SYLLABUS

1. Course title:

Instrumental Pharmaceutical Analysis

2. Code:

3. Cycle of study:

1

4. ECTS credits:

6

5. Type of course:

(•) Mandatory ( ) Elective

6. Prerequisites:

NONE

7. Class restrictions:

NONE

8. Duration / semester:

1 4

9. Weekly contact hours:

9.1. Lectures: 3

9.2. Seminars: 0

9.3. Laboratory/Practice classes: 2

10. Faculty:

Faculty of Pharmacy

11. Department/study program:

Pharmacy (Integrated study I and II cycle)

12. Lecturer:

Maida Šljivić Husejnović, PhD, Assoc.Prof.

13. Lecturer's e-mail:

maida.sljivic-husejnovic@untz.ba

14. Web site:

www.frmf.untz.ba

15. Course aims:

The aim of this course is to introduce theoretical principles and gain practical experience in using some of the most important instrumental methods in pharmaceutical analysis.

16. Learning outcomes:

Introduction to and mastery of some instrumental methods of analysis.

17. Course content:

1. Introduction to curriculum.
2. Introduction to instrumental methods of pharmaceutical analysis. Classification of analytical methods. Parameters of analytical determination. Calibration and validation.
4. Electroanalytical methods. Potentiometry. Coulometry. Voltammetry.
5. Spectroscopic methods of analysis. Atomic spectrometry (AAS, EAS, FAS). Molecular spectrometry (UV, visible, IR, FMA). NMR. Mass spectrometry.
6. Separation methods. Classification and basic principles of chromatographic methods. Chromatographic methods. Electrophoresis.
7. Optical methods. Turbidimetry and nephelometry. Refractometry. Polarimetry.

18. Learning methods:

Lectures, consultations, practical laboratory work

Lectures - Students are required to attend lectures and actively participate in them.
Consultations - Through consultations, students can resolve uncertainties and deepen their acquired knowledge.
Practical laboratory work - Students are required to complete the prescribed number of practical laboratory work and pass two colloquiums.

19. Assessment methods:

Knowledge assessment will be conducted through two partial exams or one partial exam and a final written and/or oral exam.

Pre-exam activities (min 55, max 100 points)
- Student's activity - 0-20 points
- Colloquium I - 3-5 points
- Colloquium II - 3-5 points
- First partial exam - 12 - 20 points
- Second partial/final exam - max. 50 points

Student's activity: During practical laboratory work and/or lectures, students actively participate in class and demonstrate engagement in the work. Regular attendance and student activity are valued with a maximum of 20 points.
Colloquium: Within the schedule of experimental exercises, two colloquiums will be held: the first one covering topics related to concentration calculations using calibration techniques, and the second one focusing on problem-solving in potentiometric titrations. The colloquium is taken after the completion of the exercise cycle.
Exam: Students can take the exam in two parts, orally and/or in writing. The first partial exam covers material from the calibration, validation, and electroanalytical methods areas. The exam is taken during the semester, after attending the prescribed teaching units. To pass the first partial exam, students need to achieve 12-20 points for the passed part of the exam. The second partial/final exam covers the remaining material from spectroscopic and chromatographic methods areas. Students take the second partial/final exam at the end of the semester, after attending all lectures. In the second partial/final exam, students earn points towards their grade. Students need to achieve a total number of points satisfying the passing grade criteria for planned activities and assessments during the semester.
If a student fails to achieve a sufficient number of points for grading in pre-exam activities, the final exam and the failed parts of the exam are taken in the regular and retake exam dates.

20. Assessment components:

A student's performance is continuously monitored throughout the course and is expressed in points.

The final grade of a student after all planned forms of assessment is evaluated and graded as follows:
10 (A) - 95-100 - outstanding performance without errors or with minor errors
9 (B) - 85-94 - above the average, with some errors
8 (C) - 75-84 - average, with noticeable errors
7 (D) - 65-74 - generally good, but with significant shortcomings
6 (E) - 55-64 - meets the minimum criteria
5 (F, FX) <55 - does not meet the minimum criteria.

21. Required reading list:

Medenica M. and Pejić N. Instrumentalne metode, 2018.
Pašalić H. Instrumentalne metode, 2013.

22. Web sources:

23. Applicable starting from the academic year:

2023/2024.

24. Adopted in the Faculty/Academy session:

17.11.2025.