

Department of Pharmaceutical Analysis and Nuclear Pharmacy
Summer term 2025/2026

Ordinance
LECTURES and PRACTICES on New Trends in Analytical Chemistry for foreign students

Lectures and practices on New Trends in Analytical Chemistry for 2nd – 4th year are performed in the rooms O151, and laboratories of instrumental methods at DPANP and/or TAC, 3 hours per week (1 hour lecture, 2 hours practices) or, possibly, in one run block with the same extent during the semester, according to a decision of the teacher. Alternatively, in a pandemic situation (according to the dean's decision), the education and examination process will be carried out in a distance form via MS Teams.

Particular tasks are given to students individually and preliminary knowledge is tested by mouth during each practice.

Absence of students from practices is not accepted without a bill of health from the doctor. Justified absence has to be additionally substituted according to instructions of the teacher. Absence exceeding a 1/3 of total teaching process is not accepted. Students with any suspect of the symptoms of COVID-19 or flu will not be allowed to attend any presence form of the education and examination. Tutorials can be given to students during semester according to the teacher agreement.

Students are demanded to have during practices an exercise book, chemical tables, calculator, and textbook obtained from or recommended by the teacher. It is forbidden to use any electronic devices (mobiles, camera, etc.) during lectures/practices/exam (in both on-line and presence forms of education as well), they have to be switched off.

In the case of a pandemic situation, students are demanded to have during lectures/practices a face mask and gloves, and to keep recommended distances from each other in lecture room or laboratory.

Additional literature/sources for theoretical study:

1. **Mikuš, Peter, Maráková, Katarína:** Hyphenated electrophoretic techniques in advanced analysis. Bratislava : KARTPRINT, 2012
2. **Mikuš, Peter:** pdf lectures (MS Teams)
3. **D.G. Watson,** Pharmaceutical analysis, A textbook for pharmacy students and pharmaceutical chemists, Elsevier, Churchill Livingstone, London 2005.
4. **J. Chamberlain,** Analysis of drugs in biological fluids, CRC Press, Boca Raton, Florida 1987.
5. **web pages** with appropriate key words and their combinations (spectral methods, spectrometry, spectroscopy, absorption, fluorescence, UV, IR, MS, NMR, electrochemical methods, polarography, biosensors, separation methods, electrophoresis, chromatography)

Bratislava, 09.02.2026

prof.RNDR. Peter Mikuš, PhD.
head of department

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Chemistry for foreign students

Conditions for successful passing of practices and exams

1. Student is required to attend practices.

Absences exceeding 1/3 of all lessons lead to interruption of teaching process for the student in this module. In such case, the student can enroll himself/herself for this module next academic year. Alike, if obtained score was lower than 60%, the student can enroll himself/herself for this module next academic year.

2. Examination.

Examination is performed subsequently after completing the education block in writing (in a presence or distance MS Teams form, according to the pandemic situation). Exams are divided to regular term, first and second reparation. If the obtained score in the second reparation was lower than 60%, the student can enroll himself/herself for this module next academic year. All other details concerning the exam will be properly explained by the teacher before exam.

3. Final remarks

Any changes and modifications in this ordinance can be done by the teacher depending on a current pandemic situation.

CLASSIFICATION SYSTEM:

A	96%
B	90%
C	80%
D	70%
E	60%
FX	<60%

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Knowledge of the student is tested in writing during the exam period. Date of examinations will be announced by the teacher on the last lecture.

lectures: Tuesday 16:40-17:30 room O151 (in a presence form or on-line via MS Teams, according to the pandemic situation), the form of education (continuous or a block form) will be determined by the teacher, all relevant instructions to the education process will be presented on the first lecture; teacher: prof. RNDr. Peter Mikuš, PhD.

practices: Tuesday 10:15-12:45 room O151, (in a presence form or on-line via MS Teams, according to the pandemic situation), the form of education (continuous or a block form) will be determined by the teacher, all relevant instructions to the education process will be presented in the first lecture; teacher: prof. RNDr. Peter Mikuš, PhD.

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

16.02. – 20.02.2026

New trends in sample pretreatment techniques used before instrumental analysis

23.02. – 27.02.2026

New trends in instrumentation and analytical possibilities of spectral analytical methods (UV, Fluor., LIF, IR, NMR, MS), principles, experimental arrangement, quantitative and qualitative parameters and evaluation, application area

02.03. – 06.03.2026

New trends in instrumentation and analytical possibilities of electrochemical analytical methods (CV, DPV, SWV, etc., advanced electrode materials and modifications, biosensors), principles, experimental arrangement, quantitative and qualitative parameters and evaluation, application area

09.03. – 13.03.2026

New trends in instrumentation and analytical possibilities of separation analytical methods: gas chromatography and high performance liquid chromatography (GC, HPLC, UHPLC, etc., new stationary phases), principles, experimental arrangement, quantitative and qualitative parameters and evaluation, application area

16.03. – 20.03.2026

New trends in instrumentation and analytical possibilities of separation analytical methods: capillary electromigration methods (CZE, ITP, IEF, CEC, MEKC, etc., new selectors), principles, experimental arrangement, quantitative and qualitative parameters and evaluation, application area

23.03. – 27.03.2026

New trends in instrumentation and analytical possibilities of separation analytical methods: combined separation methods (basic principles and instrumental schemes)

30.03. – 03.04.2026

Automatization in chromatographic separation techniques (instrumental schemes and principles of two-dimensional systems with on-line sample pretreatment)

06.04. – 10.04.2026

Automatization in electrophoretic separation techniques (instrumental schemes and principles of two-dimensional systems with on-line sample pretreatment)

13.04. – 17.04.2026

2D separation methods in heart-cut and comprehensive analysis; metabolomics, proteomic and genomic applications

20.04. – 24.04.2026

Miniaturization in separation techniques (microchip analysis in 1D format)

27.04. – 01.05.2026

Miniaturization in separation techniques (microchip analysis in 2D format)

04.05. – 08.05.2026

Statistical evaluation of results in pharmaceutical analysis

11.05. – 15.05.2026

Validation of analytical methods I

18.05. – 22.05.2026

Validation of analytical methods II