Course descriptions

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COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KJ/01-Mgr/00	Academic English Language Preparation (1)

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

Number of credits: 2

Recommended semester: 2.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
intermediate level of English

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

Learning outcomes:
After completing the seminars a student is able to understand professional texts, reproduce their content orally and in writing, using English professional terminology from the field of human body and the profession of a pharmacist. Thanks to professional texts a student can use English professional terminology in both professional and non-professional environments.

Class syllabus:
The lessons concentrate on the following topics: the human body, the body systems and their functions, pharmaceutical care, the role of a pharmacist, services available in a pharmacy, laboratory equipment.

Recommended literature:
Hollá, O., Kližanová, D., Žufková,V.: English for Pharmacists I. Bratislava: Vydavateľstvo UK, 2020.
Grammar Workbook I

Languages necessary to complete the course:
English language

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

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

Past grade distribution
Total number of evaluated students: 2978

A	ABS	B	C	D	E	FX
48,12	0,0	21,09	15,45	7,56	6,75	1,04

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

Last change: 29.03.2022

Approved by: PhDr. Darina Kližanová

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KJ/02-Mgr/00	**Course title:** Academic English Language Preparation (2)
Educational activities: **Type of activities:** seminar **Number of hours:** **per week:** 2 **per level/semester:** 28 **Form of the course:** on-site learning	
Number of credits: 2	
Recommended semester: 3.	
Educational level: I.II.	
Prerequisites:	
Recommended prerequisites: intermediate level of English	
Course requirements: - active presence at seminars - final test with evaluation scale – A (100 – 91 %), B (90 – 81 %), C (80 – 73 %), D (72 – 66 %), E (65 – 60 %), FX (59 – 0 %) Scale of assessment (preliminary/final): 100 %	
Learning outcomes: After completing the seminars a student is able to understand professional texts, reproduce their content orally and in writing, using English professional terminology from the field of factors influencing health condition. Thanks to professional texts a student can use English professional terminology in both professional and non-professional environments.	
Class syllabus: The lessons concentrate on the following topics: factors influencing our health, pollution of environment, drug abuse and drug addiction, health care, disease transmission.	
Recommended literature: Hollá, O., Kližanová, D., Žufková,V.: English for Pharmacists II. Bratislava: Vydavateľstvo UK, 2020. Grammar Workbook II	
Languages necessary to complete the course: English language	
Notes: Academic English Language Preparation (1-5) within Master Study Programme is carried out in Slovak study programme in five semesters. The contents of these specialised professional courses closely follow the contents of other professional courses taught in the relevant semesters. It is therefore highly recommended to take the courses gradually from the 2nd to the 6th semester	

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

Past grade distribution
Total number of evaluated students: 2375

A	ABS	B	C	D	E	FX
44,84	0,0	21,89	16,67	9,98	6,36	0,25

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

Last change: 25.03.2022

Approved by: PhDr. Darina Kližanová

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KJ/03-Mgr/19	**Course title:** Academic English Language Preparation (3)
Educational activities: **Type of activities:** seminar **Number of hours:** **per week:** 2 **per level/semester:** 28 **Form of the course:** on-site learning	
Number of credits: 1	
Recommended semester: 4.	
Educational level: I.II.	
Prerequisites:	
Recommended prerequisites: intermediate level of English	
Course requirements: - active presence at seminars - final test with evaluation scale – A (100 – 91 %), B (90 – 81 %), C (80 – 73 %), D (72 – 66 %), E (65 – 60 %), FX (59 – 0 %) Scale of assessment (preliminary/final): 100 %	
Learning outcomes: After completing the seminars a student is able to understand professional texts, reproduce their content orally and in writing, using English professional terminology from the field of basic chemical terminology and disease prevention. Thanks to professional texts a student can use English professional terminology in both professional and non-professional environments.	
Class syllabus: The lessons concentrate on the following topics: disease prevention, healthy way of life, balanced diet, vitamins, minerals, cosmetics, first aid, treatment in various situations and emergencies.	
Recommended literature: Hollá, O., Jurišová, E., Kližanová, D., Žufková,V.: English for Pharmacists III. Bratislava: Vydavateľstvo UK, 2019. Grammar Workbook III	
Languages necessary to complete the course: English language	
Notes: Academic English Language Preparation (1-5) within Master Study Programme is carried out in Slovak study programme in five semesters. The contents of these specialised professional courses closely follow the contents of other professional courses taught in the relevant semesters. It is therefore highly recommended to take the courses gradually from the 2nd to the 6th semester	

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

Past grade distribution
Total number of evaluated students: 73

A	ABS	B	C	D	E	FX
35,62	0,0	35,62	15,07	8,22	0,0	5,48

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

Last change: 25.03.2022

Approved by: PhDr. Darina Kližanová

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KJ/04-Mgr/19	**Course title:** Academic English Language Preparation (4)
Educational activities: **Type of activities:** seminar **Number of hours:** **per week:** 2 **per level/semester:** 28 **Form of the course:** on-site learning	
Number of credits: 1	
Recommended semester: 5.	
Educational level: I.II.	
Prerequisites:	
Recommended prerequisites: intermediate level of English	
Course requirements: - active presence at seminars - final test with evaluation scale – A (100 – 91 %), B (90 – 81 %), C (80 – 73 %), D (72 – 66 %), E (65 – 60 %), FX (59 – 0 %) Scale of assessment (preliminary/final): 100 %	
Learning outcomes: After completing the seminars a student is able to understand professional texts, reproduce their content orally and in writing, using English professional terminology from the field of pharmacology. Thanks to professional texts a student can use English professional terminology in both professional and non-professional environments.	
Class syllabus: The lessons concentrate on the following topics: common disorders, home medicine cabinet, drug classification, frequently prescribed drugs, their sources, composition and effects, alternative medicine, healing herbs - their structure and functions.	
Recommended literature: Hollá, O., Kližanová, D., Žufková,V.: English for Pharmacists IV. Bratislava: Vydavateľstvo UK, 2020. Grammar Workbook IV	
Languages necessary to complete the course: English language	
Notes: Academic English Language Preparation (1-5) within Master Study Programme is carried out in Slovak study programme in five semesters. The contents of these specialised professional courses closely follow the contents of other professional courses taught in the relevant semesters. It is therefore highly recommended to take the courses gradually from the 2nd to the 6th semester	

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

Past grade distribution
Total number of evaluated students: 68

A	ABS	B	C	D	E	FX
73,53	0,0	14,71	11,76	0,0	0,0	0,0

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

Last change: 25.03.2022

Approved by: PhDr. Darina Kližanová

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KJ/15-Mgr/19	Academic English Language Preparation (5)

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

Number of credits: 1

Recommended semester: 6.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
intermediate level of English

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

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

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

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

Languages necessary to complete the course:
English language

Notes:

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

Past grade distribution
Total number of evaluated students: 53

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

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

Last change: 25.03.2022

Approved by: PaedDr. Viera Žufková, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KJ/11-Mgr/19	Academic German Language Preparation (1)

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

Number of credits: 1

Recommended semester: 2.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 20

A	ABS	B	C	D	E	FX
75,0	0,0	10,0	0,0	0,0	0,0	15,0

Lecturers: Mgr. Stella Rizmanová

Last change: 25.03.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KJ/12-Mgr/19	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:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 6

A	ABS	B	C	D	E	FX
50,0	0,0	33,33	0,0	16,67	0,0	0,0

Lecturers: Mgr. Stella Rizmanová

Last change: 25.03.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KJ/13-Mgr/19	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:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 4

A	ABS	B	C	D	E	FX
75,0	0,0	0,0	0,0	0,0	0,0	25,0

Lecturers: Mgr. Stella Rizmanová

Last change: 25.03.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KJ/14-Mgr/19	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:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 4

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

Lecturers: Mgr. Stella Rizmanová

Last change: 25.03.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KJ/16-Mgr/19	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: 8.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 3

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

Lecturers: PaedDr. Viera Žufková, PhD., Mgr. Stella Rizmanová

Last change: 25.03.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 3

Recommended semester: 7.

Educational level: I.II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:
English language

Notes:
Maximum number of students per course: 1 group

Past grade distribution
Total number of evaluated students: 29

A	ABS	B	C	D	E	FX
72,41	0,0	6,9	10,34	6,9	0,0	3,45

Lecturers: Ing. Ľudmila Pašková, PhD.

Last change: 23.11.2021

Approved by: Ing. Ľudmila Pašková, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 3

Recommended semester: 5.

Educational level: I.II.

Prerequisites:

Course requirements:
Continuous assessment : students prepare a semester work on a given topic.
Final assessment: examination combined with oral defence of the semester work. A minimum of 60% is required to pass the exam.
Scale of assessment (preliminary/final): 40/60

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 a new analytical method with respect to the analysis of small molecules and biomolecules (natural, chemical, and biological drugs, drug metabolites, biomarkers) in complex biological matrices. Analytical evaluation of the biological system in this regard includes (i) the study of pharmacokinetics, biodistribution, and elimination of the drug, (ii) metabolomics (analysis of selected targeted metabolites and metabolic profiles, non-targeted metabolomics analysis), (iii) proteomics (qualitative and quantitative analysis of short peptides and proteins as potential biomarkers, analysis of large proteins used in pharmaceutical practice in the form of biotherapeutics (monoclonal antibodies)). Such analytical evaluation is essential for studying the mechanisms of drug action in the body, diagnosis of diseases (via known and novel biomarkers), and optimizing a therapy (e.g., by correlating active drug metabolite levels with the patient's condition, i.e., structure-effect relationship). Students also learn 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:
o 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
o Validation of the analytical method for bioanalyses.
o Validation parameters of the method with regard to the specifics of validation in biological systems
o Validation protocol for bioanalysis
o Guidelines for bioanalysis
o 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
o Biosensors
o Characteristics of biosensors
o Classification of biosensors (electrochemical, enzyme, optical, immunoaffinity)
o Biosensors for biomedical research and practice
o 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
o 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
o Analytical methods in metabolomics
o analysis of small molecules (metabolites, potential biomarkers) in biological material
o 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)
Quantitative analysis (proteolysis, monitoring of small peptides and proteins as potential biomarkers in biological material, evaluation of biosimilarity in biotherapeutics)

Recommended literature:

• Maráková, K. Analýza látok v biologických systémoch vybrané prednášky a úlohy na cvičenia, Bratislava: Univerzita Komenského, 2021. 160s. (available in the central library's online catalog)
• Mikuš, P., Piešťanský, J., Dokupilová, S.: Kvapalinová chromatografia, hmotnostná spektrometria a ich kombinácie vo farmaceutickej a biomedicínskej analýze, VEDA, Bratislava, 2018. 365s.

• Mikuš, P., Piešťanský, J.: Kapilárna elektroforéza, hmotnostná spektrometria a ich kombinácie vo farmaceutickej a biomedicínskej analýze, Učebnica pre farmaceutické fakulty a fakulty prírodovedného a technického smeru so zameraním na analytickú chémiu a farmaceutickú chémiu, VEDA, Bratislava, 2014. 312s.
• Tekeľ, J., Mikuš, P.: Vybrané kapitoly z analytickej chémie: Analýza látok v biologických systémoch. UK, Bratislava, 2005.194s.
• Chromý, V., Fischer, J.: Bioanalytika : analytická chemie v laboratórní medicině. Brno : MU, 2002. 267 s.
• Králová, B., Fukal, L., Rauch, P.: Bioanalytické metody. Praha : Vysoká škola chemickotechnologická, 2001. 254 s.
• Mikuš, P., Maráková, K.: Hyphenated electrophoretic techniques in advanced analysis.Bratislava : KARTPRINT, Bratislava, 2012. 217 s. (vedecká monografia)

Languages necessary to complete the course:
slovak and english language

Notes:

Past grade distribution
Total number of evaluated students: 20

A	ABS	B	C	D	E	FX
90,0	0,0	10,0	0,0	0,0	0,0	0,0

Lecturers: PharmDr. Katarína Maráková, PhD.

Last change: 02.04.2022

Approved by: PharmDr. Katarína Maráková, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 7

Recommended semester: 2.

Educational level: I.II.

Prerequisites:

Course requirements:
Completion of all practical tasks and completion of the assigned task for a sufficient number of points - at least 6 points (60%) out of a possible 10 points (100%).
• verification of the student's readiness for the laboratory exercise carried out in written and oral form at the beginning of each exercise - max. 4 points (40%)
• fulfillment of the assigned practical task, submitted protocol - max. 6 points (60%)
To successfully complete the exercises in the course, it is necessary to obtain at least 60% of the sum of the maximum number of points from individual exercises. Completion of the exercises is a condition of admission to the final exam.
The final exam is in written form. To pass the exam, it is necessary to obtain at least 60% of possible points.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
After completing the course the student will gain a solid and sufficiently broad theoretical, methodological basis and practical experimental skills for the detection and 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:
Analytical chemistry
• principle, history, importance in pharmacy
• classification, work with samples, requirements for analytical reactions, purity of substances
• qualitative inorganic analysis - group, selective and specific reactions of cations and anions

• qualitative organic analysis - elemental analysis in organic substances, solubility classes, functional group analysis
• quantitative chemical analysis - gravimetric analysis (gravimetry), volumetric analysis (volumetry)

Recommended literature:

• Pikulíková, A., Dvořáková, E., Riečanská E.: Laboratórne cvičenia z analytickej chémie I. Chemická analýza. Bratislava : UK, 2007. 273 p. (scriptum)
• Křenek, P.: Analýza organických látok. Bratislava : UK, 2007. 80 p. (scriptum)
• Mikuš, P., Mikušová, V.: Chemical Analysis Qualitative and Quantitative. Bratislava : UK, 2011. 133 p. (scriptum)
• Majer, J. a kol.: Analytická chémia pre farmaceutov. Martin : Osveta, 1989, 363 p. (textbook)

Languages necessary to complete the course:
slovak language

Notes:

Past grade distribution
Total number of evaluated students: 549

A	ABS	B	C	D	E	FX
15,3	0,0	16,76	21,13	21,68	15,66	9,47

Lecturers: RNDr. Svetlana Dokupilová, PhD., Mgr. Michal Hanko, PhD., Ing. Dáša Kružlicová, PhD., Mgr. Samuel Varényi, PhD., PharmDr. Ivana Čižmárová, Mgr. Kristián Slíž, Mgr. Petra Chaľová, PharmDr. Michaela Matušková, RNDr. Jozef Motyčka, RNDr. Anna Boriková, PhD., Mgr. Jana Havlíková, MSc., Mgr. Martina Opetová, Mgr. Andrea Horniaková, Mgr. Ondrej Štefánik, Mgr. Radovan Tomašovský, PharmDr. Katarína Maráková, PhD., Ing. Ivan Benkovský, PhD., PharmDr. Mária Bodnár Mikulová, PhD.

Last change: 02.04.2022

Approved by: Mgr. Michal Hanko, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 8

Recommended semester: 3.

Educational level: I.II.

Prerequisites:

Course requirements:
Obligatory course.
Continuous assessment:
The condition for successfull passing of the practices is to undertake all practical tasks and to reach sufficient points – minimum 60% out of 10 points (100%):
• Evaluation of knowledge includes written and oral testing at the beginning of each practical - max. 4 points (40%),
• the performance of the individually given practical task and a hand-written completed report – max. 6 points (60%).
Practices are successfully passed only if a total score obtained at the end of the semester is at least 60% (max. 10 points for each practical).
Final assessment:
after passing (reached required score) laboratory practices – examination. Examination is performed in written form. It is necessary to reach at least 60% of a total score for successful passing of the examination.
Scale of assessment (preliminary/final): 0 / 100

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
- boiling point, optical rotation, refractive index, pK, etc.
• Instrumental analytical methods,
o Electrochemical methods, basic division, principles, and parameters
- Instrumental arrangement of electrochemical methods
- Potentiometry, potentiometric titrations
- Amperometry
- Polarography and voltammetry
- Titrations with polarizable electrodes
- Electrogravimetry
- Coulometry
- Conductimetry
o Spectral methods
- Optical spectral methods, basic concepts, and division
- Atomic spectral analytical methods: Atomic absorption spectral analysis, atomic emission analysis, flame photometry, X-ray fluorescence spectrometry
- Molecular spectral methods: Molecular absorption spectrometry, fluorescence spectrometry, UV-VIS, infrared spectrometry, Raman spectrometry, nuclear magnetic resonance, mass spectrometry
o Optical methods non-spectral
- Refractometry, polarimetry, light scattering photometry
- Crystallography, X-ray diffraction
o Nuclear analytical methods, basic classification, principles, and parameters
- Identification of β and γ radiation, types of detectors
- 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
- Filtration, extraction in analytical chemistry
- Chromatography, planar and column chromatography, gas chromatography, high-performance liquid chromatography
- 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:

• Pikulíková, A., Dvořáková, E., Riečanská E.: Laboratórne cvičenia z analytickej chémie I. Chemická analýza. Bratislava : UK, 2007. 273 s.
• Křenek, P.: Analýza organických látok. Bratislava : UK, 2007. 80 s.
• Havránek, E. a kol.: Laboratórne cvičenia z analytickej chémie III. Fyzikálno-chemické metódy. Bratislava : UK, 2007. 91 s.
• Labuda, J. a kol, Analytická chémia, Bratislava, STU v Bratislave, 2019, 682 s.
• Mikuš, P., Piešťanský, J.: Kapilárna elektroforéza, hmotnostná spektrometria a ich kombinácie vo farmaceutickej a biomedicínskej analýze, VEDA, 2014. 310 s. (učebnica)
• Mikuš, P., Piešťanský, J., Dokupilová, S.: Kvapalinová chromatografia, hmotnostná spektrometria a ich kombinácie vo farmaceutickej a biomedicínskej analýze, VEDA, Bratislava, 2018. 365s.
• Světlík, J.: Molekulová spektroskopia a optické metódy. Bratislava : UK, 2006. 81 s.
• Garaj, J., Bustin, D., Hladký, Z.: Analytická chémia. Bratislava, Alfa 1989. 740 s.

Languages necessary to complete the course:
slovak language

Notes:

Past grade distribution
Total number of evaluated students: 337

A	ABS	B	C	D	E	FX
10,98	0,0	18,1	35,01	21,36	13,35	1,19

Lecturers: RNDr. Svetlana Dokupilová, PhD., Ing. Anton Ťažký, PharmDr. Mária Bodnár Mikulová, PhD., PharmDr. Juraj Piešťanský, PhD., Mgr. Michal Hanko, PhD., Ing. Dáša Kružlicová, PhD., Ing. Ivan Benkovský, PhD., RNDr. Anna Boriková, PhD., PharmDr. Katarína Maráková, PhD., Mgr. Jana Havlíková, MSc., Mgr. Samuel Varényi, PhD., PharmDr. Michaela Matušková, PharmDr. Ivana Čižmárová, Mgr. Martina Opetová, Mgr. Kristián Slíž, Mgr. Andrea Horniaková, Mgr. Ondrej Štefánik, Mgr. Petra Chaľová, Mgr. Radovan Tomašovský

Last change: 02.04.2022

Approved by: RNDr. Svetlana Dokupilová, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 6

Recommended semester: 2.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
None

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

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

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

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

Recommended literature:

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

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 3220

A	ABS	B	C	D	E	FX
24,47	0,0	21,68	25,5	13,01	10,93	4,41

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

Last change: 13.12.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 4

Recommended semester: 5.

Educational level: I.II.

Prerequisites:

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

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

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

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

Recommended literature:
Lieberman M., Peet A.: Marks´ Basic Medical Biochemistry: A Clinical Approach. Wolters Kluver/Lippincott Wiliams & Wilkins, 2017, 5th edition.
Nessar A.: Clinical Biochemistry, Oxford University Press, 2016, 2nd edition.

Languages necessary to complete the course:
English language

Notes:

Past grade distribution
Total number of evaluated students: 155

A	ABS	B	C	D	E	FX
12,9	0,0	22,58	25,16	18,71	18,06	2,58

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

Last change: 21.03.2022

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/22-Mgr/20	Basics of Regulatory Pharmacy

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

Number of credits: 2

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

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

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

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

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

Recommended literature:

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

Languages necessary to complete the course:
Slovak, English

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

Past grade distribution
Total number of evaluated students: 40

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

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

Last change: 01.12.2021

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 8

Recommended semester: 4.

Educational level: I.II.

Prerequisites:

Course requirements:
Main condition for the practical exercisses recognition is 60% yield as the summary of 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:
Properties and functions of the biological system.
Biological properties of higher protein structures with all functional aspects.
Enzymology - kinetics, activation / inhibition.
Energy - biomembranes - respiratory chain, proton gradient and energy generation, biological oxidation - Krebs cycle.
Enzymology of nutrient metabolism - catabolism and anabolism - carbohydrates, lipids and proteins.
Biosynthesis and biodegradation of hormones, nucleotides and porphyrins.
Fundamentsals of xenobiochemistry and its attributes.
Integration of metabolism - application of regulatory modes in nutrient metabolism.
Plant biochemistry - photosynthesis, nitrogen metabolism.

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: 3096

A	ABS	B	C	D	E	FX
18,02	0,0	21,41	23,45	18,77	13,18	5,17

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

Last change: 22.03.2022

Approved by: RNDr. František Bilka, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 2

Recommended semester: 3.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 851

A	ABS	B	C	D	E	FX
52,41	0,0	29,49	9,17	5,17	3,41	0,35

Lecturers: doc. PharmDr. Jindra Valentová, PhD.

Last change: 03.04.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 3

Recommended semester: 3.

Educational level: I.II.

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

Recommended prerequisites:
General biology, Organic chemistry, Mathematics

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

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

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

Recommended literature:

Uhríková, D. a kol.: Biofyzika – Vybrané kapitoly. Bratislava: UK, 2015. 239 s.
Holan, J. a kol.: Biofyzika pre lekárov. Martin: Osveta, 1982. 741 s.
Prosser, V. a kol.: Experimentální metody biofyziky. Praha: Academia, 1989. 716 s.
Staničová, J.: Biofyzika. Košice: Príroda, 1990. 231 s.
Hlinková, E.: Biofyzika. Bratislava: UK, 1991. 192 s.
Ottová-Leitmannová, A.: Základy biofyziky. Bratislava: Alfa, 1993. 384 s.
Chorvát D.: Biofyzika. Bratislava: UK, 1998. 200 s.
Dunca, J., Hanzelík, F., Hlaváčová, Z., Hlozák, K.: Biofyzika. Nitra: SPU, 1999. 222 s.
Kodíček, M., Karpenko, V.: Biofysikální chemie. Praha: Academia, 2000. 337 s.
Ďoubal, S., Horáčková, I.: Biofyzika pro farmaceuty. Praha: Karolinum, 2000
Hrazdira, I., Mornstein, V., Škorpíková, J.: Základy biofyziky. Brno: Neptun, 2006. 312 s.
Kukurová, E., Kráľová, E.: Lekárska fyzika a biofyzika. Bratislava: UK, 2006. 263 s.
Šajter, V., Turecký, L., Kadlečík, R. Boruta, P.: Biofyzika, biochémia a rádiológia. Martin: Osveta, 2006. 271 s.
Ďoubal, S.: Vybrané kapitoly z biofyziky. Hradec Králové: FaF UK, 2006.
Jancura, D., Fabriciová, G.: Molekulová biofyzika. Košice: PriF UPJŠ, 2009. 236 s.
Lacinová, Ľ., Uhríková, D.: Biofyzika napäťovo závislých iónových kanálov. Bratislava: UK, 2010. 62 s.
Rosina, J., Vránová, J., Kolářová, H., Stanek, J.: Biofyzika. Praha: Grada, 2013. 224 s.
Kol. autorov: Funkcie biologických membrán v bunkách živočíchov, Bratislava, 2006, skriptá k druhému bloku prednášok projektu ESF "Biomembrány"
Kol. autorov: Biofyzikálne experimentálne metódy, Bratislava, 2008, skriptá k druhému bloku prednášok projektu ESF "Biomembrány"

Languages necessary to complete the course:
Slovak

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

Past grade distribution
Total number of evaluated students: 53

A	ABS	B	C	D	E	FX
54,72	0,0	20,75	11,32	11,32	1,89	0,0

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

Last change: 01.04.2022

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 3

Recommended semester: 4.

Educational level: I.II.

Prerequisites:

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

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

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

4. Descriptive statistics: cardinal, ordinal and nominal variables, scale, interval and categorical variables, size measures, arithmetic, geometric and hypergeometric mean, statistical weight, mode, median, variability rates, variation range, mean deviation, variance and standard deviation, coefficient of variation, shape measures, distribution symmetry, distribution concentration, frequency analysis, information content and its reduction
5. Univariate sample analysis: sampling 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, agreement of the agreement of two means and variance, decomposition of variability into components, analysis of variance, balanced experiment, fixed, random and mixed effects and models, one-factor analysis of variance
6. Measures of association: countable random variable, transformation of measurable variables into countable, exposure and effect as quality, frequency analysis of qualitative traits, chance and risk, absolute and relative risk, risk ratio and chance ratio, frequency interval estimation, interval estimation OR and RR , contingency table, independence, tables 2x2, Fisher-Freeman exact test, Pearson goodness-of-fit test, survival curves, Kaplan-Meier survival curve
7. Relative numbers and indices - aggregation, temporal and spatial development, time series, cyclical phenomena, seasonality, trend, chaos, noise, influence of cyclical and random phenomena on processes, predictability
8. Multivariate analysis: correlation and covariance, trends, correlation dependence, simple linear regression, linear modeling, transformation to linear problem, statistical dependence tightness measures, sign tests, rank tests, Kruskallov Walis test, Friedman test for dependent samples, regression diagnostics (linearity, homoskedascite, autocorrelation, residue analysis), multifactor analysis of variance, general linear model, nonlinear regression models with two or more parameters
9. Process evaluation: types of measurement errors, simple and complex uncertainty, propagation and composition of uncertainties, Ishikawa diagram, accuracy, precision, robustness, limit of detection (LOD), limit of quantification (LOQ), outliers, validation, control standard, certified reference material, accredited tests, ROC curve, sensitivity and selectivity, AUC, inter-rater agreement, statistics in pharmacopoeial methods, validation of evaluation processes
10. Statistical software: data import and export, format compatibility, mass data processing, scripts, data mining, statistical software for users from the CU.

Recommended literature:

Fazekaš, T.: Moderná aplikovaná štatistika pre farmaceutov. 1st.edt. Bratislava : UK, 2000. 195 p.
Hanousek, J., Charazma, P.: Moderní metódy spracování dat : matematická statistika pro každého. Praha : Grada, 1992. 216 p.
Meloun, M., Militký, J.: Statistické zpracování experimentálních dat. Praha : Plus, 1994. 839 p.

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 117

A	ABS	B	C	D	E	FX
89,74	0,0	8,55	0,0	0,0	0,0	1,71

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

Last change: 23.03.2022

Approved by: RNDr. Tomáš Fazekaš, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFANF/11-Mgr/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. 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.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
Calculations from various chemical equations are an integral part of chemical analysis (Analytical Chemistry 1). 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 (stability constant, dissociation constant, solubility product, redox potential) and pH
• Fundamentals of calculations in quantitative analytical chemistry - explanation of the term chemical equivalent
• Calculation of concentration for the prepared solution (calculation of mass and molar concentration, dilution of solutions, mass and volume percentage), standardization of titrant solutions, buffers
• Calculation of the content of the test substance in gravimetric determinations
• Calculation of the content of the test substance in acid - base titrations
• Calculation of the content of the analyte in oxidation-reduction determinations
• Calculation of the content of the analyte in complexometric titrations
• Calculation of the content of the test substance in precipitation titration determinations
• Evaluation of measured data of direct, backward and indirect titrations

Recommended literature:
• Majer, J. a kol.: Analytická chémia pre farmaceutov. Martin : Osveta, 1989. 363 s. (učebnica)
• Pikulíková, A., Dvořáková, E., Riečanská E.: Laboratórne cvičenia z analytickej chémie I. Chemická analýza. Bratislava : UK, 2007. 273 s. (skriptá)
• Křenek, P.: Analýza organických látok. Bratislava : UK, 2007. 80 s. (skriptá)

• Mikuš, P., Mikušová, V.: Chemical Analysis Qualitative and Quantitative. Bratislava : UK, 2011. 133 s. (skriptá)
• Garaj, J., Bustin, D., Hladký, Z.: Analytická chémia. Bratislava, Alfa 1989. 740 s. (učebnica)

Languages necessary to complete the course:
slovak language

Notes:

Past grade distribution
Total number of evaluated students: 31

A	ABS	B	C	D	E	FX
58,06	0,0	25,81	3,23	0,0	3,23	9,68

Lecturers: RNDr. Anna Boriková, PhD.

Last change: 02.04.2022

Approved by: RNDr. Anna Boriková, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/11-Mgr/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:

Recommended prerequisites:
KFT/01-Mgr-A/00 Anatomy and Physiology, KFT/13-Mgr-A/00 Pathology, KFT/14- Mgr-A/00 Pathological Physiology, KFT/08-Mgr-A/00 Pharmacology and Toxicology (1)

Course requirements:
Continuous assessment: 1 seminar work
Student assessment takes the form of a written examination, the minimum threshold of success: 60%

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

Class syllabus:
- Clinical Pharmacology and Clinical Pharmacy.
- The importance of basic pharmacological knowledge for the clinical use of drugs.
- Preclinical evaluation of drugs. Clinical evaluation of drugs.
- Adverse drug reaction. Drug interactions. Pharmacovigilance.
- Summary of Product Characteristic and Patient Information Leaflet, a form for reporting adverse drug reactions.
- Humans rights and medicine.
- Pharmacotherapy of special patient groups: Peculiarities of pharmacotherapy of pregnant women, in children and in elderly patients.
- Importance of pharmacogenetics for the rational pharmacotherapy.
- Chronopharmacology and its importance for therapy.
- The importance of pharmacokinetic parameters for clinical practice.
- Basic symptomatology of the disease.
- Pathophysiological conditions influencing drug response.
- Liver diseases and their influence on the effect of drugs.

- Obesity, dyslipidaemia, diabetes and cardiovascular diseases, nutritional supplements for good practice.
- Abdominal pain basic evaluation and first aid.
- Chest pain and back pain differential diagnosis and first aid.
- Dizziness and vomiting first aid and therapy.
- Shock conditions and unconsciousness characteristics and causes.
- Prescription form, generic substitution.
- Prescription from the aspect of irrational pharmacotherapy and drug interaction.
- Over-the-counter medicines: a) most common gastrointestinal disorders, first aid, therapy.
- b) certain symptoms of CNS diseases, first aid, therapy,
- c) most common skin damage, first aid, therapy,
- d) selected diseases of the ocular mucosa, first aid, therapy.

Recommended literature:

Kuželová M., Foltánová T., Kiliánová Z., Kosírová S., Kráľová E., Ondriašová E. Vybrané kapitoly zo všeobecnej a špeciálnej klinickej farmakológie a farmakoterapie pre farmaceutov. Univerzita Komenského v Bratislave, 2021. 105 s.
Kuželová M., Dóka G., Foltánová T., Jankyová S., Kiliánová Z., Kráľová E., Ondriašová E., Vavrincová D., Vavrinec P.: Vybrané kapitoly zo špeciálnej klinickej farmakológie a farmakoterapie pre farmaceutov, Univerzita Komenského v Bratislave, 2020. 201 s.
Kuželová, M., Švec, A., Švec, P.: Kapitoly zo všeobecnej klinickej farmakológie pre farmaceutov.
Bratislava : Famaceutická fakulta UK, 2011. 196 s.
Kuželová, M., Švec, A., Švec, P.: Vybrané kapitoly z klinickej farmakológie pre farmaceutov.
Bratislava : Famaceutická fakulta UK, 2010. 152 s.
Kriška, M. a kol.: Memorix klinickej farmakológie. Bratislava : SAP, 2002. 879 s.
Kriška, M. a kol.: Riziko liekov v medicínskej praxi. Bratislava : SAP, 2000. 474 s.
Kuželová M., Kovácsová B., Švec P.: Farmakológia antiinfekčných liečiv. Osveta, 2010. 184s.

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 2752

A	ABS	B	C	D	E	FX
19,69	0,0	20,2	25,84	21,04	12,94	0,29

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

Last change: 01.02.2022

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

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KFT/12-Mgr/00	**Course title:** Clinical Pharmacology and Pharmacotherapy (2)
Educational activities: **Type of activities:** lecture / laboratory practicals / seminar **Number of hours:** **per week:** 3 / 0 / 2 **per level/semester:** 42 / 0 / 28 **Form of the course:** on-site learning	
Number of credits: 5	
Recommended semester: 8.	
Educational level: I.II.	
Prerequisites:	
Recommended prerequisites: KFT/09-Mgr-A/00 Pharmacology and Toxicology (2), KFT/11-Mgr-A/00 Clinical pharmacology and pharmacotherapy (1)	
Course requirements: Preliminary assessment: 1 seminar work in a form of solved case report Final assessment: Written examination, minimum success rate: 60%.	
Learning outcomes: Completing the course the student acquires basic information about treatment options and first aid for pain, insomnia, dizziness and vomiting, fever, cough, diarrhea, bleeding events, infections, gastrointestinal diseases and ear, nose, throat diseases. The student will become familiar with the ATC groups and therapeutic use of the most current symptoms of disease and potential manifestations of adverse effects in selected pharmacotherapeutic groups. This course will contribute to the participation of pharmacists for solving pharmacotherapeutic problems in clinical practice in cooperation with the physician.	
Class syllabus: - The issue of over-the-counter medicines. - Interactions of over-the-counter medicines. - Allergic reactions and their skin manifestations. - Therapeutic drug monitoring - part of rational pharmacotherapy. - Problems of drugs using in dermatology. - Problems of pharmacotherapy of women. - Oral and parenteral nutrition. - How to prescribe drugs correctly. - Life style drugs. - Compliance, adherence to therapy and concordance. - ATC groups, indication subgroups of drugs and their classification. - Group A-V ATC: the most current issues of therapeutic drug use and standard therapeutic procedures.	

- Basics of patient examination.
- Main symptoms of the disease:
- Identification and solution of pharmacotherapeutic problems, pharmaceutical care part of clinical pharmacy. Rational use of drugs in pharmacotherapy.
- Case reports: diarrhea, insomnia and fear, cough, shortness of breath, fever, headache, bleeding conditions, treatment of fungal and viral infections, treatment of some GIT symptoms and diseases, treatment of ear, nose and throat diseases.

Recommended literature:

Kuželová M., Foltánová T., Kiliánová Z., Kosírová S., Kráľová E., Ondriašová E. Vybrané kapitoly zo všeobecnej a špeciálnej klinickej farmakológie a farmakoterapie pre farmaceutov. Univerzita Komenského v Bratislave, 2021. 105 s.
Kuželová M., Dóka G., Foltánová T., Jankyová S., Kiliánová Z., Kráľová E., Ondriašová E., Vavrincová D., Vavrinec P.: Vybrané kapitoly zo špeciálnej klinickej farmakológie a farmakoterapie pre farmaceutov, Univerzita Komenského v Bratislave, 2020. 201 s.
Kuželová, M., Švec, A., Švec, P.: Kapitoly zo všeobecnej klinickej farmakológie pre farmaceutov. Bratislava : Famaceutická fakulta UK, 2011. 196 s.
Kuželová, M., Švec, A., Švec, P.: Vybrané kapitoly z klinickej farmakológie pre farmaceutov. Bratislava : Famaceutická fakulta UK, 2010. 152 s.
Kriška, M. a kol.: Memorix klinickej farmakológie. Bratislava : SAP, 2002. 879 s.
Kuželová M., Kovácsová B., Švec P.: Farmakológia antiinfekčných liečiv. Osveta, 2010. 184s.
Nathan, A.: Managing Symptoms in the Pharmacy. Second Edition. London: Pharmaceutical Press, 2014

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 2780

A	ABS	B	C	D	E	FX
31,19	0,0	28,71	22,91	10,5	4,06	2,63

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

Last change: 01.02.2022

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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: 2

Recommended semester: 1.

Educational level: I.II.

Prerequisites:

Course requirements:
There are two tests during the semester. At least 60% must be obtained for their successful completion. The exam is a written test.
100 – 95 %: A
94 – 85 %: B
84 – 75 %: C
74 – 65 %: D
64 – 60 %: E
< 59 %: Fx
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 data collection, processing and evaluation in electronic form. He / she is independently oriented in this area and can use procedures and techniques of working with data, understands data organization and is able to use current versions of standard application software in their professional activities.

Class syllabus:
The content of the course is an update of the student's abilities and skills to communicate with the means of computer technology at the level of the so-called standard application equipment as a result of intensive development in the technical and program area, which is an organic part of professional pharmaceutical activities in all branches of pharmaceutical sciences and practice.
Course syllabus:
· Qualified communication of the user with the computer, knowledge of working with devices, peripherals and media of computer technology,
· Data organization and its means, work with archive files (zip, rar, etc.) and their current tools,
· Word processing, creation and operations with text files, creation of tables and calculations in them, conversion to rtf, pdf formats,
· Spreadsheet and its user functions, including mathematical and statistical, graphing,
· Creation of presentations as specific document formats.

Recommended literature:
The literature is constantly updated at the exercises in the form of protocols. Due to the need for constant updating, students are provided with study texts on individual issues.

Languages necessary to complete the course:
Slovak language, English language.

Notes:
The course is taught only in the winter semester, the capacity of the course is limited to 20 students.

Past grade distribution
Total number of evaluated students: 1082

A	ABS	B	C	D	E	FX
48,24	0,0	22,92	18,39	7,39	2,87	0,18

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

Last change: 09.12.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KGF/08-Mgr/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: 87

A	ABS	B	C	D	E	FX
57,47	0,0	36,78	4,6	1,15	0,0	0,0

Lecturers: PharmDr. Veronika Šimunková, PhD., PharmDr. Mária Raučinová, PhD., Mgr. Jana Selčanová, PharmDr. Mária Čuchorová, PhD., PharmDr. Miroslava Špaglová, PhD., Mgr. Jarmila Ferková

Last change:

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFB/13-Mgr/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:

Recommended prerequisites:
KFB/03-Mgr-A/00 Pharmaceutical Botany

Course requirements:
A 100% attendance in practical training in person or online is required*. The final exams will have the form of a test**. Grading rules: 100-92/A, 91-84/B, 83-76/C, 75-68/D, 67-60/E, 59-0/FX.
* According to the attendance list (will be downloaded from MS Teams after each online lecture)
**In the case of the distance form of the study, the exam will be in the form of an online test in MS Forms
Scale of assessment (preliminary/final): 0/1

Learning outcomes:
Upon successfully completing the educational process, the student should have extensive knowledge from Pharmacognosy about medicinal plants and natural products in the current pharmaceutical market, food, beverages, or cosmetics. Furthermore, get information about the pitfalls of natural remedies in self-medication to learn exciting facts about recent research of natural products and their path to the herbal drug. The acquired knowledge should give the pharmacist courage and confidence to dispatch herbal drugs, medical devices, cosmetic products and food supplements of natural origin.

Class syllabus:
Lectures are devoted to current topics on natural substances and medicinal plants, which are available as OTC products (over-the-counter) in pharmacies or used in everyday life, and which are not fully covered in Pharmacognosy 1 and 2. The student will meet with important information about current research of natural products, about psychoactive plants and their constituents, about the Influence of the intestinal microbiome on the activity of natural substances, about plant antioxidants in the prevention of various diseases (e.g. Alzheimer's, Parkinson's), about vegetables, fruits, and spices with therapeutic potential, about known beverages, and natural substances from non-vascular land plants or sea plants. Attention will also be paid to important natural substances with antimicrobial effects, natural dyes, and plant metabolites currently used in pharmacotherapy.

Recommended literature:

European Medicines Agency (https://www.ema.europa.eu/en/medicines)
Databases: ScienceDirect, Scopus, PubMed, SciFinder, GoogleScholar

Languages necessary to complete the course:
English

Notes:
Only in the summer semester, min. 5 students, max. 20 students

Past grade distribution
Total number of evaluated students: 71

A	ABS	B	C	D	E	FX
8,45	0,0	30,99	40,85	8,45	11,27	0,0

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

Last change: 01.08.2022

Approved by:

STATE EXAM DESCRIPTION

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/29-Mgr/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 specified

Course requirements:
Obligatory attendance at seminars. Written exam with 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:
Dietetics in the treatment and prevention of diseases. The relationship of nutrition to health and disease.
Physiology of nutrition. Components of nutrition - macronutrients (carbohydrates, fats, proteins), micronutrients, vitamins and minerals. Water. Alcohol.

Individual nutritional status. Monitoring of nutritional status in population.
Energy balance - energy intake and expenditure. Energy substrates. Energy density of food. Influence of energy expenditure.
Diet I: diet recommendation for selected diseases – diet therapy and prevention of obesity, diabetes 1 and 2 type, dyslipoproteinemia, hypertension and atherosclerosis, cancer.
Diet II: diet therapy in specific groups of population (children, pregnant and breast feeding women, in seniors), diet therapy in others diseases. Nutrition in malnutrition.
Eating disorders (malnutrition, anorexia, bulimia).
Food allergies and intolerances.
Food and nutritional literacy. Evaluation methods. Food safety.
Basics of nutrition hygiene. Nutritional recommendations and guidelines. Nutritional habits and their monitoring (analysis of dietary records, databases of energy and nutritional composition of foods).
Nutrigenomics and nutrigenomics.
Enteral and parenteral nutrition.
The current nutritional situation in our country and in the world. The National Health and Nutrition Program. Food consumption and its development.
Healthy diets guidelines. Alternative forms of nutrition (vegetarianism, macrobiotics) and dietetics.
Issues of organic foods, genetically modified foods, functional foods.
Foods for specific nutritional purposes - dietetic foods, dietary supplements. Legislation, marketing, payment, rational use and advice.
Nutrition and supplement counselling in pharmacy. Nutritional software, mobile applications for nutritional and supplement counselling.
The practical tasks and solutions of model situations and case studies, focused on:
Anthropometric examinations in adults and children.
Measurement of skin algae. Bioimpedance analysis of body composition.
Biochemical markers of nutrition in the evaluation of nutritional status.
Rational nutrition - Food pyramid, Food plate.
Caloric tables, practice of calculating caloric values. Nutrition databases and software.
Case reports I: overweight / obesity patient management - training in dietary and nutritional counselling.
Case reports II: management of a patient with selected diseases (oncological diseases, cardiovascular diseases, diabetes) - training in dietary and nutritional counselling.
Case reports III: basic dietary and nutritional counselling related to other conditions (celiac disease, osteoporosis, allergies, intolerance).
Case reports IV: basic dietary and nutritional counselling in pregnant and breast feeding women, seniors and children.

Recommended literature:

Svačina Š a kol. Klinická dietológie, Grada Publishing Praha, 2008
Svačina Š. a kol.: Dietológie. Triton Praha, 2013
Zlatohlávek L. Klinická dietológie a výživa, Current Media Praha, 2016
Keresteš J. a kol.: Zdravie a výživa ľudí. 1. vyd. Bratislava : CAD PRESS, 2011.
Minárik P.: Vademekum zdravej výživy, Kontakt Bratislava, 2010
Minárik P., Mináriková D.: Rakovina a výživa – mýty a fakty, Kontakt Bratislava 2013
Minárik P., Mináriková D.: Rakovina a výživa – mýty a fakty II, Kontakt Bratislava 2014
Minárik, Paulová, Mináriková: Diéta pri ochoreniach pažeráka, žalúdka a dvanástnika, Kontakt Bratislava, 2016
Minárik P, Blahó E. Diéta pri ochoreniach žlčníka a pankreasu, Raabe Bratislava, 2017
Minárik P., Zoboková B., Blahó E. Diéta pre diabetikov, Raabe Bratislava 2017

Minárik, Fábryová, Blaho: Diéta pri zvýšenom cholesterole a iných poruchách metabolizmu tukov, Raabe Bratislava, 2018
Beňo I., Náuka o výžive. Fyziologická a liečebná výživa. Osveta Martin, 2003
Skriptá:
Minárik P., Mináriková D.: Strava a výživa v prevencii a liečbe rakoviny, VSZSP sv Alžbety, 2017
Minárik P., Chlebo P.: Výživa, potrava a ľudské zdravie, VSZSP sv Alžbety, 2017

Languages necessary to complete the course:
Slovak, english

Notes:

Past grade distribution
Total number of evaluated students: 73

A	ABS	B	C	D	E	FX
75,34	0,0	17,81	2,74	4,11	0,0	0,0

Lecturers: doc. PharmDr. Daniela Mináriková, PhD.

Last change: 29.11.2021

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KBMBL/05-Mgr/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: 266

A	ABS	B	C	D	E	FX
95,86	0,0	2,63	1,5	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., PharmDr. Boris Dudík, PhD.

Last change: 01.06.2016

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KBMBL/06-Mgr/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: 263

A	ABS	B	C	D	E	FX
94,3	0,0	2,66	1,52	1,14	0,0	0,38

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: 01.06.2016

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KChTL/02-Mgr/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: 249

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

Lecturers: Ing. Ladislav Habala, PhD., RNDr. Roman Mikláš, PhD., doc. PharmDr. Jindra Valentová, PhD., Ing. Iveta Pechová, PhD., doc. PharmDr. Miloš Lukáč, PhD., Mgr. Lucia Lintnerová, PhD., doc. Ing. Martin Pisárčik, CSc., Mgr. Peter Herich, PhD., Mgr. Natalia Lucia Miklášová, PhD., RNDr. Jana Korcová, PhD.

Last change: 03.04.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 16

Recommended semester: 10.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 236

A	ABS	B	C	D	E	FX
97,46	0,0	0,85	0,42	0,0	0,0	1,27

Lecturers: Ing. Iveta Pechová, PhD., Mgr. Lucia Lintnerová, PhD., RNDr. Roman Mikláš, PhD., doc. Ing. Martin Pisárčik, CSc., doc. PharmDr. Jindra Valentová, PhD., doc. PharmDr. Miloš Lukáč, PhD., Ing. Renáta Horáková, PhD., Ing. Ladislav Habala, PhD., Mgr. Peter Herich, PhD., Mgr. Natalia Lucia Miklášová, PhD., Mgr. Anna Miňo, PhD.

Last change: 03.04.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFANF/04-Mgr/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:
Tekeľ, J., Mikuš, P.: Vybrané kapitoly z analytickej chémie: analýza látok v biologických systémoch. Bratislava, Vydavateľstvo UK 2005, s. 194.
Mikuš, P., Maráková, K.: Hyphenated electrophoretic techniques in advanced analysis. Bratislava : KARTPRINT, 2012. 217 s. (vedecká monografia)
Mikuš, P., Piešťanský, J.: Kapilárna elektroforéza, hmotnostná spektrometria a ich kombinácie vo farmaceutickej a biomedicínskej analýze, Učebnica pre farmaceutické fakulty a fakulty prírodovedného a technického smeru so zameraním na analytickú chémiu a farmaceutickú chémiu, VEDA, Vydavateľstvo Slovenskej akadémie vied, Bratislava, 2014, ISBN 978-80-224-1377-0, pp 310
Mikuš, P., Piešťanský, J., Dokupilová, S.: Kvapalinová chromatografia, hmotnostná spektrometria a ich kombinácie vo farmaceutickej a biomedicínskej analýze, VEDA, Bratislava, 2018. 365s.

Languages necessary to complete the course:
slovak and english language

Notes:

Past grade distribution
Total number of evaluated students: 244

A	ABS	B	C	D	E	FX
97,95	0,0	2,05	0,0	0,0	0,0	0,0

Lecturers: prof. RNDr. Peter Mikuš, PhD., PharmDr. Katarína Maráková, PhD., RNDr. Svetlana Dokupilová, PhD., PharmDr. Juraj Piešťanský, PhD., PharmDr. Mária Bodnár Mikulová, PhD.,

RNDr. Jozef Motyčka, RNDr. Anna Boriková, PhD., Mgr. Samuel Varényi, PhD., Ing. Dáša Kružlicová, PhD., Mgr. Michal Hanko, PhD.
Last change: 10.12.2021
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFANF/05-Mgr/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:
Tekeľ, J., Mikuš, P.: Vybrané kapitoly z analytickej chémie: analýza látok v biologických systémoch. Bratislava, Vydavateľstvo UK 2005, s. 194.
Mikuš, P., Maráková, K.: Hyphenated electrophoretic techniques in advanced analysis. Bratislava : KARTPRINT, 2012. 217 s. (vedecká monografia)
Mikuš, P., Piešťanský, J.: Kapilárna elektroforéza, hmotnostná spektrometria a ich kombinácie vo farmaceutickej a biomedicínskej analýze, Učebnica pre farmaceutické fakulty a fakulty prírodovedného a technického smeru so zameraním na analytickú chémiu a farmaceutickú chémiu, VEDA, Vydavateľstvo Slovenskej akadémie vied, Bratislava, 2014, ISBN 978-80-224-1377-0, pp 310
Mikuš, P., Piešťanský, J., Dokupilová, S.: Kvapalinová chromatografia, hmotnostná spektrometria a ich kombinácie vo farmaceutickej a biomedicínskej analýze, VEDA, Bratislava, 2018. 365s.

Languages necessary to complete the course:
slovak and english language

Notes:

Past grade distribution
Total number of evaluated students: 220

A	ABS	B	C	D	E	FX
93,64	0,0	2,27	1,36	0,0	1,82	0,91

Lecturers: prof. RNDr. Peter Mikuš, PhD., Ing. Ivan Benkovský, PhD., PharmDr. Katarína Maráková, PhD., RNDr. Svetlana Dokupilová, PhD., PharmDr. Juraj Piešťanský, PhD., PharmDr.

Mária Bodnár Mikulová, PhD., RNDr. Jozef Motyčka, RNDr. Anna Boriková, PhD., Mgr. Samuel Varényi, PhD., Ing. Dáša Kružlicová, PhD., Mgr. Michal Hanko, PhD.
Last change: 11.12.2021
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFB/01-Mgr/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: 280

A	ABS	B	C	D	E	FX
99,29	0,0	0,71	0,0	0,0	0,0	0,0

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

Last change: 09.06.2016

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFB/02-Mgr/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: 257

A	ABS	B	C	D	E	FX
95,33	0,0	2,72	0,39	0,39	0,0	1,17

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

Last change: 09.06.2016

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFCh/03-Mgr/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: 97

A	ABS	B	C	D	E	FX
98,97	0,0	0,0	1,03	0,0	0,0	0,0

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

Last change: 09.06.2016

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFCh/04-Mgr/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: 97

A	ABS	B	C	D	E	FX
95,88	0,0	3,09	1,03	0,0	0,0	0,0

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

Last change: 09.06.2016

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFChL/04-Mgr/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: 226

A	ABS	B	C	D	E	FX
94,25	0,0	1,33	0,88	0,44	2,21	0,88

Lecturers: prof. RNDr. Daniela Uhríková, CSc., Ing. Jarmila Oremusová, CSc., Mgr. Mária Klacsová, PhD., RNDr. Tomáš Fazekaš, PhD., doc. RNDr. Jana Gallová, CSc., prof. Ing. Vladimír Frecer, DrSc., RNDr. Alexander Búcsi, PhD., Mgr. Lukáš Hubčík, PhD., doc. Mgr. Marcela Chovancová, PhD., Mgr. Katarína Želinská

Last change: 09.06.2016

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFChL/05-Mgr/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: 208

A	ABS	B	C	D	E	FX
87,98	0,0	4,33	0,96	0,48	2,4	3,85

Lecturers: prof. RNDr. Daniela Uhríková, CSc., Ing. Jarmila Oremusová, CSc., Mgr. Mária Klacsová, PhD., RNDr. Tomáš Fazekaš, PhD., doc. RNDr. Jana Gallová, CSc., prof. Ing. Vladimír Frecer, DrSc., RNDr. Alexander Búcsi, PhD., Mgr. Lukáš Hubčík, PhD., doc. Mgr. Marcela Chovancová, PhD., Mgr. Katarína Želinská

Last change: 09.06.2016

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/06-Mgr/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: 594

A	ABS	B	C	D	E	FX
91,92	0,0	5,05	2,19	0,0	0,17	0,67

Lecturers: doc. RNDr. Ingrid Tumová, CSc., prof. RNDr. Magdaléna Kuželová, CSc., doc. MUDr. Tatiana Stankovičová, CSc., PharmDr. Elena Ondriašová, CSc., PharmDr. Eva Kráľová, PhD., doc. PharmDr. Peter Křenek, PhD., PharmDr. Stanislava Kosírová, PhD., Mgr. Ondrej Sprušanský, PhD., PharmDr. Tatiana Foltánová, PhD., doc. PharmDr. Marek Máťuš, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, 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.

Last change: 09.06.2016

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/07-Mgr/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: 555

A	ABS	B	C	D	E	FX
81,8	0,0	12,79	3,6	0,72	0,18	0,9

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

Last change: 09.06.2016

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KGF/03-Mgr/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: 204

A	ABS	B	C	D	E	FX
99,02	0,0	0,98	0,0	0,0	0,0	0,0

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

Last change: 09.06.2016

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KGF/04-Mgr/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: 186

A	ABS	B	C	D	E	FX
94,09	0,0	3,23	0,54	1,61	0,0	0,54

Lecturers: PharmDr. Milica Molitorisová, PhD., PharmDr. Veronika Šimunková, PhD., PharmDr. Mária Raučinová, PhD., PharmDr. Alžbeta Lengyelová, PharmDr. Veronika Mikušová, PhD., PharmDr. Miroslava Špaglová, PhD., PharmDr. Mária Čuchorová, PhD., PharmDr. Desana Matušová, PhD., doc. RNDr. Miroslava Šupolíková, PhD.

Last change: 09.06.2016

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 4

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:
The student solves the set topic and in cooperation with the tutor. The final output is the work in accordance with the internal regulations of the Comenius University - the Rector's Directive of the Comenius University on the basic requirements for final theses. The work contains the current state of the problem, in which the student performs a literary search related to the issue. Based on it, he/she proposes the aim of the work, methodology and methods of processing the experimental part. The thesis presents its own results and the corresponding comparative discussion with a summarizing conclusion. The student presents the topic within the defense of the final thesis together with the ability to argue questions and comments.

Class syllabus:
The focus of diploma theses is in accordance with the issues addressed at the department by the relevant supervisors. Topics:
Drug Consumption and Health Technology (HTA) assessment, pharmacoeconomics, drug policy.
Pharmacoepidemiology and pharmacy management.
Awareness studies, KAP (knowledge-attitudes-practice) studies.
Legislation / legislation in the field of pharmacy / healthcare or constitutional rights, economic and legal analysis of pharmaceutical and healthcare.
History of pharmacy, ethics.
Relation of drug consumption to the health status of the population.
Quality of health / pharmaceutical care. Quality of life of patients.
Individually prepared drugs.
Professional satisfaction of pharmacists.
Pharmaceutical historiography.
Patient adherence to therapy.
Management of selected diseases from the perspective of a pharmacist.
Problems of hospital pharmacy.
Safety and pharmacovigilance.
Prevention and public health.

Recommended literature:

Languages necessary to complete the course:
Slovak language, English language.

Notes:

Past grade distribution
Total number of evaluated students: 391

A	ABS	B	C	D	E	FX
87,72	0,0	6,65	2,05	1,28	1,53	0,77

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

Last change: 09.12.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 16

Recommended semester: 10.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:
The student solves the set topic and in cooperation with the tutor. The final output is the work in accordance with the internal regulations of the Comenius University - the Rector's Directive of the Comenius University on the basic requirements for final theses. The work contains the current state of the problem, in which the student performs a literary search related to the issue. Based on it, he/she proposes the aim of the work, methodology and methods of processing the experimental part. The thesis presents its own results and the corresponding comparative discussion with a summarizing conclusion. The student presents the topic within the defense of the final thesis together with the ability to argue questions and comments.

Class syllabus:
The focus of diploma theses is in accordance with the issues addressed at the department by the relevant supervisors. Topics:
Drug Consumption and Health Technology (HTA) assessment, pharmacoeconomics, drug policy.
Pharmacoepidemiology and pharmacy management.
Awareness studies, KAP (knowledge-attitudes-practice) studies.
Legislation / legislation in the field of pharmacy / healthcare or constitutional rights, economic and legal analysis of pharmaceutical and healthcare.
History of pharmacy, ethics.
Relation of drug consumption to the health status of the population.
Quality of health / pharmaceutical care. Quality of life of patients.
Individually prepared drugs.
Professional satisfaction of pharmacists.
Pharmaceutical historiography.
Patient adherence to therapy.
Management of selected diseases from the perspective of a pharmacist.
Problems of hospital pharmacy.
Safety and pharmacovigilance.
Prevention and public health.

Recommended literature:

Languages necessary to complete the course:
Slovak language, English language

Notes:

Past grade distribution
Total number of evaluated students: 366

A	ABS	B	C	D	E	FX
74,86	0,0	15,3	6,01	1,64	1,09	1,09

Lecturers: PharmDr. Miroslava Snopková, PhD., PharmDr. Ľubica Lehocká, PhD., doc. PharmDr. Daniela Mináriková, PhD., doc. PharmDr. Tomáš Tesař, PhD., MBA, PharmDr. Zuzana Koblišková, PhD., PharmDr. Lucia Masaryková, PhD., PharmDr. Milica Molitorisová, PhD., PharmDr. Slávka Porubcová, Mgr. Monika Čičová, PharmDr. Katarína Gatialová, Ing. Ingrid Slezáková

Last change: 09.12.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 7

Recommended semester: 7.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
FaF.KFCh/05-Mgr/00 Pharmaceutical chemistry (1), FaF.KFCh/05-Mgr/20 Pharmaceutical chemistry (2), KFANF/01-Mgr/19 Analytical chemistry (1), KFANF/02-Mgr/20 Analytical chemistry (2).

Course requirements:
Compulsory participation in all forms of teaching in full extent. Passing two preliminary tests, which consist of questions from laboratory practicals and lectures, with a minimum success rate of 60 %. Elaboration of protocols "Drug quality control" according to the principles of good laboratory practice in accordance with applicable regulations. Final written examination. The final written exam consists of questions of quality control of drugs, excipients and drugs (identification tests, purity tests, content determination), according to valid legal regulations of the European Union, Slovak Republic and validation of these methods.
Evaluation grades: 100-92.00% evaluation A, 91.99-84.00% evaluation B, 83.99-76.00% evaluation C, 75.99-68.00% evaluation D, 67.99-60 % evaluation E, less than 60.00% evaluation FX.
Scale of assessment (preliminary/final): 20/80.

Learning outcomes:
Drug analysis is a profile pharmaceutical discipline, which in theoretical and laboratory teaching focuses on quality control of drugs, excipients and medicines in the entire process of production, distribution and use in order to ensure the quality, safety and efficacy of drugs and medicines. The teaching and content of the course is based on the requirements of the currently valid European Pharmacopoeia and the Slovak Pharmaceutical Codex as legal standards containing a set of technical requirements for drug quality assessment, which must be met by anyone who handles drugs, uses them in health care or performs state supervision in the field of pharmacy. The theoretical foundations of the discipline are applied in laboratory practicals, where the student works with a pharmacopoeia in order to learn to quickly orient in a large amount of factual data and experimentally perform drug and medicine quality control in accordance with the principles of good laboratory, good pharmacy and good manufacturing practice. The knowledge and laboratory skills acquired after completing the course Drug Analysis are used in practice in pharmacies, hospitals,

State Instute for Drug Control, accredited control laboratories, in pharmaceutical production, research and in further postgraduate education of pharmacists - in a specialized study.

Class syllabus:

The chemical structure of the drug is the starting point for determining the appropriate procedure for the analytical use of its physical, physicochemical and chemical properties in identification testing, evaluation of the purity and stability of the drug and in the quantitative analysis of the drug. The thematic areas of lectures and practical exercises are designed to cover all important areas of the field.

1. Analysis of drugs - content, mission and importance of the discipline. Quality control and evaluation of drugs and medicines in the Slovak Republic. State Instute for Drug Control. European Pharmacopoeia. Slovak Pharmaceutical.
2. European Pharmacopoeia (Ph. Eur.) - identification reactions of ions and organic groups (2.3.1). Group reactions.
3. Drug identification tests (Ph. Eur.) - selective chemical reactions: precipitation, complex-forming reactions.
4. Drug identification tests (Ph. Eur.) - selective chemical reactions: redox, specific reactions.
5. Drug identification tests (Ph. Eur.) based on physical, physicochemical and chemical principles using instrumental analytical methods - Part 1. Flame tests, solubility, melting point, freezing point, distillation range, density, viscosity, reaction of solution, optical rotation, refractive index (2.2).
6. Drug identification tests (Ph. Eur.) based on physical, physicochemical principle using instrumental analytical methods - Part 2: analytical methods, spectral, separation, electrochemical methods.
7. Tests for purity of drugs (Ph. Eur.) - Part 1: Origin of impurities in the drug and the medicine. Influence of impurities on drug quality and organism. Classification of impurities by origin. Impurities of defined composition. Impurities of undefined composition. General articles on impurities in the pharmacopoeia - limit tests (2.4).
8. Tests for purity of drugs - part 2. Proof of impurities in the drug using their physical and physico-chemical manifestations. Instrumental analytical methods for drug purity tests - optical methods, separation methods, electrochemical (2.2).
9. Determination of drug content - Part 1. Gravimetric and volumetric methods for determining the content of drugs and their division. Pharmacopoeial volumetric methods - categorization of methods and principle of individual methods, primary standards for volumetric solutions, standardization of volumetric solution (factor of volumetric), milligram equivalent of volumetric solution, indication of equivalence point. Determination of water content in drugs (semi-micro method). Determination of nitrogen in primary aromatic amines. Acid value, ester value, hydroxyl value, iodine value, peroxide value, saponification value.
10. Determination of drug content - Part 2. Instrumental methods for drug content determination - optical methods, separation methods, electrochemical.
11. Multi-component drug systems and medicines. Drug identification tests in multicomponent systems, tests for purity and determination of drug content in medicines according to the Slovak Pharmaceutical Codex and company standards. Quality assessment of drugs with special properties and requirements for them - radiopharmaceuticals, vaccines.
12. Stability of drugs and medicines and its evaluation. Degradation processes and factors affecting the stability of drugs and medicines. Chemical principles of decomposition reactions. Accelerated and long-term drug stability tests. Kinetic characteristics of decomposition processes. Evaluation of packaging material quality.
13. Statistical evaluation of analysis results. Validation of analytical methods. Good manufacturing practice. Good laboratory practice. Drug registration. Good pharmacy practice - reagent apparatus

in a pharmacy. Legislation: work with hazardous chemical agents, warning symbols, risk phrases (R-phrases), safety phrases (S-phrases), Safety Data Sheet.

Recommended literature:

European Pharmacopoeia, Current Edition and Supplements, Strasbourg, Council of Europe, Cedex
Slovenský farmaceutický kódex, Aktuálne vydanie.
Slovenský farmaceutický kódex 2015. 2. vyd. Bratislava: Obzor, 2015
Slovenský liekopis 1, zv. I – VII, Bratislava: Herba, 1997 – 2003
Slovenský farmaceutický kódex. 1. vyd. Doplnok. Bratislava: Obzor, 2007
Slovenský farmaceutický kódex. 1. vyd. Bratislava: Herba, 1996
Bezáková Ž. a kol.: Základy farmaceutickej analýzy. Kvalitatívne hodnotenie chemických liečiv. 1. vyd. Nitra: VA Print, 2002, 722 s., ISBN 80-96-82-56-7-4
Bezáková Ž.: Kvalita liečiv. Zabezpečenie a kontrola. Martin: Neografia, 2007, 400 s., ISBN 978-80-88892-79-3
Bezáková Ž.: Analýza chemických liečiv. Stanovenie obsahu liečiv podľa Slovenského liekopisu 1. 1. vyd. VA Print, Nitra 2002, 208 s., ISBN 80-968-256-0-7
Eger, K., Troschütz, R., Roth, H.-J.: Arzneistoffanalyse. Reaktivität-Stabilität-Analytik. 4. Aufl., Stuttgart: Deutscher Apotheker Verlag, 1999, 730 s., ISBN 3-7692-2595-3
Rücker, G., Neugebauer, M., Willems, G.G.: Instrumentelle pharmaceutische Analytik. 3. Aufl., Stuttgart: Wissenschaftliche Verlagsgeselschaft, 2001, 705 s., ISBN 3-8047-1739-X

Languages necessary to complete the course:
slovak, english

Notes:

Past grade distribution
Total number of evaluated students: 2760

A	ABS	B	C	D	E	FX
19,42	0,0	24,09	25,54	15,4	13,19	2,36

Lecturers: doc. PharmDr. Miroslava Sýkorová, PhD., PharmDr. Iva Kapustíková, PhD., doc. Mgr. Fils Andriamainty, PhD., doc. PharmDr. Ivan Malík, PhD., Mgr. Stanislav Bilka, PhD., PharmDr. Jana Čurillová, PhD., PharmDr. Vladimír Garaj, PhD., PharmDr. Matej Maruniak, PhD., PharmDr. Lenka Stopková, PhD., Mgr. Róbert Šandrik, PhD., PharmDr. Kamila Chomaničová, PhD., PharmDr. Miroslav Kemka, PharmDr. Mária Pecháčová, PhD., PharmDr. Eva Salanci, PhD.

Last change: 28.03.2022

Approved by: doc. PharmDr. Miroslava Sýkorová, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 1

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

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

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

Lecturers: doc. PharmDr. Jindra Valentová, PhD.

Last change:

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 2

Recommended semester: 2.

Educational level: I.II.

Prerequisites:

Course requirements:
Attending lectures, obligation to participate on the practical exercise in providing first aid. Written test with a minimum of 60% success rate. Credits shall not be given to students who shall not participate on practical exercise in providing first aid.

Learning outcomes:
First aid should be a natural part of general care of persons affected by a sudden damage to their health. Pharmacists as healthcare workers must master the basics of first aid and, if necessary, they must be able to provide expert first aid treatment to an affected person before the arrival of a doctor of medicine.

Class syllabus:
Characteristics of the subject, basic concepts, aims of the subject, legislation. Motivational background of first aid provision (personal and legal). Basic life functions. Respiratory system, heart and blood circulation, relation to first aid. Transport of oxygen. Diagnostics of the basic life functions. Basic life-saving procedures. General principles of first aid provision. Basic support of life functions. Cardiopulmonary resuscitation. Automatic external defibrillation. Acute coronary syndrome - prevention and first aid. Sudden stroke - prevention and first aid. Disturbances of respiration, suffocation, first aid. Convulsive states. Unconsciousness, intoxications. Severe injuries. Injuries, bleeding. Shock - causes, symptoms, first aid. Burns and scalding. Effects of extreme temperatures (hypothermia, overheating, heatstroke). Injury due to electrical current. Accidents with a mass injury of persons. Practice of resuscitation.

Recommended literature:
Kalig K.: Prvá pomoc pre tých, čo ju poskytujú, a pre tých, čo ju potrebujú. Rescue Man, 2008
Van de Velde S et al.: European first aid guidelines, Resuscitation, 2006
Miriana Pištejová, Dušan Kraus: Prvá pomoc v praxi, Rokus 2017
Robin Šin, Petr Štourač a Jana Vidunová: Lékařska první pomoc, Galén 2019
Viliam Dobiaš: Volali ste záchranku? Dixit 2020

Languages necessary to complete the course:
Slovak Language

Notes:

Past grade distribution
Total number of evaluated students: 2993

A	ABS	B	C	D	E	FX
76,34	0,0	14,43	4,78	2,34	1,1	1,0

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

Last change: 09.12.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 5

Recommended semester: 1.

Educational level: I.II.

Prerequisites:

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

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

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

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

Recommended literature:

Alberts, B. a kol.: Základy bunečné biologie. Ústí nad Labem : Espero Publishing, 2003. 630 s. (učebnica) Kyselovič, J., Musil, P.: Všeobecná biológia - Teoretické a praktické návody na cvičenia : Stimul Bratislava, 2008, 124s. (skriptá)
Lodish, H. a kol.: Molecular Cell Biology, eight edition, W.H.Freeman and Company, 2016
Alberts, B. a kol.: Molecular Biology of the Cell, sixth edition, Garland Science, 2015.

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 624

A	ABS	B	C	D	E	FX
7,21	0,0	27,88	31,41	20,03	7,69	5,77

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

Last change: 13.12.2021

Approved by: Mgr. Ondrej Sprušanský, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 6

Recommended semester: 1.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 609

A	ABS	B	C	D	E	FX
10,51	0,0	34,65	32,18	16,91	2,79	2,96

Lecturers: doc. Ing. Martin Pisárčik, CSc., Ing. Ladislav Habala, PhD., Ing. Iveta Pechová, PhD., Mgr. Lucia Lintnerová, PhD., Mgr. Peter Herich, PhD., RNDr. Roman Mikláš, PhD., Mgr. Natalia Lucia Miklášová, PhD., PharmDr. Janka Leskovská, PharmDr. Mário Markuliak, Mgr. Anna Miňo, PhD., Mgr. Bianka Oboňová, Mgr. Martin Bajcura

Last change: 30.03.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KGF/17-Mgr/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:
Assessment by e-test (Moodle). Assumption for successful completion is at 55% at least. Assessment scale - A: 95-100%, B: 85-94%, C: 75-84%, D: 65-74%, E: 55-64%.

Learning outcomes:
The students gain a basic overview about the pharmaceutical industry and the good manufacturing practice to ensure high quality and safe medicines that maximize therapeutic benefit for patients. The acquired knowledge will enable students to understand new perspectives about knowledge applications in practice.
Excursion to pharmaceutical production enables students to get a real view on manufacturing processes of medicines.

Class syllabus:
Syllabus:
Pharmaceutical industry - development, future, and position in health care environment.
Pharmaceutical market as one of the highly regulated sectors - legislation, health authorities, registration procedures, inspections.
Research and development of medicinal products from pharmaceutical technology point of view. Pre-formulation, formulation, principles of planned quality and its application in Quality by Design during the development of pharmaceuticals. Transfer from R&D to production, transfer of production between different production sites.
Pharmaceutical regulation – regulatory authority, regulatory processes, structure of registration documentation. Change management.
Pharmaceutical production - principles, organization, material flow, personnel flow. Pharmaceutical industrial technology, manufacturing equipment and technical support systems, validation methods. Good Manufacturing Practice (GMP) requirements for quality assurance in the production of medicinal products. Pharmaceutical quality system, role of Quality Control (QC) and Quality Assurance (QA). System of release, role of Qualified Person (QP).
Development of analytical methods, quality control. Parametric release, systems PAT and RTRT. System of inspections, risk management.
Possibilities of employment for graduates in pharmaceutical industry.

Recommended literature:

1. Aulton, M. E.: Aulton´s Pharmaceutics: the design and manufacture of medicines. Edinburgh: Churchill Livingstone, 2018
2. European Pharmacopoeia 10th edition, Council of Europe, Brussel, 2019
3. EudraLex – Volume 4, European Commission. Available online: https://ec.europa.eu/health/documents/eudralex/vol-4_en
4. European Medicines Agency. Good manufacturing practice (GMP). Available online: https://www.ema.europa.eu/en/human-regulatory/research-development/compliance/good-manufacturing-practice.

Languages necessary to complete the course:

English

Notes:

Educational activity includes an excursion to a manufacturing company. In a case of distance education due to pandemic situation, the visit of production site can be replaced by virtual excursion.

Past grade distribution

Total number of evaluated students: 85

A	ABS	B	C	D	E	FX
67,06	0,0	24,71	7,06	1,18	0,0	0,0

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

Last change: 15.12.2021

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/22-Mgr/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:
Completion of lectures and seminars in the specified extend. The exam performed by the written test with a minimum success rate of 60%. The assessment: A = 100-93%, B = 92-85%, C = 84-77%, D = 76 -69%, E = 68-60%, FX = less than 60%.

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 problematic 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. Zacharová, E., a kol.: Zdravotnická psychologie, Praha, Grada 2007, 232 s.
2. Říčan, P.: Psychologie osobnosti. Praha Grada, 2007, 200 s.
3. Kollárik, T.: Sociálna psychológia. Bratislava, UK, 2004, 548 s.
4. Bruno, t., Adamczyk, G.: Řeč těla, Praha, Grada, 2005, 112 s.
5. Medzihorský, Š., a kol.: Komunikácia a lekárenská starostlivosť, Bratislava, 2011, Linwe/KRAFT, 94 s.
6. Foltán, V., a kol.: Vybrané aspekty lekárenskej starostlivosti, Bratislava 2012, Linwe/KRAFT, 208 s.
7. Morovicsová, E., a kol.: Komunikácia v medicíne, UK Bratislava, 2011, 212 s.

Languages necessary to complete the course:
Slovak language.

Notes:

Past grade distribution
Total number of evaluated students: 539

A	ABS	B	C	D	E	FX
58,81	0,0	26,72	10,39	1,48	1,67	0,93

Lecturers: PharmDr. Ľubica Lehocká, PhD.

Last change: 09.12.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/28-Mgr/15	Health Technology Assessment

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

Number of credits: 2

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

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

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

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

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

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

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

Languages necessary to complete the course:
Slovak language.

Notes:

Past grade distribution
Total number of evaluated students: 39

A	ABS	B	C	D	E	FX
74,36	0,0	15,38	2,56	5,13	2,56	0,0

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

Last change: 01.04.2022

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/24-Mgr/00	History of Pharmacy

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:
Student #s assessment includes a written test (90 % of final assessment) and also the completion of lectures (10 % of final assessment). The minimum success limit is 65 %. The final assessment of the exam is:
A = 100 – 93 %, B = 92 – 86 %, C = 85 – 79 %, D = 78 – 72 %, E = 71 – 65 %, FX = less than 64 %.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
By completing the study course, the student aquires basic information about the historical development of pharmacy in the context of social development, focusing on the territory of Europe and Slovakia. They will get acquainted with changes in the social status of pharmacy, drugs and medicines, in the perception of health and disease in different times and cultures. Completion of this course also contributes to the formation of professional ethical opinions and professional pride of students.

Class syllabus:
1. History of pharmacy as a scientific field, basic terminology.
2. Periodization of the history of pharmacy.
3. Prehistoric medicine.
4. Medicine in ancient cultures.
5. Separation of pharmaceutical function from medicine.
6. Pharmacy as a relatively separate field. Pre-classical and classical pharmacy.
7. Differentiation of pharmacy – development of pharmaceutical sciences.
8. Differentiation of pharmacy – development of pharmaceutical branches (industry, wholesale distribution, pharmacy, education, research, control).
9. Pharmaceutical associations and organizations - development with a focus on the territory of Slovakia.
10. History of drugs and medicines.

Recommended literature:
Rusek, V. – Kučerová, M.: Úvod do studia farmacie a dějiny farmacie. Praha: Avicenum, 1983.

Bartunek, A.: Dejiny slovenského lekárnictva I. (do roku 1918). Prešov: AB Art Gallery, 2012.
Bartunek, A.: Osobnosti slovenského lekárnictva. Martin: Osveta, 2001.
Broncová, D. (ed.): Historie farmacie v českých zemích. Praha: Milpo Media, 2003.
Rusek, V. a kol.: Kapitoly z dějin československé farmacie. Bratislava: SPN, 1970.
Smečka, V. – Rusek, V. – Kolář, J. : Lékarenství I. Vývojové kroky československých lékáren se zřetelem k činnosti výdejní. Brno: VFU, 2008

Languages necessary to complete the course:
Slovak language

Notes:
The course is taught only in the winter semester

Past grade distribution
Total number of evaluated students: 1272

A	ABS	B	C	D	E	FX
44,97	0,0	14,31	16,35	10,93	11,71	1,73

Lecturers: Ing. Ingrid Slezáková, doc. PharmDr. Tomáš Tesař, PhD., MBA

Last change: 01.12.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KGF/07-Mgr/00	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:
Assessment through a written examination, for successful completion at least 55%; Assessment A: 95-100%, B: 85-94%, C: 75-84%, D: 65-74%, E: 55-64%

Learning outcomes:
By completing the course the student will gain theoretical knowledge about homoeopathic preparations, especially in terms of pharmaceutical technology (dosage forms, excipients, preparation) and get acquainted with the possibilities of therapy and its use in practice.

Class syllabus:
Homoeopathy – definition, history of homoeopathy, terminology
Origin of homoeopathic preparations
Formulation and preparation, excipients, dosage forms, stability.
Current state, position and development of homoeopathic preparations , registration and distribution, legislation
Homoeopathy and European pharmacopoeia
Homoeopathic preparation and its use in the therapy of acute and chronic diseases

Recommended literature:
Demarque, D., Jouanny, J., Poitevin, B., Saint-Jean, Y.: Farmakologie a Materia medica homeopatica. Francúzsko : Boiron-CEDH, 1998.432 s.
Chalabala, M. a kol.: Technologie léků : 2. preprac. a dopln. vyd., Praha : Galén, 2001. 408 s.
Chefdeville, F. a kol..: Homeopatie : vztahy mezi léky. Francúzsko: Boiron, 2001. 379 s.
Pinto, G., Feldman, M.: Homeopatie pro děti. 1. vyd. Praha : Alternativa, 2004. 232 s.
Macleod, G.: Veterinární homeopatie. 1. vyd. Praha : Alternativa, 2002. 299 s.
Wiesenauer, M. Homeopatia. Prehľadný poradca pri samoliečbe homeopatickými liekmi. Bratislava: Ikar, 2008.
European pharmacopoeia, 10th edition

Languages necessary to complete the course:
slovak

Notes:

Approved by: PharmDr. Veronika Mikušová, PhD.

Past grade distribution
Total number of evaluated students: 134

A	ABS	B	C	D	E	FX
89,55	0,0	5,97	2,24	1,49	0,0	0,75

Lecturers: PharmDr. Mária Čuchorová, PhD.

Last change: 12.12.2021

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 2

Recommended semester: 8.

Educational level: I.II.

Prerequisites: FaF.KORF/10-Mgr/20 - Retail Pharmacy, Legislation and Ethics

Recommended prerequisites:
Retail Pharmacy, Legislation and Ethics

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

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

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

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

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

Languages necessary to complete the course:
Slovak language.

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

Past grade distribution
Total number of evaluated students: 27

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

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

Last change: 02.12.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 3

Recommended semester: 3.

Educational level: I.II.

Prerequisites:

Course requirements:
For credits is required successful completion of two pre-tests during the semester with a minimum success rate of 50% from each of tests and subject 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 engages in the basic constituents of the environment and its effects on human health - specifically, is it 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 content of Hygiene pharmaceutical facilities is based on the 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: 231

A	ABS	B	C	D	E	FX
46,75	0,0	30,3	14,72	5,19	3,03	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: 23.11.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KBMBL/08-Mgr/10	Immunodiagnostics

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

Number of credits: 2

Recommended semester: 5., 7.

Educational level: I.II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 204

A	ABS	B	C	D	E	FX
18,63	0,0	14,71	26,96	13,24	13,24	13,24

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

Last change: 23.11.2021

Approved by: PharmDr. Hana Kiňová Sepová, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 5

Recommended semester: 3.

Educational level: I.II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 165

A	ABS	B	C	D	E	FX	N/a
12,12	0,0	18,79	24,85	17,58	23,03	3,64	0,0

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

Last change: 23.11.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KGF/16-Mgr/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:

Recommended prerequisites:
Pharmaceutical Technology (1) KGF/05-Mgr-A/20

Course requirements:
Assessment through a written examination during the course, for successful completion at least 60 % is required. Assessment: A: 85–100 %, B: 79–84 %, C: 73–78 %, D: 66–72 %, E: 60–65 %, FX: 59 % and less.

Learning outcomes:
Knowledge acquired by passing this course interlocks with previously acquired basic knowledge about conventional dosage forms and provide further detailed information about new trends in formulation and new applications of dosage forms. The aim is to enhance the student´s knowledge in the field of innovative dosage forms and biological medicines.

Class syllabus:
Lectures: Drug delivery systems and dosage forms for targeting. New excipients for new generation drug formulations. Drug carriers: polymeric carriers, drug-carrier complexes, nanoparticles, nanofibres, microspheres. Lipid carriers: NLC, SLN and liposomes: formulation, drug incorporation, liposomal dosage forms and their perspectives. Micro- and nanoemulsions, self-emulsifying systems, multiple and dry emulsions, micro- and nanosuspensions, formulation and applications. New trends in dermal and transdermal applications of drugs. Innovative solid and semi-solid dosage forms.
Biological medicines (BM), biosimilars, dosage forms, Fill/Finish operations and excipients in the production of BM. Formulation, stability and methods of evaluation of BM. BM in hormonal therapy – insulin dosage forms, possibilities in controlled liberation. Application devices. Growth hormones – use, side-effects. Enzyme therapy - lactase, pancreatase, serapeptase etc. Transfusion preparations and their quality. Plasma processing. Blood products. Medicines prepared or isolated from plasma. Thrombin inhibitors. Erythropoietins, granulocytes, colony-stimulating factors. Combination Products – wearable pumps, autoinjectors pre-filled syringes. BM in oncology - interleukins, interferons, monoclonal antibodies, antibody fragments, hematopoietic growth factors. Vaccines and BM for immune system response modulation. Allergen immunotherapy.

DNA formulations for gene therapy. Other applications of BM – dermatology, rheumatology, gastroenterology, sclerosis multiplex, macular degeneration etc.
Practical exercices: Formulation of new dosage forms: nanodispersion drug carriers, microemulsions, nanoemulsions and their comparison with conventional dosage forms (emulsions). Study of the influence of different excipients on the drug formulation and on the physico-chemical properties. In vitro drug release assay from the prepared formulations.
Attendance of the lectures is highly recommended. Attendance of practical exercises is obligatory.

Recommended literature:
Žabka, M. a kol. Moderné lieky vo farmaceutickej technológii. Bratislava: SAP, 2. vyd., 2001, 486s.
European Pharmacopoeia 10th Ed. Strasbourg: EDQM, 2021
https://uniba.sk/en/about/faculties-and-units/comenius-university-academic-library/external-electronic-information-resources/
Current available literature are listed on lectures or practical exercises with relevant theme.

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 68

A	ABS	B	C	D	E	FX
48,53	0,0	32,35	11,76	5,88	1,47	0,0

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

Last change: 13.12.2021

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/23-Mgr/17	Innovative Medicines in Pharmacotherapy

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

Number of credits: 2

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

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

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

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

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

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

Languages necessary to complete the course:

slovak, english

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

Past grade distribution
Total number of evaluated students: 160

A	ABS	B	C	D	E	FX
98,75	0,0	0,0	0,0	0,0	0,0	1,25

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

Last change: 01.12.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 3

Recommended semester: 1.

Educational level: I.II.

Prerequisites:

Course requirements:
Active participation, taking two tests during semester with an overall success rate of at least 60%; successful passing of the written and oral exam.
Grading scale:
100 – 91% = A
90 – 81% = B
80 – 73% = C
72 – 66% = D
65 – 60% = E
59 – 0% = Fx
Scale of assessment (preliminary/final): 15/85

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

Class syllabus:
1. Grammatical introduction, phonetic rules of Latin, length of syllable, accent
2. Morphological introduction, introduction to the structure of medical terms
3. Latin nouns of the 1st declension, verb esse and its compounds
4. Latin nouns of the 2nd declension, verbs of the 1st conjugation
5. Adjectives of the 1st and 2nd declensions, verbs of the 2nd conjugation, adverbs
6. Latin nouns of the 3rd declension – consonant stems
7. Midterm test
8. Latin nouns of the 3rd declension – vowel stems
9. Verbs of the 3rd conjugation
10. Greek nouns of the 1st and 2nd declensions

11. Verbs of the 4th conjugations
12. Greek nouns of the 3rd declension - consonant and vowel stems
13. Overview of grammar

Recommended literature:

• VALLOVÁ, Eleonóra. Cursus linguae Latinae ad usum pharmaciae studentium. Bratislava: Univerzita Komenského, 2016. . 978-80-223-4176-9.
• OZÁBALOVÁ, Ľudmila. Latinčina pre farmaceutov. Bratislava: Univerzita Komenského, 2017. ISBN 80-223-4323-7.
• OZÁBALOVÁ, Ľudmila, VALLOVÁ, Eleonóra and Tomáš HAMAR. Trojjazyčný latinsko-anglicko-slovenský slovník pre študentov farmácie a medicíny. Bratislava: Univerzita Komenského, 2017. ISBN 978-80-223-4347-3.
• KÁBRT, Jan and Jan KÁBRT ml. Lexicon medicum. Praha: Galén, 2015. ISBN 978-80-7492-200-8.
• European Pharmacopoeia Online 9.0
• Farmaceutický kódex 2015 – Codex pharmaceuticus Slovacus MMXV.

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 634

A	ABS	B	C	D	E	FX
65,77	0,0	21,14	6,94	2,37	0,95	2,84

Lecturers: doc. PhDr. Ľudmila Ozábalová, PhD., Mgr. Ivan Lábaj, PhD., PhDr. Tomáš Oravec

Last change: 26.03.2022

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 2

Recommended semester: 2.

Educational level: I.II.

Prerequisites: FaF.KJ/17-Mgr/19 - Latin Medicinal Terminology or FaF.KJ/17-Mgr/22 - Latin Medicinal Terminology

Course requirements:
Active participation, taking two tests during semester with an overall success rate of at least 60%; successful passing of the written and oral exam.
Grading scale:
100 – 91% = A
90 – 81% = B
80 – 73% = C
72 – 66% = D
65 – 60% = E
59 – 0% = Fx
Scale of assessment (preliminary/final): 15/85

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

Class syllabus:
1. Overview of grammar of units 1-7
2. Latin adjectives of the 3rd declension
3. Greek adjectives of the 3rd declension
4. Comparison of adjectives and adverbs
5. Nouns of the 4th declension, nouns of the 5th declension
6. Verbum infinitum
7. Numerals
8. Midterm test
9. Prepositions, prefixes

10. Compound words
11. Relative pronouns, present subjunctive
12. Grammatical structure of medical prescription
13. Final overview of grammar

Recommended literature:

• VALLOVÁ, Eleonóra. Cursus linguae Latinae ad usum pharmaciae studentium. Bratislava: Univerzita Komenského, 2016. . 978-80-223-4176-9.
• OZÁBALOVÁ, Ľudmila. Latinčina pre farmaceutov. Bratislava: Univerzita Komenského, 2017. ISBN 80-223-4323-7.
• OZÁBALOVÁ, Ľudmila, VALLOVÁ, Eleonóra and Tomáš HAMAR. Trojjazyčný latinsko-anglicko-slovenský slovník pre študentov farmácie a medicíny. Bratislava: Univerzita Komenského, 2017. ISBN 978-80-223-4347-3.
• KÁBRT, Jan and Jan KÁBRT ml. Lexicon medicum. Praha: Galén, 2015. ISBN 978-80-7492-200-8.
• European Pharmacopoeia Online 9.0
• Farmaceutický kódex 2015 – Codex pharmaceuticus Slovacus MMXV.

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 443

A	ABS	B	C	D	E	FX
66,37	0,23	14,45	9,26	3,84	2,71	3,16

Lecturers: doc. PhDr. Ľudmila Ozábalová, PhD., Mgr. Ivan Lábaj, PhD., PhDr. Tomáš Oravec

Last change: 26.03.2022

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 3

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Course requirements:
During the semester, two practical cases will be solved using uncommented legislation of 25 points each. Credits will not be awarded to a student who obtains less than 12 points from any written test. The minimum success limit for both written tests is 65 %. Evaluation scale: A: 100 – 93 %, B: 92 – 86 %, C:85 – 79 % D: 78 – 72 %, E: 71 – 65 %. FX: less than 64 %.

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

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

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

Languages necessary to complete the course:
Slovak language.

Notes:

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

Past grade distribution
Total number of evaluated students: 27

A	ABS	B	C	D	E	FX
40,74	0,0	37,04	11,11	3,7	7,41	0,0

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

Last change: 04.12.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/18-Mgr/20	Management Basics in Pharmacy

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

Number of credits: 3

Recommended semester: 4.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
Not specified

Course requirements:
Completion of lectures and seminars. Preliminary tests minimum 50% for each one. The exam performed by the written test with a minimum threshold of success 65%. The assessment: A = 100-93%, B = 92-86%, C = 85-79%, D = 78-72%, E = 71-65%, FX = 64% and less.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
This course represents a selection of thematic specific areas from the extensive issues of management theory with a focus on the specifics of management in health care. It provides students with a set of knowledge that a health worker - and a pharmacist - should master at a theoretical level to apply in practice in their daily and managerial professions. The content of the course includes basic managerial functions, such as management, planning, organization, control and leadership, discusses the specifics of management procedures in health care with a focus on pharmacy, including marketing in pharmacy. Students can use the acquired knowledge for their future application in various areas of health care, including pharmacy.

Class syllabus:
1. General theory of management. Manager´s thinking and directions.
2. Management as process.
3. Strategic management.
4. Financial management.
5. Organization, organizational structure – Personal management.
6. Quality management.
7. Health management – managers in health care system, manager´s functions in health care.
8. Quality management
9. Specifics of management procedures in pharmacy – management of patient and management of medical devices.
10. The basics of pharmaceutical marketing – market, customers, marketing mix.

11. Marketing of health care equipment – pharmacy, equipment for dissension of medical devices.

Recommended literature:

1. Foltán V. a kol.: Manažment, marketing a lieky, Herba 2010.
2. Ozorovský V. a kol.: Zdravotnícky manažment a financovanie, Bratislava, Wolters Kluwer 2016
3. Kotler P.: Marketing a management, Grada, 2001
4. Jakušová V.: Základy zdravotníckeho manažmentu, Osveta Martin, 2010.
5. Sedlák M.: Základy manažmentu, IURA Edition 2008.
6. Karlíček M.: Základy marketingu, Grada 2013
7. Metyš K., Balog P.: Marketing ve farmácii, Grada 2006

Languages necessary to complete the course:
Slovak language

Notes:

Past grade distribution
Total number of evaluated students: 154

A	ABS	B	C	D	E	FX
72,73	0,0	16,88	8,44	1,3	0,65	0,0

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

Last change: 07.02.2022

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFChL/18-Mgr/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:
During full-time teaching, students will write 8 to 10 tests for a total of 40 points during the semester, and a written test worth of 60 points is written at the exam. Points from tests at seminars and from the current test at the exam are added together. In case of on-line teaching, students write a test worth of 100 points.
To obtain an A rating, it is necessary to obtain at least 92 points, to obtain an B rating at least 84 points, to obtain a C rating at least 76 points, to obtain a D rating at least 68 points and to obtain an E rating at least 61 points.
Scale of assessment (preliminary/final): Seminar tests: maximum 40 points (full-time teaching)Final exam test: maximum 60 points (full-time teaching)Final exam test: maximum 100 points (on-line teaching)

Learning outcomes:
After completing the course, students will master the basics of higher mathematics, practical applications of discrete mathematics methods, introduction to mathematical analysis, differential and integral calculus. They will be able to use this knowledge in the study of physics, physical chemistry, biophysics, pharmaceutical technology and other related specialised subjects of the study program Pharmacy.

Class syllabus:
Discrete mathematics - propositional logic. Sessions and functions - function definition and graph of function. Elementary functions. Real functions of a real variable. Sequences and numerical series - limits of sequences. Infinite numerical series and power series, approximation of functions. Differential calculus - limit and derivative, differential and difference. Analzsis of real functions. Integral calculus - primitive function, indefinite and definite integral and its applications. Functions of several variables - partial derivation, total derivation and total differential. Ordinary first order differential equations and their applications.
Lectures from the subject Mathematics for Pharmacists are supplemented by a seminar, where students verify their theoretical knowledge and acquire skills in solving mathematical examples.

Recommended literature:

V. Frecer: Matematika pre farmaceutov, UK, Bratislava, 2014.
M. Jasem, Ľ. Horanská: Matematika I. Zbierka úloh, Bratislava, STU, 2010.

Languages necessary to complete the course:
Slovak language

Notes:
The course is provided only in the winter semester.

Past grade distribution
Total number of evaluated students: 131

A	ABS	B	C	D	E	FX
11,45	0,0	16,03	19,08	15,27	24,43	13,74

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

Last change: 26.11.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KGF/10-Mgr/00	**Course title:** Medical Devices
Educational activities: **Type of activities:** lecture / laboratory practicals / seminar **Number of hours:** **per week:** 2 / 0 / 0 **per level/semester:** 28 / 0 / 0 **Form of the course:** on-site learning	
Number of credits: 2	
Recommended semester: 5.	
Educational level: I.II.	
Prerequisites:	
Course requirements: Assessment of students takes place in a form of pre-final written exam as a prerequisite to pass a final written exam by e-test. Minimum success rate is at the 70%. Assessment A 95-100%, B: 88-94%, C: 82-87%, D: 76-81%, E: 70-75%.	
Learning outcomes: The student acquires basic knowledge about medical devices (properties, requirements, quality, handling, storage) in the context of their most common indications in medical and preventive health care. The main emphasis is given on medical devices that are commonly available in pharmacies and medical dispensaries.	
Class syllabus:	
Recommended literature: The literature is specified and supplemented in lectures by topics. 1. Collections of Laws of the National Council of the Slovak Republic, web site of the Ministry of Health of the Slovak Republic. 2. Act no. 362/2011 Coll. on Medicines and Medical Devices. 3. European Pharmacopoeia, 10th Edition. Strasbourg: EDQM, 2020. Central Library of FaF UK in Bratislava4. European Pharmacopoeia. Available online: access into the updated license 10th Edition (10.4 - 10.5) through registration in the Central Library of FaF UK in Bratislava.	
Languages necessary to complete the course: Slovak and English	
Notes: Teaching takes place in winter term. The teaching capacity is limited to 100 students as maximum. Past grade distribution: Evaluation of students by grade distribution in the academic year 2020/2021: A 10.8%; B 35.1%; C 32.4%; D 18.9%; E 2.7%.	

Past grade distribution
Total number of evaluated students: 1244

A	ABS	B	C	D	E	FX
60,29	0,0	19,45	10,37	3,22	2,57	4,1

Lecturers: PharmDr. Veronika Šimunková, PhD., PharmDr. Mária Raučinová, PhD., Mgr. Jana Selčanová, PharmDr. Veronika Mikušová, PhD., PharmDr. Jana Kubíková, PhD., PharmDr. Milica Molitorisová, PhD., PhDr. Eva Nováková, Ing. Silvia Molnárová

Last change: 13.12.2021

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 2

Recommended semester: 4.

Educational level: I.II.

Prerequisites:

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

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

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

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

Recommended literature:

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

Languages necessary to complete the course:

slovak

Notes:

The capacity of subject is limited to 20 students

Past grade distribution

Total number of evaluated students: 42

A	ABS	B	C	D	E	FX
19,05	0,0	57,14	19,05	4,76	0,0	0,0

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

Last change: 21.12.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 2

Recommended semester: 5.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
FaF.KFB/03-Mgr/00-Mgr-A/00 Pharmaceutical Botany

Course requirements:
Active attendance at the lectures and excursions is required, including work with herbarium specimans (25 pts.). Students have to prepare and defend their seminary work (30 + 45 pts.).
Final grade:
A: 100 - 94 pts., B: 93 - 85 pts., C: 84 - 78 pts., D: 77 - 71 pts., E: 70 - 60 pts., FX – 59 and less
Scale of assessment (preliminary/final): 55/45

Learning outcomes:
Students will learn to identify most important medicinal plants, students will learn fundamentals about dispersal, conservation, production, harvesting, processing and manufacturing of medicinal plants.

Class syllabus:
The lessons concentrate on the following topics: dispersal, conservation, production, harvesting, processing, and manufacturing of medicinal plants, Identification of pharmaceutically important medicinal plants.

Recommended literature:
Takhtajan A.: Flowering plants, 2009
Ross I. A. Medicinal Plants of the World, 2001

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 1211

A	ABS	B	C	D	E	FX
64,08	0,0	23,37	9,5	1,32	0,5	1,24

Lecturers: doc. Ing. Miroslav Habán, PhD., Mgr. Ondrej Ďuriška, PhD.
Last change: 25.06.2022
Approved by: doc. Ing. Miroslav Habán, PhD., prof. Ing. Milan Nagy, CSc.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 2

Recommended semester: 6.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 273

A	ABS	B	C	D	E	FX
59,71	0,0	33,33	5,13	1,83	0,0	0,0

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

Last change: 03.04.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 5

Recommended semester: 1.

Educational level: I.II.

Prerequisites:

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

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

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

Recommended literature:
Murray P.R., Rosenthal K.S., Pfaller M.A.: Medical Microbiology 9th Ed., Elsevier Books 2020, ISBN 13: 9780323673228
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

Notes:

Past grade distribution
Total number of evaluated students: 614

A	ABS	B	C	D	E	FX
15,15	0,0	15,47	22,8	20,03	19,38	7,17

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: 23.11.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 3

Recommended semester: 6.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 47

A	ABS	B	C	D	E	FX
76,6	0,0	10,64	12,77	0,0	0,0	0,0

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

Last change: 06.07.2021

Approved by: PharmDr. Vladimír Garaj, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KBMBL/22-Mgr/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: 235

A	ABS	B	C	D	E	FX
28,51	0,0	29,79	22,98	12,77	5,11	0,85

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

Last change: 23.11.2021

Approved by: RNDr. František Bilka, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 1

Recommended semester: 6., 8.

Educational level: I.II.

Prerequisites:

Course requirements:
- active participation in lectures - 100% participation
- successful completion of a written examination
A 92-100%, B 84-91%, C 76-83%, D 68-75%, E 60-67%, Fx< 60%
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
By completing the course, students will gain information about the latest systems and methods of exercise, which can effectively solve acute and chronic problems of the organ and locomotor system. They will get acquainted with the possibilities and choice of physical activity in case of movement deficit. They will learn to prevent and solve problems after injuries using specific exercises and methods of regeneration. Physical activity also in your free time, and thus gain habits to create an optimal lifestyle in the long run.

Class syllabus:
- What precedes sports activity with a recommendation of when, where and how to start.
- Physical activity focused on the physical development of healthy people (fitness training) and improving the health of specific groups of the population.
- Exercise (preventive and curative) methods, methods and systems of exercises that help with diseases, injuries and stressful periods of life.
- Specific exercise programs, focused on a selected health problem.
- Specifics of physical activity in healthy people and people with diseases of the organ or musculoskeletal system.
- An overview of the most common injuries and injuries in selected sports activities, how to prevent them.
- Focus on individual physical activities, with specifics for age, health and interest groups.

Recommended literature:
BINOVSKÝ, A. 2001. Systematická a funkčná športová anatómia. Bratislava 2001. ISBN: 80-88901-42-1

ČALKOVSKÁ, A. a kol. 2010. Fyziológia človeka pre nelekárske študijné programy. Martin: Osveta 2010. ISBN 978-80-8063-344-8
KENNEY, W. – WILMORE, J. – COSTILL, D. 2015. Physiology of sport and exercise. 6. Vyd. Champaign: Human Kinetics, 627 s. ISBN: 978-1-4504-7767-3
MÁČEK,M. akol.2010. Základy zátěžové fyziologie. www.tvl.lf2.cuni.cz. 2010
McARDLE VD, Katch V L,. Exercise Physiology. Lippincott Williams & Wilkins, baltimore, 2007, 1068 s.
NOVOTNÝ, Jan. 2014. Sportovní medicína. 1. vyd. Brno: Masarykova univerzita, 123 s. ISBN 978-80-210-7408-8
POWERS SK & Howley ET., Exercise Physiology, theory and Application of Fitness and performance, 6.vyd, McGraw-hill Int. Edition, 2007.
UKROPEC, J. – UKROPCOVÁ, M. 2012. Adipose tissue and skeletal muscle plasticity in obesity and metabolic disease. Dyslipidemia - from prevention to treatment. - Rijeka : InTech, s. 141-172. - ISBN 978-953-307-904-2.
UKROPCOVÁ, M. – UKROPEC, J.: 2013. Fyzická aktivita, obezita a zdravie. Klinická obezitológia. Brno: Facta Medica, 2013. s. 102-122, ISBN 978-80-904731-7-1.

Languages necessary to complete the course:
Slovak language

Notes:

Past grade distribution
Total number of evaluated students: 140

A	ABS	B	C	D	E	FX
99,29	0,0	0,0	0,0	0,0	0,0	0,71

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

Last change: 28.07.2022

Approved by: PaedDr. Martina Tibenská, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 3

Recommended semester: 4.

Educational level: I.II.

Prerequisites:

Course requirements:
Obligatory elective course. Practices take place in working groups focused on the selected analytical method, into which students enroll at the beginning of the semester. Student participation in all forms of teaching is mandatory to the extent specified in the curriculum. During the semester, students prepare a semester work on a given topic. The submitted and defended semester work is a requirement for successful completion of the course exam. To pass the exam, one must obtain at least 60% of the possible points.
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. Inthis 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 (2DLC, 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 strategyof 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 thebasics 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 diploma thesis, as well as in doctoral studies (PhD.).

Class syllabus:

• Advanced sample preparation methods prior to instrumental analysis
o microdialysis
o Microextraction (mSPE, mLLE)
o Ultrafiltration
o Ultracentrifugation
• Development, optimization, and validation of an analytical method for pharmaceutical use.
o Optimization and validation parameters of the method for pharmaceutical analysis
o Validation protocol in pharmaceutical analysis
o National and transnational pharmacopoeias in the process of validation of analytical methods
• New electrochemical methods and their specifics
o Traditional vs. new electrode materials (carbon, metal, nanomaterials)
o Electrode modifications (nanoparticles, enzymes, polymers, mediators, ionic liquids, nucleic acids)
o Electrode formats: traditional, miniaturized, screen-printed
o Advanced electrochemical techniques - 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., Piešťanský J.: Kapilárna elektroforéza, hmotnostná spektrometria a ich kombinácie vo farmaceutickej a biomedicínskej analýze, VEDA, Bratislava, 2014. 312p.
• Mikuš, P., Piešťanský, J., Dokupilová, S.: Kvapalinová chromatografia, hmotnostná spektrometria a ich kombinácie vo farmaceutickej a biomedicínskej analýze, VEDA, Bratislava, 2018. 365p.

• Mikuš, P., Maráková, K,: Hyphenated Electrophoretic Techniques in Advanced Analysis, KARTPRINT, Bratislava, 2012. 217p.
• Mikuš, P.: Chiral Capillary Electrophoresis in Current Pharmaceutical and Biomedical Analysis, Intech, Rijeka, 2012. 182p.
• Labuda, J. a kol, Analytická chémia, Bratislava, STU v Bratislave, 2019, 682 s.
• Světlík J.: Molekulová spektroskopia a optické metódy, UK Bratislava, 2006. 81p.

Languages necessary to complete the course:
slovak and english language

Notes:

Past grade distribution
Total number of evaluated students: 119

A	ABS	B	C	D	E	FX
68,91	0,0	28,57	1,68	0,84	0,0	0,0

Lecturers: RNDr. Svetlana Dokupilová, PhD., PharmDr. Juraj Piešťanský, PhD., Mgr. Michal Hanko, PhD., Ing. Dáša Kružlicová, PhD., Mgr. Samuel Varényi, PhD., PharmDr. Katarína Maráková, PhD.

Last change: 02.04.2022

Approved by: RNDr. Svetlana Dokupilová, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 7

Recommended semester: 2.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 4000

A	ABS	B	C	D	E	FX
6,4	0,0	19,73	31,95	27,8	4,88	9,25

Lecturers: doc. PharmDr. Jindra Valentová, PhD., doc. PharmDr. Miloš Lukáč, PhD., RNDr. Roman Mikláš, PhD., Ing. Ladislav Habala, PhD., Mgr. Lucia Lintnerová, PhD., Ing. Iveta Pechová, PhD., Mgr. Peter Herich, PhD., PharmDr. Janka Leskovská, PharmDr. Mário Markuliak, doc. Ing. Martin Pisárčik, CSc., Mgr. Natalia Lucia Miklášová, PhD., Mgr. Bianka Oboňová, Mgr. Anna Miňo, PhD., RNDr. Jana Korcová, PhD., Mgr. Martin Bajcura, Mgr. Jakub Vaľko

Last change: 03.04.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 5

Recommended semester: 3.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 3455

A	ABS	B	C	D	E	FX
4,17	0,0	13,37	22,72	29,67	12,3	17,77

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

Last change: 03.04.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 2

Recommended semester: 3.

Educational level: I.II.

Prerequisites:

Course requirements:
Obligatory attendance at 80% of lectures and preparation of a seminar work: the seminar work consists of a professional translation of the ORPHANET article on the selected rare disease into the slovak version of the Encyclopedia of Rare Diseases, preparation of an article about rare disease for the general public, which will be published on the website www.sazch.sk and a presentation on the given rare disease at the seminar.

Learning outcomes:
By completing the course, the student will gain basic information on a heterogeneous and large group of diseases with low prevalence (6 - 8000 rare diseases with a prevalence of no more than 5 per 10 000 EU population). The aim is to inform students about basic approaches, scientific knowledge and information sources where they will be able to find important information about rare diseases in the future. Afterwards, the student will be introduced to selected rare diseases, which are already treated in Slovakia within the national network of rare disease centres. An interest in physiology and pathology, or completion of courses in this field, as well as a good knowledge of the English language are an advantage.

Class syllabus:
- The concept and definition of rare diseases in Europe and worldwide
- Rare disease diagnosis and prevention
- The importance of patient groups for the development of the topis
- Practical examples of selected rare diseases - metabolic diseases, diseases of the respiratory system, diseases of the nervous system, neuromuscular diseases, diseases of the blood, diseases of the immune system

Recommended literature:
• Kubáčková K. kolektív: Vzácná onemocnění, Mladá fronta 2014, s 304, ISBN ISBN 9788020431493
• www. orpha.net
• http://www.rd-action.eu/
• https://www.health.gov.sk/Clanok?2-vyzva-ERN-30-11-2019

• https://ec.europa.eu/health/ern_en
• https://ec.europa.eu/health/non_communicable_diseases/rare_diseases_sk
• http://sazch.sk/pracoviska-pre-zch/
• www. orpha.net
• http://www.rd-action.eu/
• https://www.health.gov.sk/Clanok?2-vyzva-ERN-30-11-2019
• https://ec.europa.eu/health/ern_en
• https://ec.europa.eu/health/non_communicable_diseases/rare_diseases_sk
• http://sazch.sk/pracoviska-pre-zch/

Languages necessary to complete the course:
slovak, english

Notes:

Past grade distribution
Total number of evaluated students: 67

A	ABS	B	C	D	E	FX
38,81	0,0	46,27	5,97	8,96	0,0	0,0

Lecturers: PharmDr. Tatiana Foltánová, PhD., PharmDr. Eva Malíková, PhD.

Last change: 09.12.2021

Approved by: PharmDr. Tatiana Foltánová, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 6

Recommended semester: 4.

Educational level: I.II.

Prerequisites:

Course requirements:
Lectures: attendance on lectures
Practical lessons: active attendance on practical lessons, students have to pass two tests: 1. Anatomy of the plants (20 points); 2. Identification of the plants (20 points)
Final exam: test (60 points)
Final grade: A = 100 - 94 pts.; B = 93 – 85 pts.; C = 84 – 78 pts.; D = 77 – 71 pts.; E = 70 – 60 pts. FX = 59 pts. and less (not pass)
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
Learning outcomes: Students will learn the fundamentals of plant anatomy, plant morphology and plant systematic with special emphasis on medicinal plants. Students will benefit from acquired knowledge in subjects: Medicinal plants and Pharmacognosy.

Class syllabus:
The lessons concentrate on the following topics: plant cell and plant cell organelles, plant anatomy and morphology – plant tissues and plant organs, plant reproduction, plant systematics with special emphasis on medicinal plants.

Recommended literature:
Ďuriška O., 2022: Pharmaceutical botany – presentations in electronic form
Siphunov A. 2020: Introduction to botany
Spurná V., 1998: Pharmaceutical botany I. Plant cell and plant tissues
Spurná V., 1999: Pharmaceutical botany II. Plant morphology
Takhtajan A., 2009: Flowering plants

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 3628

A	ABS	B	C	D	E	FX
31,92	0,0	23,21	23,65	12,35	7,8	1,07

Lecturers: doc. Ing. Miroslav Habán, PhD., RNDr. Ingrid Mistríková, CSc., Mgr. Ondrej Ďuriška, PhD.

Last change: 25.06.2022

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

STATE EXAM DESCRIPTION

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 5

Recommended semester: 5.

Educational level: I.II.

Prerequisites:

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

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

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

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

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

Class syllabus:

Syllabus of Lectures

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

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

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

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

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

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

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

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

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

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

Recommended literature:

The Lectures from the Pharmaceutical Chemistry (1) Course; In Slovak
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, USA, 1022 pp.
Doležal, M. a kol. (2014). Farmaceutická chemie léčiv působících na centrální nervový systém (In Czech). Praha, Karolinum, Czech Republic, 188 pp.
Doležal, M. a kol. (2016). Farmaceutická chemie léčiv působících na autonomní nervový systém (In Czech). Praha, Karolinum, Czech republic, 134 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, USA, 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.
Remko, M. (2019). Základy medicínskej a farmaceutickej chémie (In Slovak), 3. Vyd. Remedika, Bratislava, Slovakia, 480 pp.
Roche, V. F., Zito, S. V., Lemke, T. L., & Williams, D. A. (2019). Foye´s Principles of Medicinal Chemistry, 8th Ed. Wolters Kluwer Health Adis (ESP), Baltimore, USA, 1168 pp.
Silverman, R. B., & Holladay, M. W. (2015). The Organic Chemistry of Drug Design and Drug Action. 3rd Ed. Elsevier, Waltham, USA, 521 pp.

Languages necessary to complete the course:
Slovak language, Czech language, English language

Notes:

Past grade distribution
Total number of evaluated students: 3125

A	ABS	B	C	D	E	FX
15,71	0,0	15,65	24,03	17,38	20,35	6,88

Lecturers: doc. Mgr. Fils Andriamainty, PhD., doc. PharmDr. Ivan Malík, PhD., PharmDr. Vladimír Garaj, PhD., Mgr. Stanislav Bilka, PhD., PharmDr. Jana Čurillová, PhD., PharmDr. Matej Maruniak, PhD., PharmDr. Lenka Stopková, PhD., Mgr. Róbert Šandrik, PhD., Ing. Stanislava Šoralová, PhD., PharmDr. Katarína Birošíková, PharmDr. Kamila Chomaničová, PhD., PharmDr. Miroslav Kemka, PharmDr. Mária Pecháčová, PhD., PharmDr. Eva Salanci, PhD.

Last change: 22.03.2022

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 8

Recommended semester: 6.

Educational level: I.II.

Prerequisites:

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

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

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

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

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

Class syllabus:

Syllabus of Lectures

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

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

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

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

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

Discussion connected with the topics lectured previously

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

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

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

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

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

Discussion connected with the topics lectured previously.

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

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

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

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

Syllabus of Laboratory Practicals

1ST-12TH WEEK – PART A

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

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

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

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

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

1ST-12TH WEEK – PART B

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

a) Analgesics–Antipyretics,
b) Disulfiram,
c) Drugs Supporting Acidosis. Antacids and Anti-Ulcer Drugs,
d) Disinfectants and Antiseptics,
e) Sulfonamides.

Recommended literature:

The Lectures from the Pharmaceutical Chemistry (2) Course (In Slovak).

Andriamainty, F., & Malík, I. (2011). Farmaceutická chémia Vybrané liečivá - ich príprava a štúdium fyzikálno-chemických parametrov (In Slovak). 1st Ed. Vydavateľstvo Univerzity Komenského v Bratislave, Bratislava, Slovakia, 216 pp.

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

Beale, J.M., & Block, J.H. (2011). Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry. 12th Ed. Wolters Kluwer Health (Lippincott Williams & Wilkins), Philadelphia, USA, 1022 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.
Hartl, J., Doležal, M., Miletín, M., Opletalová, V., & Zimčík, P. (2012). Farmaceutická chemie IV (chemoterapeutika; In Czech), Karolinum, Praha, Czech Republic, 168 pp.
Hartl, J., Doležal, M., Krinková, J., Miletín, M., & Opletalová, M. (2012). Farmaceutická chemie III (oběhová a krevní soustava, trávící a vylučovací soustava; In Czech), Karolinum, Praha, Czech Republic, 117 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, USA, 832 pp.
Remko, M. (2019). Základy medicínskej a farmaceutickej chémie (In Slovak), 3rd Ed. Remedika, Bratislava, Slovakia, 480 pp.
Roche, V.F., Zito, S.V., Lemke, T.L., & Williams, D.A. (2019). Foye´s Principles of Medicinal Chemistry, 8th Ed. Wolters Kluwer Health Adis (ESP), Baltimore, USA, 1168 pp.
Silverman, R.B., & Holladay, M.W. (2015). The Organic Chemistry of Drug Design and Drug Action. 3rd Ed. Elsevier, Waltham, USA, 521 pp.
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, United Kingdom, 903 pp.

Languages necessary to complete the course:
Slovak language, Czech language, English language

Notes:

Past grade distribution
Total number of evaluated students: 156

A	ABS	B	C	D	E	FX
6,41	0,0	18,59	29,49	34,62	9,62	1,28

Lecturers: doc. Mgr. Fils Andriamainty, PhD., doc. PharmDr. Ivan Malík, PhD., PharmDr. Vladimír Garaj, PhD., Ing. Stanislava Šoralová, PhD., doc. PharmDr. Miroslava Sýkorová, PhD., Mgr. Stanislav Bilka, PhD., PharmDr. Jana Čurillová, PhD., PharmDr. Iva Kapustíková, PhD., PharmDr. Matej Maruniak, PhD., PharmDr. Lenka Stopková, PhD., Mgr. Róbert Šandrik, PhD., PharmDr. Kamila Chomaničová, PhD., PharmDr. Miroslav Kemka, PharmDr. Mária Pecháčová, PhD., PharmDr. Eva Salanci, PhD.

Last change: 22.03.2022

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/06-Mgr/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:
There are two tests during the semester. At least 60% must be obtained for their successful completion.
100 – 95 %: A
94 – 85 %: B
84 – 75 %: C
74 – 65 %: D
64 – 60 %: E
< 59 % FX
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The course connects the world of drugs and medicines with informatics and its current methods and tools. After completing the course, the student is able to independently and creatively work with information systems of drugs and drugs, interpret data on drugs and drugs in their wide range of pharmaceutical and clinical issues. By completing the course the student is able to understand pharmacotherapy as an information process, is able to use a computer as a clinical tool for treatment decisions, generate and interpret outputs, is able to communicate with drug databases, including search in digital spaces (including evidence-based pharmacy) and use advances in e-pharmacy and e-health. Upon successful completion of this course, students are qualified to use procedures and techniques of working with pharmaceutical databases and understand the flow of information in the field of drugs and medicines, including the ability to work with bibliographic databases as a source of new knowledge. The student is able to use current versions of application software in their professional activities.

Class syllabus:
The subject of the discipline Pharmaceutical Informatics is drugs and a complex of structured data about them. The course suitably synthesizes the professional pharmaceutical need for knowledge about drugs and drugs with the current necessary electronic form of collection, processing and routine use of pharmaceutical data and information.
· Information system as a central concept of pharmacoinformatics,

· Pharmaceutical computing,
· Computer as a means of implementing the professional requirements of a pharmacist for the handling of professional pharmaceutical data and media,
· Current information systems, drug and drug databases,
· Compatibility of pharmaceutical data, their current types and shapes.
· Drugs and medicines, their properties in terms of their IT specificity and with regard to the needs formulated by the information process,
· Local and network technologies in the field of medicines and drugs and work with them,
· Seminars are active and individual communication with a computer on workstations of computer laboratories in solving pharmacoinformatics problems,
· Creation of abilities, knowledge and skills in solving theoretical and practical information problems associated with drugs and medicines,
· Revellation, virtual libraries, bibliographic databases.

Recommended literature:
Professional magazine and internet resources according to individual topics.

Languages necessary to complete the course:
Slovak language, English language.

Notes:
The course is taught only in the summer semester of the academic year, the capacity of the course is limited to individual student work at the computer workplaces of the faculty, which requires the organization of capacities due to the great interest of students.

Past grade distribution
Total number of evaluated students: 37

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

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

Last change: 09.12.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 5

Recommended semester: 1.

Educational level: I.II.

Prerequisites:

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

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

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

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

Recommended literature:

Oremusová J., Sarka K., Vojteková M.: FYZIKA. Laboratórne cvičenia pre farmaceutov. Bratislava, Univerzita Komenského, 2009. 102 s. (skriptá)
Videoprednášky dostupné v MS Teams.
Video k laboratórnym cvičeniem dostupné v MS Teams.
Kopecký, F.: Prehľad fyziky pre farmaceutov I. (Mechanika, hydromechanika a náuka o teple). 4. vydanie, Bratislava, Univerzita Komenského, 1999. 184 s. (skriptá, http://www.fpharm.uniba.sk/index.php?id=2665).
Sarka, K., Kopecký, F.: Prehľad fyziky pre farmaceutov II. (Elektrina, magnetizmus a žiarenie). Bratislava, Univerzita Komenského, 1988. 104 s. (skriptá, http://www.fpharm.uniba.sk/index.php?id=2665).
Krempaský, J.: Fyzika. Bratislava, Alfa 1982. 752 s.
Halliday D., Resnick R., Walker J: Fyzika. Prometheus. Praha, 2000

Languages necessary to complete the course:

slovak language

Notes:

Past grade distribution
Total number of evaluated students: 225

A	ABS	B	C	D	E	FX
6,67	0,0	10,67	20,89	22,67	19,56	19,56

Lecturers: RNDr. Alexander Búcsi, PhD., doc. RNDr. Jana Gallová, CSc., doc. Mgr. Marcela Chovancová, PhD., Mgr. Mária Klacsová, PhD., Mgr. Lukáš Hubčík, PhD., Ing. Jarmila Oremusová, CSc.

Last change: 30.03.2022

Approved by: doc. RNDr. Jana Gallová, CSc.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/07-Mgr/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:
Student evaluation is in the form of an exam, in writing, the minimum scale to pass is 60%. Grades: A: 92-100%, B: 83-91%, C: 76-82%, D: 68-75%, E: 60-67%, Fx: 59% and less.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
After completing a course, students obtain a general overview of pharmacy history, pharmaceutical training, the organization and management of a pharmacy, the role of the pharmacist in the healthcare system, selected legislative standards in the field of health and pharmacy and professional pharmaceutical literature.

Class syllabus:
- Higher education in the Slovak Republic- university functions and the role of universities.
- Historical aspects of pharmacy development.
- Pharmacy and its role in the health system.
- Pharmaceutical sciences and pharmaceutical industries - their characteristics and importance.
- Development of training in pharmacy.
- Selected legislative standards in the field of healthcare and pharmacy. Pharmacy organisation and management system.
- The role of the pharmacist in the healthcare system.
- Pharmacies as medical facilities - types, expertise, activities and employees.
- Professional literature in pharmacy, work with information sources.

Recommended literature:
Chalabala, M. a kol. Encyklopédia farmácie. Martin: Osveta, 1991, 439 s. ISBN 80-217-0260-5
Dohnal, F. Studijní texty k dějinám farmacie. Praha: Karolinum, 2014, 154 s. ISBN: 978-80-246-2608-6
Meško, D. a kol. Akademická príručka. 3. vydanie, Martin: Osveta, 2013, 495 s. ISBN 80-8063-200-6
Zákon NR SR č. 362/ 2011 Z. z. o liekoch a zdravotníckych pomôckach o zmene a doplnení niektorých zákonov v znení neskorších predpisov

Zákon NR SR č. 131/ 2002 Z. z. o vysokých školách a o zmena a doplnení niektorých zákonov v znení neskorších predpisov
Vyhláška MZ SR č. 129/ 2012 o požiadavkách na správnu lekárenskú prax

Languages necessary to complete the course:
Slovak language.

Notes:
The course is optional and available only in the winter semester.

Past grade distribution
Total number of evaluated students: 3883

A	ABS	B	C	D	E	FX
28,3	0,0	27,17	21,81	13,86	8,34	0,52

Lecturers: PharmDr. Miroslava Snopková, PhD., PharmDr. Ľubica Lehocká, PhD., PharmDr. Lucia Masaryková, PhD., doc. PharmDr. Tomáš Tesař, PhD., MBA, PharmDr. Zuzana Koblišková, PhD., PharmDr. Miriam Vulevová, MBA

Last change: 24.03.2022

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

STATE EXAM DESCRIPTION

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 9

Recommended semester: 6.

Educational level: I.II.

Prerequisites:

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

Course requirements:
Assessment through a written examination, for successful completion at least 70 %.
Assessment A: 95-100%, B: 88-94%, C: 82-87%, D: 76-81%, E: 70-75%.

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

Class syllabus:
Drug Technology, biotechnology
The drug as a dispersion and an application system
Systematic classification of the drugs and dosage forms
Technological procedures and equipments for the preparation and production of the drugs
Pharmaceutical adjuvants - excipients
Colloidal dispersion systems, lyophobic and lyophilic colloids
Dispersion system liquid in liquid and solid in liquid
Preparations obtained by extraction methods
Liquid preparations for oral use
Preparations for inhalation
Parenteral preparations - injections, infusions – production, use
Parenteral controlled release drug delivery systems
Eye and nasal preparations
Liposomes and microemulsion as a new drug delivery systems

Recommended literature:
Aulton, M. E.: Aulton´s Pharmaceutics: the design and manufacture of medicines. Edinburgh: Churchill Livingstone, 2007
European Pharmacopoeia 9th edition

Lectures from 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

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 152

A	ABS	B	C	D	E	FX
17,76	0,0	46,05	25,66	9,87	0,66	0,0

Lecturers: PharmDr. Alžbeta Lengyelová, PharmDr. Veronika Šimunková, PhD., Mgr. Jana Selčanová, PharmDr. Veronika Mikušová, PhD., PharmDr. Mária Raučinová, PhD., PharmDr. Mária Čuchorová, PhD., PharmDr. Miroslava Potúčková, PhD.

Last change: 05.08.2020

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KGF/05-Mgr/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%, FX: 70% and less.

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 in compounding of dosage forms.

Class syllabus:
• Cutaneous semi-solid drugs. Basics of semi-solid drugs. Production.
• Rectal and vaginal products.
• Transdermal therapeutic systems. Medicinal and cutaneous patches.
• Solid drugs for oral use (granules, tablets, coated tablets, capsules).
• Modified release peroral dosage forms. Time- and site- specific drugs.
• Dosage microforms.
• Drug release, release and absorption kinetics.
• Biopharmacy, mechanism of drug transfer through biological membranes, bioavailability.
• Stability and stabilization of drug products.
• Quality assurance in pharmaceutical production and quality control.
• Pharmaceutical packs and packaging.
• Biologics and biosimilars.

Recommended literature:
Slovak
Komárek, P. Technologie léků, . Praha : Galén, 2006. 399 s.
Chalabala, M. a kol.: Technologie léků. 3. vyd. Praha : Galén, 2001. 408 s.
Žabka, M. a kol: Moderné lieky vo farmaceutickej technológii. Bratislava: SAP, 1999. 487 s.
Slovenský liekopis 1. (SL 1). Zv. I. - VII. Bratislava : Herba, 1997- 2004.

European Pharmacopoeia 10 th Ed. Strasbourg: EDQM, 2020.
https://www.fpharm.uniba.sk/pracoviska/ustredna-kniznica/externe-informacne-zdroje/
Slovenský farmaceutický kódex. (Vestník MZ SR – osobitné vydanie) Bratislava: Obzor, 2015.
Vitková Z.: Úvod do farmakokinetickej analýzy. Bratislava: STU, 2002.
Vitková Z.: Rektálne a vaginálne lieky. Bratislava: Felia s. r. o., 2016.
Vitková Z.: Dermálne polotuhé lieky, Bratislava: Felia s. r. o., 2017.
Vitková Z.: Fyzikálno-technologické princípy emulzií. Bratislava: Felia s. r. o., 2019.
Aktuálne semestrálne prednášky v on-line podobe (MSTeams, moodle)
Mikušová V., Šimunková V., et al.:Farmaceutická technológia ¬– návody na laboratórne cvičenia. 2020. Dostupné online po prihlásení:
https://www.fpharm.uniba.sk/pracoviska/galenika/pedagogicka-cinnost/farmaceuticka-technologia-1/
Aktuálne prednášky z Farmaceutickej technológie dostupné on-line (v MS-Teams, Moodle)
English
Aulton, M. E.: Aulton´s Pharmaceutics: the design and manufacture of medicines- Edinburgh: Churchill Livingstone, 2021.
European Directorate for the Quality of Medicines and HealthCare: https://www.edqm.eu/
Tichý, E., Starýchová L., Čuchorová, M.: Solid dosage forms – Laboratory practises. Bratislava, UK, 2015.
Tichý, E., Špaglová M., Bartoníková K.: Liquid dosage forms – Laboratory practises. Bratislava, UK, 2016.
Tichý, E., Šimunková, V., Halenárová, A.: Emulsions, suspensions, ointments, creams, pastes, suppositories and pessaries – Laboratory practises. Bratislava, UK, 2017.
Current lectures in Pharmaceutical Technology available on-line (MS-Teams, Moodle)

Languages necessary to complete the course:
Slovak (+ English/French for studying European Pharmacopoeia)

Notes:

Past grade distribution
Total number of evaluated students: 2741

A	ABS	B	C	D	E	FX
14,3	0,0	36,23	29,22	15,65	4,52	0,07

Lecturers: PharmDr. Alžbeta Lengyelová, PharmDr. Veronika Šimunková, PhD., PharmDr. Miroslava Špaglová, PhD., Mgr. Jarmila Ferková, PharmDr. Desana Matušová, PhD., PharmDr. Veronika Mikušová, PhD., PharmDr. Mária Raučinová, PhD., Mgr. Jana Selčanová, RNDr. Aleš Vrána, PharmDr. Jozef Zima, PharmDr. Mária Čuchorová, PhD., PharmDr. Miroslava Potúčková, PhD., doc. RNDr. Miroslava Šupolíková, PhD.

Last change: 12.12.2021

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 10

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

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

Course requirements:
Assessment through an oral examination. Condition: 70% succes of practical exercises.
Evaluation: A: 95-100%, B: 88-94%, C: 82-87%, D: 76-81%, E: 70-75%.

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 in compounding of dosage forms.

Class syllabus:
• Introduction to the course. Pharmaceutical Technology (Galenic Pharmacy), Biogalenic Pharmacy.
• 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, lyophilic and lyophobic colloids.
• Dispersion systems – emulsions and suspensions, powders.
• 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, nasal and ear preparations.
• Liposomes and microemulsions as a new drug delivery systems.
• Vaccines

Recommended literature:
Slovak:

Komárek, P. Technologie léků, . Praha : Galén, 2006. 399 s
Žabka, M. a kol: Moderné lieky vo farmaceutickej technológii. Bratislava: SAP, 1999. 487 s.
Slovenský liekopis 1. (SL 1). Zv. I. - VII. Bratislava : Herba, 1997- 2004.
European Pharmacopoeia 10th ed. Strasbourg: EDQM, 2020.
Slovenský farmaceutický kódex. (Vestník MZ SR - osobitné vydanie) Bratislava: Obzor, 2015.
Vitková Z., Úvod do farmakokinetickej analýzy. Bratislava: STU, 2002.
Vitková Z., Herdová P.: Roztoky. Bratislava: Felia s r.o., 2017, 99s.
Mikušová V., Šimunková V., et al.:Farmaceutická technológia ¬– návody na laboratórne cvičenia. 2020. Dostupné online po prihlásení:
https://www.fpharm.uniba.sk/pracoviska/galenika/pedagogicka-cinnost/farmaceuticka-technologia-1/
Aktuálne semestrálne prednášky v on-line podobe (MS-Teams, moodle)
English:
European Pharmacopoeia 10th ed. Strasbourg: EDQM, 2020.
Aulton, M. E.: Aulton's Pharmaceutics: the design and manufacture of medicines. Edinburgh: Churchill Livingstone, 2021.
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
Current lectures in Pharmaceutical Technology available on-line (MS-Teams, Moodle)

Languages necessary to complete the course:
Slovak (English/French for studying European Pharmacopoeia)

Notes:

Past grade distribution
Total number of evaluated students: 2847

A	ABS	B	C	D	E	FX
29,86	0,0	23,81	20,69	11,45	9,27	4,92

Lecturers: PharmDr. Alžbeta Lengyelová, PharmDr. Veronika Mikušová, PhD., PharmDr. Veronika Šimunková, PhD., PharmDr. Mária Raučinová, PhD., Mgr. Jana Selčanová, PharmDr. Miroslava Špaglová, PhD., doc. RNDr. Miroslava Šupolíková, PhD., Mgr. Jarmila Ferková, PharmDr. Jozef Zima, PharmDr. Mária Čuchorová, PhD., PharmDr. Desana Matušová, PhD., PharmDr. Miroslava Potúčková, PhD.

Last change: 12.12.2021

Approved by:

STATE EXAM DESCRIPTION

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 6

Recommended semester: 5.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
FaF.KFB/03-Mgr/00-Mgr-A/00 Pharmaceutical Botany

Course requirements:
Conditions for successful completion of laboratory practices:
– students are obliged to wear a white lab coat, which is necessary for laboratory work
– a 100-% attendance at the laboratory practices is required
– written protocols/reports from each laboratory practice are to be handed in
– microscopic slides shall be handled with care
– the fee to be paid for a broken microscopic slide is 2 €
– students must pass two tests in the course of the semester, each of maximum 100 points;
the point yield should be at least 60 % (each test). To students who fail to reach at least 60 % of points in any of the semestral tests, the chance to write a reparative test (once each) will be given, and they should then reach an average of at least 60 % of points (average is to be calculated of both tests. According to the number of gained points average the classification will be given as following:
0 – 59 points grade FX (not pass)
60 – 68 points grade E
69 – 76 points grade D
77 – 84 points grade C
85 – 92 points grade B
93 – 100 points grade A
Note:
Successful passing of the laboratory practices, including the written tests, is the basic requirement to attend the exam in Pharmacognosy (1). The examiners will take into account the points from the written tests when classifying the course of Pharmacognosy (1) in ratio 1:1. Students may enter Pharmacognosy (2) in the summer semester even though been graded FX in Pharmacognosy (1).
Scale of assessment (preliminary/final): 50/50

Learning outcomes:

After successful completion the student is able to discriminate basic structural classes of secondary metabolites and their biogenetic origin, to determine the plant drug identity by its macroscopic and microscopic properties.

Class syllabus:

During lectures students will be informed on pharmacognostical part of pharmacopoeia, especially about plant drugs monographs, on plant constituents biogenesis from primary and secondary metabolites point of view, on their function and importance in plant bodies, on classification systems and characterization of all secondary metabolites classes baseed on chemical properties. Students will aquire overview about used drugs and their main constituents, which could be a part of official phytoremedies. Content of macroscopical and microscopical part of practice: anatomical and morphological drug characterization, macroscopical drug recognision in tea mixtures based on diacritic values.

Recommended literature:

Nagy - Mučaji: Pharmacognosy : Natural remedies. – 1st Ed. - Bratislava : FaF UK, 2002. - 72 s.
Czigle-Tóth-Tekeľová: Practical Pharnacognosy. Microscopical and Macroscopical Identification of Herbal
Drugs. FaF CU 2013, ISBN 978-80-223-3354-2.
Actual version of European Pharmacopoeia.

Languages necessary to complete the course:

English

Notes:

Past grade distribution

Total number of evaluated students: 3027

A	ABS	B	C	D	E	FX
31,98	0,0	29,96	23,32	9,81	3,5	1,42

Lecturers: prof. PharmDr. Pavel Mučaji, PhD., prof. Ing. Milan Nagy, CSc., RNDr. Daniela Tekeľová, CSc., Mgr. Jaroslav Tóth, PhD., doc. PharmDr. Silvia Bittner Fialová, PhD., doc. PharmDr. Szilvia Czigle, PhD., PharmDr. Vladimír Forman, PhD., PharmDr. Katarína Rendeková, PhD., Mgr. Petra Mitrengová, PhD., PharmDr. Michaela Mergová

Last change: 25.06.2022

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 8

Recommended semester: 6.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
KFB/03-Mgr-A/00 Pharmaceutical botany

Course requirements:
1. Conditions for successful completion of the exercise:
- obtaining a minimum of 67% points in each of the tests,
- development and presentation of an analytical protocol,
- complete the prescribed exercises.
2. Continuous evaluation of practical exercises:
- 2 semester tests - always with a maximum of 100 points;
- a student who fails to obtain at least 67% of the marks in each of the two tests is entitled to one make-up test in each of the prescribed tests. The result of a given make-up test, if at least 67% of the points, will be substituted for the number of points of the make-up prescribed test. The focus of the make-up test will be the same as that of the failed test.
If the student does not score at least 67% on both of the semester tests, the focus of the make-up test will include the topics of both failed tests.
If the student fails to meet the minimum average score requirement of 67% on the above tests, the instructor will award the student a grade of FX, which will prevent the student from sitting for the Pharmacognosy (2) examination. Such student shall be required to take the failed/absent prescribed tests when the Pharmacognosy (2) course is carried forward to the next academic year.
The final average % grade (score of at least 67%) for the tests will be included in the overall course grade by 1/3, with the remaining 2/3 being the exam grade.
According to the number of gained points average the classification will be given as following:
0 – 59 points grade FX (not pass)
60 – 68 points grade E
69 – 76 points grade D
77 – 84 points grade C
85 – 92 points grade B
93 – 100 points grade A

Learning outcomes:

After successful completion of the training process, the student should be able to classify herbal medicines according to their use in prevention and therapy, to correlate their biological effects with their main types of content substances, to know the classification of adverse effects and interactions of natural medicines, to be able to assess the quality of a herbal drug on the basis of pharmacognostic pharmacopoeial evaluation.

Class syllabus:
Students receive information on the classification of drugs according to therapeutic use, including basic information on side effects and drug interactions caused by ingredients of natural origin. Emphasis is placed on herbal drugs and their active substances, which are part of the registered phytopharmaceuticals in EU countries or are registered in the current edition of the European Pharmacopoeia. In the chemical part of the practical exercises, students are introduced to selected pharmacopoeial methodologies for testing the identity of drugs and the determination of the content of active substances. They are also trained in the basic procedures of extraction and isolation of substances from plant material with emphasis on chromatographic methods.

Recommended literature:
Nagy - Mučaji: Pharmacognosy : Natural remedies. – 1st Ed. - Bratislava : FaF UK, 2002. - 72 s.
Actual version of European Pharmacopoeia.

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 3148

A	ABS	B	C	D	E	FX
22,4	0,0	22,68	24,02	14,55	7,91	8,45

Lecturers: prof. PharmDr. Pavel Mučaji, PhD., prof. Ing. Milan Nagy, CSc., doc. PharmDr. Szilvia Czigle, PhD., Mgr. Jaroslav Tóth, PhD., PharmDr. Vladimír Forman, PhD., doc. PharmDr. Silvia Bittner Fialová, PhD., PharmDr. Katarína Rendeková, PhD., RNDr. Daniela Tekeľová, CSc., PharmDr. Michaela Mergová, Mgr. Petra Mitrengová, PhD.

Last change: 25.06.2022

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 3

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

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

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

Learning outcomes:
After completing the course, students will be acquainted with mathematical models of the kinetics of the disposition of chemical substances in the body and will master the physicochemical principles of the relationship between the pharmacokinetic profile and the molecular structure of substances. They will learn the methods of modeling and determining the transport properties of potential drugs. Students will gain a broader picture of the complex issues of research and optimization of the properties of drugs. They will use this knowledge in practice to research new drugs.

Class syllabus:
Phenomenological view of the transport and fate of the drug in the body. Principles and mathematical models of drug kinetics, disposition and effect. Pharmacokinetic compartmental distribution models based on human physiology. Kinetic parameters and their importance for drug design. Methods for predicting physicochemical properties and kinetic parameters from the molecular structure of biologically active substances. Optimization of biological tests and interpretation of measured activities.

Recommended literature:

Languages necessary to complete the course:

Slovak language

Notes:
The capacity of the course is limited to 10 to 15 students. Priority is given to students with good grades (weighted study average determined according to the rules of the FaF UK study regulations). Therefore, a consultation with the teacher is required before enrolling in the course.

Past grade distribution
Total number of evaluated students: 8

A	ABS	B	C	D	E	FX
25,0	0,0	0,0	37,5	12,5	25,0	0,0

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

Last change: 29.11.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 7

Recommended semester: 5.

Educational level: I.II.

Prerequisites:

Course requirements:
During the semester, students pass 2 midterm tests; to pass the test at least 60% of maximum score is required.
Successful completion of the semester is followed by a comprehensive oral exam.
The student must demonstrate mastery of at least 60% of the required knowledge. The exam result is graded: A (at least 92%), B (at least 83%), C (at least 76%), D (at least 68%), E (at least 60%) and Fx (less than 60% of the maximum number points).
Scale of assessment (preliminary/final): 20/80

Learning outcomes:
The knowledge gained by successfully completing the course is the basis for understanding other scientific disciplines in the pharmaceutical study.

Class syllabus:
Pharmacology of pain - general and local anesthetics, analgesics, antipyretics, opioid analgesics. CNS pharmacology - neuromediators, classification. Drugs in neurodegenerative diseases. Antiparkinson drugs. Antiepileptics. Hypnotics and sedatives, psychostimulants. Anxiolytics. Antipsychotics. Antidepressants. Pharmacology of the uropoietic system (diuretics, drugs affecting electrolyte metabolism). Pharmacology of the respiratory system (expectorants, antitussives, antiasthmatics). Pharmacology of CVS - therapy of heart failure. Antianginal drugs. Antihyperlipidemics. Antihypertensives. Antidysrhythmics. Pharmacology of blood (anticoagulants, antiplatelet agents, thrombolytics). GIT pharmacology. Pharmacology of the endocrine system. Pharmacology of antibacterial drugs and chemotherapeutics. Therapy of oncological diseases, immunomodulatory substances. Biological drugs.

Recommended literature:
Kuželová M.: Princípy farmakológie kardiovaskulárnych liečiv pre farmaceutov. Osveta, 2008
Kuželová M., Kovácsová B., Švec P.: Farmakológia antiinfekčných liečiv. Osveta, 2010
Rang, H.P., Dale, M.M. a kol.: Rang and Dale´s Pharmacology, 8th ed. London, Churchill Livingstone, Elsevier, 2016
Švihovec J., Bultas J., Anzenbacher P. a kol.: Farmakologie, Grada, Praha 2018

Martinková J. a kol. Farmakologie pro studenty zdravotnických oboru, Grada, Praha 2018

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 150

A	ABS	B	C	D	E	FX
20,0	0,0	42,67	25,33	8,0	4,0	0,0

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

Last change: 01.12.2021

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

STATE EXAM DESCRIPTION

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/08-Mgr/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:
During the semester, students pass 2 midterm tests; to pass the test at least 60% of maximum score is required.
Successful completion of the semester is followed by a comprehensive exam test.
The student must demonstrate mastery of at least 60% of the required knowledge. The exam result is graded: A (at least 92%), B (at least 83%), C (at least 76%), D (at least 68%), E (at least 60%) and Fx (less than 60% of the maximum number points).
Scale of assessment (preliminary/final): 20/80

Learning outcomes:
The knowledge gained by successfully completing the course is the basis for understanding other scientific disciplines in the pharmaceutical study.

Class syllabus:
Introduction to the study of pharmacology - basic terminology and subdisciplines. Pharmacodynamics of drugs - mechanisms of drug effects, non-specific and specific effect. Receptors, their function, structure and classification. Intercellular signal transduction, G-regulatory proteins in receptor systems.
The effects of drugs on the whole organism. Drugs of the autonomic nervous system, sympathotropic and parasympathotropic drugs. Local hormones and modulators, drugs affecting their production and pharmacological regulation. Pharmacology of neuromuscular tonus and its regulation.

Recommended literature:
Račanská E. a kol.: Farmakológia. Teoretická príprava a návody na praktické cvičenia. Vysokoškolské učebné texty, UK Bratislava, 2005
Rang, H.P., Dale, M.M. a kol.: Rang and Dale´s Pharmacology, Churchill Livingstone, Elsevier, 8th ed. London, 2016
Švihovec J., Bultas J., Anzenbacher P. a kol.: Farmakologie, Grada, Praha 2018

Martinková J. a kol. Farmakologie pro studenty zdravotnických oboru, Grada, Praha 2018 Máťuš, M., Křenek P., Ondriašová, E.: Farmakológia: Študijné otázky 1. časť. - 1. vyd. - Bratislava : Univerzita Komenského v Bratislave, 2019. [online], ISBN 978-80-223-4777-8

Languages necessary to complete the course:

Notes:

Past grade distribution

Total number of evaluated students: 317

A	ABS	B	C	D	E	FX
34,38	0,0	37,85	13,25	9,15	4,73	0,63

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

Last change: 01.12.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 6

Recommended semester: 7.

Educational level: I.II.

Prerequisites:

Course requirements:
During the semester, students pass 2 midterm tests; to pass the test at least 60% of maximum score is required.
Successful completion of the semester is followed by a comprehensive oral exam.
The student must demonstrate mastery of at least 60% of the required knowledge. The exam result is graded: A (at least 92%), B (at least 83%), C (at least 76%), D (at least 68%), E (at least 60%) and Fx (less than 60% of the maximum number points).
Scale of assessment (preliminary/final): 20/80

Learning outcomes:
The knowledge gained by successfully completing the course is the basis for understanding other scientific disciplines in the pharmaceutical study.

Class syllabus:
Pharmacology of pain - general and local anesthetics, analgesics, antipyretics, opioid analgesics. CNS pharmacology - neuromediators, classification. Drugs in neurodegenerative diseases. Antiparkinson drugs. Antiepileptics. Hypnotics and sedatives, psychostimulants. Anxiolytics. Antipsychotics. Antidepressants. Pharmacology of the uropoietic system (diuretics, drugs affecting electrolyte metabolism). Pharmacology of the respiratory system (expectorants, antitussives, antiasthmatics). Pharmacology of CVS - therapy of heart failure. Antianginal drugs. Antihyperlipidemics. Antihypertensives. Antidysrhythmics. Pharmacology of blood (anticoagulants, antiplatelet agents, thrombolytics). GIT pharmacology. Pharmacology of the endocrine system. Pharmacology of antibacterial drugs and chemotherapeutics. Therapy of oncological diseases, immunomodulatory substances. Biological drugs.

Recommended literature:
Kuželová M.: Princípy farmakológie kardiovaskulárnych liečiv pre farmaceutov. Osveta, 2008
Kuželová M., Kovácsová B., Švec P.: Farmakológia antiinfekčných liečiv. Osveta, 2010
Rang, H.P., Dale, M.M. a kol.: Rang and Dale´s Pharmacology, 8th ed. London, Churchill Livingstone, Elsevier, 2016
Švihovec J., Bultas J., Anzenbacher P. a kol.: Farmakologie, Grada, Praha 2018

Martinková J. a kol. Farmakologie pro studenty zdravotnických oboru, Grada, Praha 2018

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 2792

A	ABS	B	C	D	E	FX
29,12	0,0	24,14	22,03	15,29	6,52	2,9

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

Last change: 01.12.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 2

Recommended semester: 6.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
Completion of Pathology of Rare Diseases and Pharmacology 1 is an advantage

Course requirements:
Compulsory attendance at 80% of lectures and processing of information about the selected drug in the form of a ppt presentation and contribution to the journal of the Slovak Chamber of Pharmacist - Lekárnické listy (Pharmacy Letters).
Scale of assessment (preliminary/final): Interim assessment consists of evaluating ppt presentations on the assigned topics.The final evaluation is based on the interim assessment together with evaluation of the presentation of the contribution to the journal of the Slovak Chamber of Pharmacist - Lekárnické listy (Pharmacy Letters).

Learning outcomes:
The course develops the topic of rare diseases from the point of view of pharmacology but also current research projects in this field. It introduces students to treatable rare diseases. It explains the mechanisms of action of drugs on rare diseases, indications and contraindications. The course provides students with basic information on treatable rare diseases, orphan drug development and authorisation, the effectivity and safety of orphan drugs. The student is gradually introduced to selected drugs for metabolic rare diseases, rare diseases of the cardiovascular, respiratory, nervous and immune systems, or rare neuromuscular diseases and rare blood diseases. Completion of Pathology of Rare Disease or Pharmacology 1 is an advantage.

Class syllabus:
The concept and definition of orphan drugs in Europe and worldwide
- Rare disease research
- Practical examples of selected drugs for rare diseases - metabolic diseases, diseases of the respiratory system, diseases of the nervous system, neuromuscular diseases, diseases of the blood, diseases of the immune system

Recommended literature:

KUBÁČKOVÁ K.: Vzácná onemocnení v kosce, Maldá fronta 2014, ISBN 9788020431493, KUBÁČKOVÁ K.: Vzácné nádory v onkologii, Mladá fronta, 2015, ISBN 9788020436580, www.orpha.net, http://www.irdirc.org/, https://www.ema.europa.eu/en, www.sukl.sk,

Languages necessary to complete the course:
Slovak and English

Notes:

Past grade distribution
Total number of evaluated students: 39

A	ABS	B	C	D	E	FX
58,97	0,0	25,64	10,26	5,13	0,0	0,0

Lecturers: PharmDr. Tatiana Foltánová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, PharmDr. Eva Malíková, PhD., PharmDr. Eva Kráľová, PhD.

Last change: 09.12.2021

Approved by: PharmDr. Tatiana Foltánová, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 5

Recommended semester: 2.

Educational level: I.II.

Prerequisites:

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

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

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

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

Recommended literature:

Oremusová J., Greksáková O.: Fyzikálna chémia, Zbierka úloh pre študentov farmácie, 1.vyd. Bratislava UK, 2019
Kopecký F.: Fyzikálna chémia pre farmaceutov I. : štruktúra a vlastnosti atómov a molekúl. 3. vyd. Bratislava: UK, 2000 (skriptá).
Oremusová J., Greksáková O.: Fyzikálna chémia: Laboratórne cvičenia pre farmaceutov, 2010, Univerzita Komenského Bratislava (skriptá)
Kopecký, F. a kol.: Praktické a výpočtové cvičenia z fyzikálnej chémie. Bratislava : UK, 1989 (skriptá).
Atkins, P. W.: Fyzikálna chémia : časť 1, 2a, 2b, 3. 6.vyd.. Bratislava : STU 1999.
Lázníčková A., Kubíček V.: Základy fyzikální chemie. Vybrané kapitoly pro posluchače Farmaceutické fakulty. Praha: Karolinum, 2014, ISBN 978-80-246-2791-5
Reguli J.: Fyzikálna chémia pre bakalárske štúdium. VEDA, 2015

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 173

A	ABS	B	C	D	E	FX	N/a
2,31	0,0	5,2	13,29	18,5	30,64	30,06	0,0

Lecturers: prof. RNDr. Daniela Uhríková, CSc., RNDr. Alexander Búcsi, PhD., RNDr. Tomáš Fazekaš, PhD., doc. RNDr. Jana Gallová, CSc., Mgr. Lukáš Hubčík, PhD., doc. Mgr. Marcela Chovancová, PhD., Mgr. Mária Klacsová, PhD., Ing. Jarmila Oremusová, CSc.

Last change: 29.03.2022

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KTV/01-Mgr/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:
- activity, 100% attendance
- passing physical performance testing
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
After completing the course, the student has developed motor skills and improved motor skills according to the sport he has chosen.

Class syllabus:
Our aim is an educated student and his active approach to correct and healthy movement. Students can complete the course Physical Education through sports, which they choose from the offer at the department: Aerobic, Step aerobic, Tabata, Fitball, Badminton, Volleyball, BodyArt, Cross fit, Fitness training, Frisbee, collective Sports games, Floorball, Futsal, Table tennis, Water tourism. The best students have the opportunity to participate in the representation of the faculty in the University League in Volleyball, Futsal, Floorball. In the block form of teaching, they can complete the course by active participation in the Ski and Snowboard course and the Tourist (hiking) course. The final evaluation is 100% active participation in classes.

Recommended literature:

Languages necessary to complete the course:
Slovak language

Notes:

Past grade distribution
Total number of evaluated students: 432

A	ABS	B	C	D	E	FX
94,91	0,0	1,85	1,16	0,0	0,0	2,08

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

Last change: 23.11.2021
Approved by: PaedDr. Martina Tibenská, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KTV/02-Mgr/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:
- activity, 100% attendance
- passing physical performance testing
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
After completing the course, the student has developed motor skills and improved motor skills according to the sport he has chosen.

Class syllabus:
Our aim is an educated student and his active approach to correct and healthy movement. Students can complete the course Physical Education through sports, which they choose from the offer at the department: Aerobic, Step aerobic, Tabata, Fitball, Badminton, Volleyball, BodyArt, Cross fit, Fitness training, Frisbee, collective Sports games, Floorball, Futsal, Table tennis, Water tourism. The best students have the opportunity to participate in the representation of the faculty in the University League in Volleyball, Futsal, Floorball. In the block form of teaching, they can complete the course by active participation in the Ski and Snowboard course and the Tourist (hiking) course. The final evaluation is 100% active participation in classes.

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 402

A	ABS	B	C	D	E	FX
90,55	0,0	1,49	0,5	0,25	0,0	7,21

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

Last change: 23.11.2021
Approved by: PaedDr. Martina Tibenská, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 1

Recommended semester: 3.

Educational level: I.II.

Prerequisites:

Course requirements:
- activity, 100% attendance
- passing physical performance testing
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
After completing the course, the student has developed motor skills and improved motor skills according to the sport he has chosen.

Class syllabus:
Our aim is an educated student and his active approach to correct and healthy movement. Students can complete the course Physical Education through sports, which they choose from the offer at the department: Aerobic, Step aerobic, Tabata, Fitball, Badminton, Volleyball, BodyArt, Cross fit, Fitness training, Frisbee, collective Sports games, Floorball, Futsal, Table tennis, Water tourism. The best students have the opportunity to participate in the representation of the faculty in the University League in Volleyball, Futsal, Floorball. In the block form of teaching, they can complete the course by active participation in the Ski and Snowboard course and the Tourist (hiking) course. The final evaluation is 100% active participation in classes.

Recommended literature:

Languages necessary to complete the course:
Slovak language

Notes:

Past grade distribution
Total number of evaluated students: 238

A	ABS	B	C	D	E	FX
97,9	0,0	0,0	0,42	0,0	0,0	1,68

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

Last change: 23.11.2021
Approved by: PaedDr. Martina Tibenská, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 1

Recommended semester: 4.

Educational level: I.II.

Prerequisites:

Course requirements:
- activity, 100% attendance
- passing physical performance testing
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
After completing the course, the student has developed motor skills and improved motor skills according to the sport he has chosen.

Class syllabus:
Our aim is an educated student and his active approach to correct and healthy movement. Students can complete the course Physical Education through sports, which they choose from the offer at the department: Aerobic, Step aerobic, Tabata, Fitball, Badminton, Volleyball, BodyArt, Cross fit, Fitness training, Frisbee, collective Sports games, Floorball, Futsal, Table tennis, Water tourism. The best students have the opportunity to participate in the representation of the faculty in the University League in Volleyball, Futsal, Floorball. In the block form of teaching, they can complete the course by active participation in the Ski and Snowboard course and the Tourist (hiking) course. The final evaluation is 100% active participation in classes.

Recommended literature:

Languages necessary to complete the course:
Slovak language

Notes:

Past grade distribution
Total number of evaluated students: 212

A	ABS	B	C	D	E	FX
97,64	0,0	0,0	0,47	0,0	0,0	1,89

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

Last change: 23.11.2021
Approved by: PaedDr. Martina Tibenská, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KTV/05-Mgr/19	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:
- activity, 100% attendance
- completion of FMS testing
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
Our goal is an educated student and his active approach to proper and healthy movement. Based on the latest knowledge in the field of functional disorders of the movement system of the general population and incorrect movement stereotypes, based on the FMS (Functional Movement Screen) method and the DNS (Dynamic Neuromuscular Stabilization) concept, after completing the course, students can theoretically and practically evaluate and correct wrong movement stereotypes of a person. By obtaining information about the correct technique of exercises, it will lead to the elimination of overloading of individual parts of the body in their ordinary life, which often results in chronic pain, for example in the back. They will learn to restore, protect or improve the movement function of the body, restore correct posture and correct movement patterns, gradually eliminate muscle imbalances. Students will also learn proper breathing.

Class syllabus:
• Diagnostics – Functional Movement Screen (FMS), a system for evaluating movement patterns.
• Correct synchronization, anatomical positions of body segments.
• Postural reactivity – punctum fixum, punctum mobile.
• Postural stabilization – improvement of body posture, even during movements.
• Change-correction of movement patterns – DNS.
• Activation of reflex locomotion patterns.
• Ipsilateral and contralateral movement pattern.
• By stimulating reflex points - quadropedal walking.
• Use of exercise aids (Flowin, Bosu, Valslide, Theraband, Swiss Ball, Kettlebell).
• Postural disharmony in anatomical disorders.

Recommended literature:

BARDENET, S.,M., MICCA, J.,J., DeNOYELLES, J.,T. et al. Functional movement screen normative values and validity in high schol athletes: can the FMS be used as a predictor of injury? [online]. Int J sports Phys Ther v.10(3) [cit. 2018-03-28]. 2015, Dostupné z: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4458917/
CHORBA, R,.S. CHORBA, D.,J., BOUILLON,L.,E., et al.. Use of a functional movement screening tool to determine injury risk in female collegiate athletes. 2010 ,[online]. [cit. 2018-03-26]. Dostupné z: https://www.ncbi.nlm.nih.gov/pubmed/21589661
ČERMÁK, J. a kol., Záda už mě nebolí. Praha, 4. rozšířené a doplněné vydání, 2005. ISBN: 80-7236-117-1.
HAVLÍČKOVÁ, L. Fyziologie tělesné zátěže I., Nakladatelství Karolinum, Praha, 2004. ISBN 80-7184-875-1.
COOK, G. et. al. Movement: Functional Movement Systems: Screening, Assessment and Corrective Strategies. On Target Publications. 2010. pp. 373-379. ISBN: 978-1931046725.
REIMAN, M. P. a R. C. MANSKE. Functional testing in human performance. Champaign, IL; Leeds: Human Kinetics, 2009. s. 31. ISBN: 9780736068796.
KOLÁŘ, P. et al., Rehabilitace v klinické praxi. 1. vydání. Praha: Galén. 2009. ISBN: 978-80-7262-657-1.
KOLÁŘ, P. Posturálni reaktibilita. 2017. [online].[cit.2017-5-5]. Dostupné z: http://www.dns-cz.com/diagnostika-poruch-dle-dns
KRAČMAR, B. Kineziologická analýza sportovního pohybu, Nakladatelství: TRITON, ISBN 2002. 80-7254-292-3.
LEWIT, K. Manipulační léčba v rámci léčebné rehabilitace, Praha, 1990. ISBN: 80-7030-096-5.
LEWIT, K. Maniuplační léčba v myoskeletárni medicíne 5. Přepracované vydání, Nakladatelství Sdelovací technka spol s.r.o., 1996. ISBN 80-86645-04-5
MACHOVÁ, J. , D. KUBÁTOVÁ, et al. Výchova ke zdraví. Praha: Grada, 2009. ISBN: 9788024727158
MUŽÍK, V., P. VLČEK, et al., Škola, pohyb a zdraví: výzkumné výsledky a projekty. 1. vyd. Brno: MU. 2010. ISBN 978-80-210-5371-7.
VÉLE, F., Kineziologie pro klinickou praxi Vydání. 1. Praha: Grada Publishing, 1997. ISBN 80-7169-256-5.
VÉLE, F., Kineziologie, Praha: Triton. 2006. ISBN 80-7254-837-9.

Languages necessary to complete the course:
Slovak language

Notes:

Past grade distribution
Total number of evaluated students: 18

A	ABS	B	C	D	E	FX
94,44	0,0	0,0	0,0	0,0	0,0	5,56

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

Last change: 28.07.2022

Approved by: PaedDr. Martina Tibenská, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 4

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Course requirements:
The student after one month internship in a pharmacy
has an obligation to complete and send an electronic protocol record (e-protocol) within the set deadline. Not sent in time protocol, not-sent e-protocolat all and an e-protocol that does not meet the formal and content criteria is considered a reason for not completing the course. The necessary formal and content criteria of the e-protocol are published at the beginning of the summer semester and are available in the moodle application or on the course website. At the end of the internship a pharmacy worker responsible for the student's internship will issue a written assessment of the student's knowledge, skills and activities during practice (Evaluation).
The exam is written. Rating A: 100-93%, B: 92-85%, C: 84-77%, D: 76-69%, E: 68-60%, Fx: 59% and less.The condition for passing the exam is sending the e-protocol via Moodle (in
compliance with its formal and content criteria) and obtaining at least 60% of the pharmacy evaluation
Scale of assessment (preliminary/final): 0/100

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

Class syllabus:
Health and safety at work, personal data protection, operational order, hygienic regime and sanitation program, spatial, material and personnel equipment of the pharmacy, pharmacy assortment, authentication of medicines, work with pharmacy software, overview of individual and bulk drugs, self-medication (non-prescription drugs, nutritional supplements, additional assortment).

Recommended literature:
Snopková M. a kol.: Lekárenská prax, Vydavateľstvo UK, 2017
Zákon č. 362/2011 Z. z. o liekoch a zdravotníckych pomôckach a o zmene a doplnení niektorých zákonov Zákon č. 363/2011 Z. z. o rozsahu a podmienkach úhrady liekov, zdravotníckych

pomôcok a dietetických potravín na základe verejného zdravotného poistenia a o zmene a doplnení niektorých zákonov
Zákon č. 139/1998 Z. z. o omamných látkach, psychotropných látkach a prípravkoch Zákon č. 576/2004 Z. z. o zdravotnej starostlivosti, službách súvisiacich s poskytovaním zdravotnej starostlivosti a o zmene a doplnení niektorých zákonov
Zákon č. 578/2004 Z. z. o poskytovateľoch zdravotnej starostlivosti, zdravotníckych pracovníkoch, stavovských organizáciách v zdravotníctve a o zmene a doplnení niektorých zákonov
Zákon č. 152/1995 Z. z. o potravinách
Vyhláška č. 129/2012 Z. z. o požiadavkách na správnu lekárenskú prax
Nariadenie vlády SR č. 296/2010 Z. z. o odbornej spôsobilosti na výkon zdravotníckeho povolania, spôsobe ďalšieho vzdelávania zdravotníckych pracovníkov, sústave špecializačných odborov a sústave certifikovaných pracovných činností
Európsky liekopis 10. vydanie (European Pharmacopoeia – Ph. Eur. 10th Edition)
Slovenský farmaceutický kódex
Vestníky MZ SR

Languages necessary to complete the course:
Slovak language

Notes:
During the internship, the student prepares and after completing a one-month internship sends via electronic application (e-learning UK - moodle) e-protocol. The e-protocol is a formal document about completion of the prescribed length of professional pharmacy practice in accordance with the valid wording of Act no. 131/2002 Coll. on higher education institutions, as amended, in accordance with the legislation in force in the European Union,
requirements for the study of pharmacy and the recognition of professional qualifications.
A week of practice is a time period characterized by five calendar days, including public holidays and non-working days. Public holidays and non-working days are included in the internship period, a student does not have to overwork them.
The one-month internship takes place in the summer semester according to the approved schedule.

Past grade distribution
Total number of evaluated students: 2734

A	ABS	B	C	D	E	FX
87,2	0,0	7,57	3,51	0,95	0,37	0,4

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

Last change: 09.12.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/09-Mgr/15	Practice in Community Pharmacy (2)

Educational activities:
Type of activities: practice
Number of hours:
per week: **per level/semester:** 20t
Form of the course: on-site learning

Number of credits: 20

Recommended semester: 9.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 2533

A	ABS	B	C	D	E	FX
60,88	0,0	29,65	7,03	1,42	0,91	0,12

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

Last change: 08.07.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KChTL/10-Mgr/00	Principles of Molecular Modelling

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

Number of credits: 2

Recommended semester: 4.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 2167

A	ABS	B	C	D	E	FX
55,61	0,0	27,55	12,09	3,74	0,65	0,37

Lecturers: Mgr. Lucia Lintnerová, PhD., doc. Ing. Martin Pisárčik, CSc., Mgr. Peter Herich, PhD.

Last change: 03.04.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFChL/13-Mgr/19	Problem solving in Physics (1)

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

Number of credits: 1

Recommended semester: 1.

Educational level: I.II.

Prerequisites:

Course requirements:
Student writes at least two tests during semester and the assessment of these tests determines the final mark. The limit for successful completion of the subject is 60%.
Conditions for Course Completion could be changed in the case of distance form of study.
Assessment: A 92-100 %, B 84-91 %, C 76-83 %, D 68-75, E 60-67, Fx 59% and less.
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
By completion of the subject student acquires skills in solving problems in physics in the extent needed for pharmacy students. Physical principles are applied to problems regarding different parts of pharmacy, medicine and daily life.

Class syllabus:
Problems solved during seminar are related to the topic of lectures in the subject Pharmaceutical physics:
Physical quantities and units. Kinematics and dynamics of mass point. Newton's laws. Mass and gravity. Mechanical work and energy. Solid body mechanics. Hydrostatics and hydrodynamics. Heat, thermodynamics. Electrostatics. Electrical current. Magnetism. Radiation.

Recommended literature:
Videoprednášky prístupné cez MS Teams
Kopecký, F.: Prehľad fyziky pre farmaceutov I. (Mechanika, hydromechanika a náuka o teple). 4. vydanie, Bratislava, Univerzita Komenského, 1999. 184 s. (skriptá, http://www.fpharm.uniba.sk/index.php?id=2665).
Sarka, K., Kopecký, F.: Prehľad fyziky pre farmaceutov II. (Elektrina, magnetizmus a žiarenie). Bratislava, Univerzita Komenského, 1988. 104 s. (skriptá, http://www.fpharm.uniba.sk/index.php?id=2665).
Krempaský, J.: Fyzika. Bratislava, Alfa 1982. 752 s.
Halliday D., Resnick R., Walker J: Fyzika. Prometheus. Praha, 2000

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 213

A	ABS	B	C	D	E	FX
69,48	0,0	17,37	10,33	0,0	0,0	2,82

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

Last change: 30.03.2022

Approved by: doc. RNDr. Jana Gallová, CSc.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFChL/14-Mgr/19	Problem solving in Physics (2)

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

Number of credits: 1

Recommended semester: 2.

Educational level: I.II.

Prerequisites:

Course requirements:
Continuous assessment by tests (minimum 2 per semester) and final test. Evaluation/grade: A 92-100 %, B 84-91 %, C 76-83 %, D 68-75, E 60-67 %, Fx <60 %
Scale of assessment (preliminary/final): 30/70

Learning outcomes:
The course help students to acquire skill in solving selected problems in Physical chemistry using adequate mathematics and numerical calculation. At the same time this course provides understanding of theoretical principles applied in specialized pharmaceutical areas like analysis of drugs, drug formulae quality control, pharmacokinetics, action of drugs on the molecular level, drug absorption, etc.

Class syllabus:
Students will improve their theoretical knowledge obtained at lectures on Physical chemistry by solving problems related to selected chapters as structure of molecules and spectral methods (UV-VIS, IR, NMR), kinetics of radioactive decay, chemical thermodynamics esp. phase equilibriums and solutions, electrochemistry and acid-base equilibriums, chemical kinetics, colloids and surfaces.

Recommended literature:
Oremusová J., Greksáková O.: Fyzikálna chémia, Zbierka úloh pre študentov farmácie, 2019, 1. vyd., Bratislava, UK.
Kopecký F.: Fyzikálna chémia pre farmaceutov I. : štruktúra a vlastnosti atómov a molekúl. 3. vyd. Bratislava: UK, 2000 (skriptá).
Oremusová J., Greksáková O.: Fyzikálna chémia: Laboratórne cvičenia pre farmaceutov, 2010, Univerzita Komenského Bratislava (skriptá)
Kopecký, F. a kol.: Praktické a výpočtové cvičenia z fyzikálnej chémie. Bratislava : UK, 1989 (skriptá).
Atkins, P. W.: Fyzikálna chémia : časť 1, 2a, 2b, 3. 6.vyd.. Bratislava : STU 1999.

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 155

A	ABS	B	C	D	E	FX
70,97	0,0	16,77	11,61	0,0	0,65	0,0

Lecturers: Ing. Jarmila Oremusová, CSc., RNDr. Alexander Búcsi, PhD., Mgr. Lukáš Hubčík, PhD., prof. RNDr. Daniela Uhríková, CSc.

Last change: 10.12.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFANF/13-Mgr/20	Radiopharmaceuticals

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

Number of credits: 4

Recommended semester: 5.

Educational level: I.II.

Prerequisites:

Course requirements:
Compulsory participation on the course educational activities is one of the conditions. For the admission to the final exam, it is necessary to complete the continuous assessment from laboratory practicals to at least 60% of total points (consisting of fulfilment of all assigned tasks, submission of protocol (report) from every topic, as well as 1 control written test to at least 60%).
The final exam (in written form) - it is necessary to obtain at least 60% of total points for successful passing the exam. Exam evaluation: A = 100-92%; B = 91.99-83%; C = 82.99-74%; D = 73.99-67%; E = 66.99-60%; FX = less than 60%.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The completion of the course contributes to the achievement of a comprehensive qualification and knowledge of a pharmacist and is connected with the laboratory of the faculty with distinctive requirements. It is the only educational opportunity for future pharmacists to learn the specifics of the work and usage of radioactive sources and to acquire practical skills in a radiopharmaceutical preparation, the use of analytical methods for their control, as well as in ensuring radiation protection and safety.
This course contributes to the completion of pharmacist´s knowledge in areas such as: - preparation, quality control, and the use of radiopharmaceuticals, as a specific category of drugs, in the departments of nuclear medicine and other specialized departments in the diagnostic and/or therapeutic process of various diseases; - personal assistance to patients in cooperation with physicians in the departments of nuclear medicine, but also in dispensation within this specific area in a public pharmacy. The acquired knowledge can also be utilized in research and development of new radiolabeled substances.

Class syllabus:
The content and syllabus of the course is in compliance with requirements of the European Pharmacopoeia, which includes several monographs on Radiopharmaceutical Preparations, as well as with current guidelines and requirements for radiation protection.
• Radiopharmaceuticals: basics of radioactivity and related physical phenomenon; properties and importance.

• Legislation and requirements in the use of ionizing radiation sources and health protection against ionizing radiation in relation to various types of exposure.
• Dosimetry and detection of ionizing radiation.
• Effects of ionizing radiation on human organism.
• Preparation of radiopharmaceuticals – basic synthetic procedures and radiolabeling of biomolecules, preparation from kits.
• Quality control of radiopharmaceuticals.
• Radiolabeled substances in the research versus Radiopharmaceuticals in practice – clinical use for diagnostic and/or therapeutic purposes.
• Nuclear medicine imaging techniques.
• Professional excursion to departments specialized in the field of preparation, quality control and use of radiopharmaceuticals.

Recommended literature:
HAVRÁNEK, E., et al. Rádiofarmaká. Bratislava : UK, 2017. (textbook)
SÝKOROVÁ, M., HAVRÁNEK, E. Rádiofarmaká laboratórne cvičenia pre farmaceutov. Bratislava : UK, 2013.
SAHA, G.P. Fundamentals of Nuclear Pharmacy. New York : Springer, 2010, p.409. (textbook)
Council of Europe. European Pharmacopoeia online, current version. Strasbourg : EDQM.
Current laws/ordinances/guidelines on radiation protection and on handling of the radioactive materials and substances.

Languages necessary to complete the course:
slovak language

Notes:
The course is provided only in winter semester

Past grade distribution
Total number of evaluated students: 87

A	ABS	B	C	D	E	FX
11,49	0,0	44,83	32,18	9,2	2,3	0,0

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

Last change: 02.04.2022

Approved by: PharmDr. Mária Bodnár Mikulová, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF/VP-1-A/20	Research Project

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

Number of credits: 1

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

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 1

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

Lecturers: prof. Ing. Vladimír Frecer, DrSc.

Last change:

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF/PVP/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: 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: 6

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

Lecturers: prof. Ing. Vladimír Frecer, DrSc., PharmDr. Andrea Balažová, PhD.

Last change:

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/10-Mgr/15	Retail Pharmacy, Legislation and Ethics

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

Number of credits: 5

Recommended semester: 8.

Educational level: I.II.

Prerequisites:

Course requirements:
Students are evaluated in writing during the semester, the minimum success rate is 65%. Rating: A: 93-100%, B: 86-92%, C: 79-85%, D: 72-78%, E: 65-71%, Fx: 64% and less. Assessment during the semester is part of the final assessment, which takes place orally.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
After completing the course, the student acquires knowledge and skills in pharmacy care, an overview of the overall content of the course Retail pharmacy and its position in pharmaceutical practice, the subject of which is working with the drug and its administration to the patient under certain conditions. A student masters the work with a prescription, ePrescription and information he/she obtains from it, but also other professional information he obtains from literature and electronic databases. Students are acquainted with basic information on the storage of drugs and medicines, on the individual preparation of medicines and on the control of pharmaceutical raw materials that are subject to an identity test.

Class syllabus:
Introduction to pharmacy.
- Providing expert information and advice on the use of medicines, including risks and their interactions, in order to ensure the effective and safe use of medicines, with particular emphasis on non-prescription medicines.
- Individual preparation of drugs.
- Control of drugs and medicines.
- Dispensing of human and veterinary medicines, dietetic food and medical devices.
- Provision of expert information and advice on the use of veterinary medicines, including compliance with the withdrawal period for animal keepers.
- Providing information and advice on the dispensing of medical devices to ensure their proper use or function.
- Administration and documentation of material, personnel and professional.
- Agenda of drug preparation, its registration and dispensation.
- Cooperation in the creation of drug forms.

- Performing routine physiological examinations.
- Communication with health insurance companies.
- Cooperation with external applications - drug information system.
- Drug interactions and electronic search.
- Quality management of pharmaceutical activities.
- Revision activity.
- Managerial and statistical communication.
- Categorization of drugs and pricing policy.
- Provision of medicines, drugs, dietetics and medical devices.

Recommended literature:

Tesař, T. a kol.: Lekárenstvo a legislatíva, Osveta, 2017
Zákon č. 362/2011 Z. z. o liekoch a zdravotníckych pomôckach a o zmene a doplnení niektorých zákonov v znení neskorších predpisov
Zákon č. 363/2011 Z. z. o rozsahu a podmienkach úhrady liekov, zdravotníckych pomôcok a dietetických potravín na základe verejného zdravotného poistenia a o zmene a doplnení niektorých zákonov v znení neskorších predpisov
Zákon č. 576/2004 Z.z. o zdravotnej starostlivosti, službách súvisiacich s poskytovaním zdravotnej starostlivosti a o zmene a doplnení niektorých zákonov v znení neskorších predpisov
Zákon č. 578/2004 Z.z. o poskytovateľoch zdravotnej starostlivosti, zdravotníckych pracovníkoch, stavovských organizáciách v zdravotníctve a o zmene a doplnení niektorých zákonov v znení neskorších predpisov
Zákon č. 139/1998 Z. z. o omamných látkach, psychotropných látkach a prípravkoch v znení neskorších predpisov
Zákon č. 147/2001 Z. z. o reklame a o zmene a doplnení niektorých zákonov v znení neskorších predpisov
Zákon č. 152/1995 Z. z. o potravinách v znení neskorších predpisov
Vyhláška MZ SR č. 129/2012 Z. z. o požiadavkách na správnu lekárenskú prax
Nariadenie vlády SR č. 296/2010 Z. z. o odbornej spôsobilosti na výkon zdravotníckeho povolania, spôsobe ďalšieho vzdelávania zdravotníckych pracovníkov, sústave špecializačných odborov a sústave certifikovaných pracovných činností v znení neskorších predpisov
Európsky liekopis 10. vydanie (European Pharmacopoeia – Ph. Eur. 10th Edition)
Slovenský farmaceutický kódex

Languages necessary to complete the course:

Slovak language

Notes:

The subject is compulsory and is taught only in the 8th semester of study.

Past grade distribution

Total number of evaluated students: 2741

A	ABS	B	C	D	E	FX
55,67	0,0	29,73	11,38	2,04	0,58	0,58

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

Last change: 09.12.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFB/12-Mgr/20	Safety of Herbal Medicines and Food Supplements

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

Number of credits: 3

Recommended semester: 7.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 42

A	ABS	B	C	D	E	FX
57,14	0,0	2,38	0,0	21,43	16,67	2,38

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

Last change:

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KChTL/07-Mgr/19	Selected Chapters in Inorganic Chemistry

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

Number of credits: 2

Recommended semester: 1.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 539

A	ABS	B	C	D	E	FX
66,79	0,19	29,31	3,53	0,0	0,0	0,19

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

Last change: 03.04.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KChTL/08-Mgr/19	Selected Chapters in Organic Chemistry

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

Number of credits: 2

Recommended semester: 2.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 368

A	ABS	B	C	D	E	FX
25,54	0,0	18,48	19,29	22,01	12,23	2,45

Lecturers: RNDr. Roman Mikláš, PhD., Mgr. Natalia Lucia Miklášová, PhD.

Last change: 31.03.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KORF/12-Mgr/00	Social Pharmacy and Pharmacoeconomics

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

Number of credits: 5

Recommended semester: 4.

Educational level: I.II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 2909

A	ABS	B	C	D	E	FX
35,41	0,0	24,1	20,52	10,31	7,15	2,51

Lecturers: doc. PharmDr. Tomáš Tesař, PhD., MBA, PharmDr. Zuzana Koblišková, PhD., Mgr. Monika Čičová, PharmDr. Slávka Porubcová, Ing. Ingrid Slezáková, PharmDr. Miriam Vulevová, MBA

Last change: 07.10.2021

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

STATE EXAM DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF/900-Mgr/15	**Course title:** Social Pharmacy and Retail Pharmacy
Number of credits: 4	
Educational level: I.II.	
State exam syllabus:	
Last change:	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFT/13-Mgr/20	Systemic and Pathological Physiology

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

Number of credits: 5

Recommended semester: 3.

Educational level: I.II.

Prerequisites:

Recommended prerequisites:
None

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

Learning outcomes:
In the newly created subject, the student will get a comprehensive conception of the arrangement and activity of the human organism as a whole, about the functions of individual systems, regulatory, coordination and integration relationships between individual anatomical systems. Student will learn about pathophysiology at the systemic level in the context of basic pathophysiological principles leading to damage of the physiological functions of systems. Student will understand the causes, course, symptoms of pathological conditions and subsequent complications, which are a prerequisite for the study of pharmacology and clinically oriented disciplines. Student will be extended and completed the spectrum of diseases and syndromes from selected systems, in more detailed way, he will recognize new or experimentally detected pathomechanisms. Student will become oriented in the current knowledge, which he will use in other profile biomedically oriented subjects of pharmaceutical studies.

Class syllabus:
Function and pathophysiology of the central, peripheral somatic and autonomic nervous system, neurological and psychiatric diseases. Control, regulation and disorders of cardiac activity, blood circulation and pathophysiology of vascular diseases and blood. Physiology and pathophysiology of breathing and pulmonary ventilation, digestive tube, liver, gallbladder, pancreas. Formation and disorders of the regulation of endocrine glands. Physiology and pathophysiology of the reproductive system of a man and a woman, hormonal regulation and its disturbances. Pathophysiology of

inflammatory diseases of the skin (eczema, erythema, lupus, psoriasis, atopic dermatitis), allergic and autoimmune diseases. Pathophysiology of inflammatory and degenerative diseases of the joints, disorders of bone metabolism and inflammation. Infectious diseases caused by bacteria, viruses, rickettsia, chlamydia, parasites, fungi, protozoa. Children's infectious diseases.
During practical training students will focused on practicing basic terminology, pathophysiology of symptoms, cases in selected systems, diagnostic tests e.g. Cognitive ability testing, analysis of records of pathologically altered functions of selected organs, investigative techniques, biochemical examinations. Pathophysiology of skin changes in childhood, adulthood, old age. and infectious diseases. Diets and advice for special diets.

Recommended literature:

Recommended Literature:
Textbook of pathology, 7th edition, by H. Mohan. Ed. Jaypee Brothers Medical Publishers (P) Ltd, New Delhi, India, 2014, ISBN 978-9351523697
Vander`s Human Physiology 12th Ed, McGraw/Hill, Ed., NY, by EP Widmaier, H Raff, KT Strang, 2011, ISBN 978/0/07/122215/0
Essentials of Human Physiology for Pharmacy, CEC Press, 2008, by LK McCorry (e-version)
Essentials of Pathophysiology, 3rd edition, by C.M. Porth. Ed. Lippincott and Wilkins: Philadelphia, 2011, ISBN 0781770874
General and Systemic Pathology, 4th edition, by J.C.E. Underwood. Ed. Churchill Livingstone: NY, 2004 ISBN 0443073341/9780443073342
Essentials of Pathophysiology for Pharmacy, 1st edition, MM Zdanovicz, CRC Press, 2002, by ISBN 781587160363 (e-version)
Pathophysiology, by I Hulín, Bratislava: Slovak Academis Press, 1997, ISBN 80-85665-90-5
Lecture and exercise handouts will be available in Moodle's online system 2220,2021.

Languages necessary to complete the course:

slovak

Notes:

New subject SAPF introduced in the winter course 2020

Past grade distribution

Total number of evaluated students: 336

A	ABS	B	C	D	E	FX
4,76	0,0	29,76	41,67	11,9	11,9	0,0

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

Last change: 13.12.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFB/08-Mgr/00	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:

Recommended prerequisites:
KFB/05-Mgr-A/00 Pharmacognosy (2) – not valid for Erasmus+ students

Course requirements:
- a 100 % attendance at the course lectures is required;
- students must prepare 2 seminar works. The first one should be submitted by 6th semestral week at the latest, the second one should be submitted by 12th semestral week at the latest;
- successful evaluation of 2 seminary works is required for successful completion of the course seminars. Only the corrected and accepted version of seminary works will enable students to take part at the final examination of the subject.
- The final exams will have the form of a written test. Grading rules: 100-92/A, 91-84/B, 83-76/C, 75-68/D, 67-60/E, 59-0/FX.

Scale of assessment (preliminary/final): 1/1

Learning outcomes:
Upon successful completion of the educational process, the student should gain a comprehensive overview of the processes that precede the emergence of a particular plant-based product and should be able to evaluate drugs and medicinal plants as basic raw materials for the preparation of natural medicines. The acquired knowledge should help the student in the application, especially in the field of research and production of pharmaceutical preparations on a plant basis, but also in other industries, e. g. cosmetics, food industry.

Class syllabus:
The course Technology of Natural Drugs deals with plant raw materials used in the pharmaceutical industry. Their use is very common not only in the form of phytopharmaceuticals or isolated active substances in the form of drugs, but is also possible in the form of nutritional supplements. It focuses on the requirements concerning the quality of plant material and factors influencing the quality of the drug in the whole process of phytopharmaceutical production - from good cultivation practice to good manufacturing practice. Gradually acquaints students with the basic procedures of plant material processing but also with newer methods of active substances obtaining such as supercritical or subcritical fluid extraction, microwave-assisted extraction or ultrasound-assisted

extraction. It explains the importance of fingerprint analysis of extracts and standardization of the content of their active substances, which are important indicators of the quality and effectiveness of phytopharmaceuticals. Students will get acquainted with an important area of natural drugs technology – biotechnology, and the possibilities of their application in the process of obtaining active substances from plants.

Recommended literature:

Nagy –Mučaji: Pharmacognosy : Natural remedies. –1st Ed. -Bratislava : FPharm CU, 2002. –72 pp.

Mučaji –Nagy: Pharmacognosy: Analytical and chromatographic practice. – 2nd revised Ed. – Bratislava, FPharm CU, 2011. –75 pp., ISBN 978-80-223-3108-1.

Actual version of European Pharmacopoiea.

Languages necessary to complete the course:

English

Notes:

Past grade distribution

Total number of evaluated students: 109

A	ABS	B	C	D	E	FX
44,95	0,0	16,51	21,1	13,76	2,75	0,92

Lecturers: PharmDr. Vladimír Forman, PhD., doc. PharmDr. Szilvia Czigle, PhD.

Last change: 25.06.2022

Approved by: prof. Ing. Milan Nagy, CSc., prof. PharmDr. Pavel Mučaji, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF/999/Eplus/20	**Course title:** Trends in the European pharmaceutical education
Educational activities: **Type of activities:** **Number of hours:** **per week: per level/semester:** **Form of the course:** on-site learning	
Number of credits: 2	
Recommended semester: 7., 8..	
Educational level: I.II.	
Prerequisites:	
Course requirements: After the production of evidence about completing the course at the foreign university (Transcript of Records), a student graduating ERASMUS plus is graduated with the credit assessment of the imported subject to the faculty, according to academic results at the host university / institution (Table E) and to protocol of the recognition of studies by Faculty / University - recognition of the results at the home institution (Table F).	
Learning outcomes: The Erasmus plus student gets obtained knowledges from the selected course offered from the curriculum of the host university / institution that belongs to the so-called educational component of the study program student. The student by the studying abroad obtains the knowledges in the indispensable subjects that are not in the curriculum at the home university / institution.	
Class syllabus: The student of Erasmus plus graduate under the Learning Agreement for Studies intended subject at another faculty of a university on which has not be completed undergraduate courses of - according to the current curriculum of subject.	
Recommended literature: the recommended reading for the student to the subject at the host university / institution - the topical source for present problems	
Languages necessary to complete the course: the language or combination of languages, knowledge of which is necessary to pass the subject at the host university / institution	
Notes: subject is provided, according to interest, only students who are sent to the host university / institution participating in foreign ERASMUS mobility plus	

Past grade distribution
Total number of evaluated students: 0

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

Lecturers: doc. PharmDr. Jindra Valentová, PhD.

Last change: 06.08.2020

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

Course ID:	**Course title:**
FaF.KFANF/12-Mgr/20	Validation in Analytical and Pharmaceutical Practice

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

Number of credits: 2

Recommended semester: 3.

Educational level: I.II.

Prerequisites:

Course requirements:
Successful completion of the exam consisting of written or oral part (min. 60%). To obtain an A rating it is necessary to obtain at least 92 out of 100 points, to obtain an B rating at least 84 points, to obtain a C rating at least 76 points, to obtain a D rating at least 68 points and to obtain an E rating at least 60 points.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
Course objectives:
• Purposefully develop and apply knowledge in the field of statistics in the process of validation of analytical instrumental methods.
• Briefly get acquainted 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:
Recommended Literature:
• D. Kružlicová: Chemometria. Univerzita sv. Cyrila a Metoda v Trnave, Michal Vaško - Vydavateľstvo, Prešov, 2015. ISBN 978-80-8105-671-0
• M. Meloun, J. Militký: Statistické zpracování experimentálních dat. East Publishing, Praha, 1998. ISBN 80-7194-075-5

• M. Otto: Chemometrics: Statistics and Computer Application in Analytical Chemistry, 3rd Edition. Wiley-VCH Verlag, Weinheim, 2016. ISBN: 978-3-527-34097-2
• Mikuš, P., Piešťanský J.: Kapilárna elektroforéza, hmotnostná spektrometria a ich kombinácie vo farmaceutickej a biomedicínskej analýze, VEDA, Bratislava, 2014. 312s. Strana: 2
• Mikuš, P., Piešťanský, J., Dokupilová, S.: Kvapalinová chromatografia, hmotnostná spektrometria a ich kombinácie vo farmaceutickej a biomedicínskej analýze, VEDA, Bratislava, 2018. 365s

Languages necessary to complete the course:
slovak language

Notes:

Past grade distribution
Total number of evaluated students: 147

A	ABS	B	C	D	E	FX
74,83	0,0	23,81	1,36	0,0	0,0	0,0

Lecturers: Ing. Dáša Kružlicová, PhD.

Last change: 02.04.2022

Approved by: Ing. Dáša Kružlicová, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 2

Recommended semester: 6.

Educational level: I.II.

Prerequisites:

Course requirements:
To be admitted to the exam, student is required to attend all lectures and seminars. The condition for passing the course is passing the final exam test and the oral exam. The test and the oral exam contribute equally to the overall result of the exam and the student must demonstrate mastery of at least 60% of the required knowledge. The exam test result is evaluated on a scale: A (at least 92%), B (at least 83%), C (at least 76%), D (at least 68%), E (at least 60%) and Fx (less than 60% of the maximum number points).
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
By completing the course, the student will gain an overview of the specifics of veterinary medicine and veterinary pharmacology. Student will be familiar with veterinary drugs, which are an important part of pharmaceutical practice.

Class syllabus:
The course pays attention to the specifics of the use of drugs in animals - routes of administration, drug forms, the properties of veterinary drugs, the use of drugs in veterinary practice (medical, biotechnological). Particular attention is paid to drug residues in animal products intended for human consumption and protection periods in animals.
The scope of the course in the form of lectures and seminars is focused on individual specific groups of veterinary drugs:
Specifics of veterinary pharmacology - differences from human pharmacology.
Legislative regulation of veterinary health care.
Veterinary drug forms and routes of administration.
Zoonoses, the most common animal diseases.
Pharmacology of selected groups of veterinary drugs:
- Drugs used in infectious and invasive diseases.
- Drugs affecting the central and peripheral nervous system.
- Medicines that affect the blood circulation.
- Medicinal products acting on the gastrointestinal tract.
- Medicinal products that affect the reproductive organs. Insemination.

- Drugs affecting metabolism.
- Euthanasia, slaughter of livestock.

Recommended literature:

Vodrážka, J. a kol.: Veterinárna farmakológia pre farmaceutov. Bratislava : Príroda, 1980. 344 s.
Ševčík, B., Lamka, J.: Veterinární farmakologie pro farmaceuty. Hradec Králové : FaF UK, 1987. 118 s. (skriptá).
Lamka J., Ducháček L.: Veterinární léčiva pro posluchače farmacie. Hradec Králové : FaF Univerzity Karlovy, 1998.
Šnirc, J. a kol.: Klinická veterinárna farmakológia. Martin: Neografia, 2007, 1182 s.

Languages necessary to complete the course:

Notes:

Past grade distribution

Total number of evaluated students: 298

A	ABS	B	C	D	E	FX
41,61	0,0	27,18	15,77	9,4	4,36	1,68

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

Last change: 29.11.2021

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

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Pharmacy

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

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

Number of credits: 3

Recommended semester: 6.

Educational level: I.II.

Prerequisites:

Course requirements:
The course ends with a written exam. The student will be admitted to the written exam after achieving the following requirements:
1. 100% participation in practical exercises
2. submission of seminar work
Scale of assessment (preliminary/final): Written exam. Evaluation A corresponds to obtaining min. 92% of the maximum number of points, B – 84%, C – 76%, D – 68%, E – 60%, Fx less than 60%.

Learning outcomes:
Students after completion of the Xenobiochemistry course should identify and outline the main biotransformation way of the production of the metabolites according to the structure of drugs. Moreover, graduates should gain good knowledge about biotransformation enzymes, their isoforms, properties and interactions on the cellular level as well as specifics of human organism on genotypic and phenotypic levels.

Class syllabus:
- Principle of xenobiotic (drug) metabolism and phases of biotransformation reactions based on chemical structure. - Characterization and#function of biotransformation enzymes, mechanism of the 1st phase reaction on CYP-450 level - CYPs isoenzymes – substrate specificity, tissue and subcellular distribution. - Meaning of the second biotransformation phase, drug transporters. - The impact of enzyme induction or inhibition on pharmacotherapeutic effect, Effect of circadian rhythms on the gene expression of biotransformation enzymes, possible interactions or side effects. - Intra- and interindividual variability in biotransformation enzyme activity. - Epigenetic factors affecting the biotransformation of xenobiotics. - Knowledge of xenobiochemistry allows a modern view on safe and efficient pharmacotherapy thus helping with the development and research of the#new potential structures of drugs.

Recommended literature:
A Handbook of Bioanalysis and Drug Metabolism, Ed. Gary Evans, CRC Press, London, NewYork, 2004.

Testa B., Kramer S.D.: 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: 139

A	ABS	B	C	D	E	FX
25,18	0,0	38,13	23,74	7,91	3,6	1,44

Lecturers: PharmDr. Andrea Balažová, PhD.

Last change: 22.03.2022

Approved by: PharmDr. Andrea Balažová, PhD.