	20,51	0,39

Lecturers: PharmDr. Miroslava Snopková, PhD., PharmDr. Ľubica Lehocká, PhD., PharmDr. Lucia Masaryková, PhD.

Last change: 02.08.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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: 5., 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	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. PharmDr. Szilvia Czigle, PhD., Mgr. Jaroslav Tóth, PhD.

Last change:

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KChTL/07-Mgr-A/19	**Course title:** 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 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: 15

A	B	C	D	E	FX
20,0	53,33	26,67	0,0	0,0	0,0

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

Last change: 24.06.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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: 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: 2.

Educational level: I.II.

Prerequisites:

Course requirements:
final evaluation: examination in form of the summary test
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The course provides a comprehensive preparation in the field of stereochemistry of organic and pharmaceutically significant compounds in pharmacy.

Class syllabus:
Stereochemistry as a phenomenon. Nomenclature and notation of stereoisomers. Conformation of acyclic and cyclic organic molecules. Chirality of molecules with asymmetric substituted tetraedric centers. Optical activity. Enantiomers, racemates. Diastereoisomers. Meso compounds. Chirality of the systems not containing stereogenic carbon atom. Axial chirality of allen and biaryl types. Helical structures. Chirality of pharmaceuticals and biological activity. Stereoisomerism on bonds with hampered rotation. Stereoisomerism on a double bond. E/Z isomerism and nomenclature of the respective type of isomers. Cis/trans isomerism of cyclic systems. Stereochemistry of some polymers. Carbohydrates, proteins and nucleic acids. Synthetic polymers. Stereochemistry and organic synthesis. Chiral pool. Techniques and procedures used in separation of stereoisomers. Asymmetric organic synthesis – chiral natural compounds, chiral agents and catalysts.

Recommended literature:
1. Devínsky F. et al. Organic Chemistry for Pharmacy Students. Comenius University Press, Bratislava, 2010
2. Čižmáriková R.: Laboratory manual for practice in organic chemistry. Bratislava, Comenius University, 2012.
3. Buxton, S.R., Roberts, S. M.: Guide to Organic Stereochemistry. London : Longman, 1996

Languages necessary to complete the course:
English language

Notes:
The course is held only in winter semester.
Teachers: Natalia Miklášová, PhD.

Past grade distribution Total number of evaluated students: 34					
A	B	C	D	E	FX
8,82	23,53	20,59	26,47	20,59	0,0
Lecturers: RNDr. Roman Mikláš, PhD., Mgr. Natalia Lucia Miklášová, PhD.					
Last change: 24.06.2021					
Approved by:					

COURSE DESCRIPTION

University: Comenius University in 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:** practicals / lecture / seminar **Number of hours:** **per week:** 0 / 0 / 2 **per level/semester:** 0 / 0 / 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 - 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: 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 obligatory elective and 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 Foreign Students (1) in the 1st (winter) semester of study.	

Past grade distribution Total number of evaluated students: 764					
A	B	C	D	E	FX
32,59	16,75	16,62	15,45	15,45	3,14
Lecturers: PhDr. Darina Kližanová					
Last change: 05.03.2021					
Approved by:					

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KJ/06-Mgr-A/00	**Course title:** Slovak Language for International Students (2)
Educational activities: **Type of activities:** practicals / lecture / seminar **Number of hours:** **per week:** 0 / 0 / 2 **per level/semester:** 0 / 0 / 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 - 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: 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 obligatory elective and 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 Foreign Students (2) in the 2nd (summer) semester of study.	

Past grade distribution Total number of evaluated students: 692					
A	B	C	D	E	FX
20,95	16,18	19,51	15,75	20,09	7,51
Lecturers: PhDr. Darina Kližanová					
Last change: 05.03.2021					
Approved by:					

COURSE DESCRIPTION

University: Comenius University in 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:** practicals / lecture / seminar **Number of hours:** **per week:** 0 / 0 / 2 **per level/semester:** 0 / 0 / 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 - 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: 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 obligatory elective and 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 Foreign Students (3) in the 3rd (winter) semester of study.	

Past grade distribution Total number of evaluated students: 18					
A	B	C	D	E	FX
83,33	5,56	5,56	0,0	0,0	5,56
Lecturers: PhDr. Darina Kližanová					
Last change: 05.03.2021					
Approved by:					

COURSE DESCRIPTION

University: Comenius University in 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: practicals / lecture / seminar
Number of hours:
per week: 0 / 0 / 2 **per level/semester:** 0 / 0 / 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
- 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:
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 obligatory elective and 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 Foreign Students (4) in the 4th (winter) semester of study.

Past grade distribution
Total number of evaluated students: 13

A	B	C	D	E	FX
30,77	38,46	7,69	0,0	0,0	23,08

Lecturers: PhDr. Darina Kližanová
Last change: 05.03.2021
Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KORF/12-Mgr-A/00	**Course title:** 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., 6.	
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: 606

A	B	C	D	E	FX
31,19	13,2	17,99	11,55	24,75	1,32

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

Last change: 02.08.2021

Approved by:

STATE EXAM DESCRIPTION

University: Comenius University in 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

University: Comenius University in 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:

Course requirements:
Personal attendance at all lectures and practicals. to pass 2 scheduled tests, each minimally 60% rate, (Evaluation (mark/success rate): A 91-100%, B 81-90%, C71-80%, D 66-70%, E 60-65%, FX # 60%). The final examtest is completed by students in computer or written form and by oral examination
Scale of assessment (preliminary/final): 30/70

Learning outcomes:
In the newly built 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. He will extended and completed the spectrum of diseases and syndromes from selected systems, in more detail 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 (exem, 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, riketsia, chlamydia, parasites, fungi, protozoa. Children's infectious diseases.

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)
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
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 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 materials are available in Moodle's online system

Languages necessary to complete the course:
english

Notes:

Past grade distribution
Total number of evaluated students: 22

A	B	C	D	E	FX
0,0	0,0	13,64	13,64	45,45	27,27

Lecturers: doc. MUDr. Tatiana Stankovičová, CSc., prof. PharmDr. Ján Klimas, PhD., MPH, PharmDr. Tatiana Foltánová, PhD., PharmDr. Zuzana Kiliánová, PhD., PharmDr. Stanislava Kosírová, PhD., PharmDr. Eva Kráľová, PhD., PharmDr. Tomáš Rajtík, PhD., doc. PharmDr. Anna Paul Hrabovská, PhD., PharmDr. Attila Kulcsár, PhD.

Last change: 09.09.2020

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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: 0

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

Lecturers: PharmDr. Vladimír Forman, PhD.

Last change:

Approved by:

COURSE DESCRIPTION

University: Comenius University in 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	B	C	D	E	FX	N/a
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

University: Comenius University in Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KFANF/12-Mgr-A/20	**Course title:** 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 the completion of lectures and seminars, the students will prepare a validation report based on the received model data. The students will receive assessment based on the quality of the prepared validation reports. The minimal treshold for completing the course is 60%.	
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 their combinations.	

Languages necessary to complete the course:
english

Notes:

Past grade distribution
Total number of evaluated students: 7

A	B	C	D	E	FX
28,57	14,29	0,0	14,29	14,29	28,57

Lecturers: PharmDr. Daniel Pecher, PhD.

Last change: 14.07.2021

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/17-Mgr-A/00	Veterinary Pharmacology

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: 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: 26

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

Lecturers: doc. PharmDr. Marek Máťuš, PhD., Mgr. Peter Vavrinec, PhD.

Last change: 02.06.2015

Approved by:

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KBMBL/14-Mgr-A/20	Xenobiochemistry

Educational activities:
Type of activities: lecture / laboratory practicals / seminar
Number of hours:
per week: 2 / 1 / 0 **per level/semester:** 28 / 14 / 0
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 6.

Educational level: I.II.

Prerequisites:

Course requirements:
Attendance of practical exercises and elaboration of seminar work. The course is completed by written examination.

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, condition of the CYPs isoenzymes creation – substrate, tissue, species, and subcellular specificity. Meaning of the second biotransformation phase – conjugation reactions with endogenic substrates. The potential impact of enzyme induction or inhibition on pharmacotherapeutic effect, possible interactions or side drug effect. Effect of circadian rhythms on biotransformation processes. Knowledge of xenobiochemistry allows a#modern view on save and efficient pharmacotherapy thus helps 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: 5

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

Lecturers: PharmDr. Andrea Balažová, PhD.

Last change: 28.06.2021

Approved by: