SYLLABUS

1. Course title:

ANALYTICAL CHEMISTRY I

2. Code:

3. Cycle of study:

1

4. ECTS credits:

7

5. Type of course:

(●) Mandatory ( ) Elective

6. Prerequisites:

no course prerequisites

7. Class restrictions:

none

8. Duration / semester:

1 2

9. Weekly contact hours:

9.1. Lectures: 3

9.2. Seminars: 1

9.3. Laboratory/Practice classes: 2

10. Faculty:

Faculty of pharmacy

11. Department/study program:

Pharmacy (integrated 1st and 2nd cycle)

12. Lecturer:

Mirsad Salkić, associate professor

13. Lecturer's e-mail:

mirsad.salkic@untz.ba

14. Web site:

www.farmacy.untz.ba

15. Course aims:

- theoretical introduction in qualitative chemical analysis related to types of reactions in various media,
- practical introduction in laboratory work,
- numerical solution to analytic problems.

16. Learning outcomes:

- principles of chemical equilibrium in aqueous solutions of acids, bases, salts, very slightly soluble compounds, complexes and redox systems,
- solution of quality problems using appropriate chemical principles and theories,
- application of methods for separation of cations and anions,
- distribution between phases in extraction and chromatographic separation methods,
- solving analytical chemistry calculation tasks and problems through practical laboratory work.

17. Course content:

Introduction to analytical chemistry. Qualitative analysis. The classification of methods of qualitative analysis. Sampling and sample preparation. Chemical reactions in analytical chemistry. Equilibria in solutions of weak and strong acids and bases. Calculation of successive and cumulative equilibrium constants and pH of solutions. Diagrams of distribution. Buffers. Buffer capacity. Ampholytes. Solutions of salts. Hydrolysis of soluble salts. Complexation. Equilibria in solutions of complexes, successive and cumulative stability constants. Precipitation.
Factors which influence the precipitaion. Fractional precipitation. redox reactions. Factors which influence the electrode potential. Methods of separation. Extraction. Ion-exchange. Chromatographic separation. Gas chromatography, high performance liquid chromatography and ion exchange chromatography. Principles of spectral methods in qualitative analysis. UV/VIS, spectra and qualitative analysis.

18. Learning methods:

- lectures with students' active participation and discussion,
- seminars,
- practical laboratory work.

19. Assessment methods:

After one third of the semester, the students take the first mid-term test which includes the topics covered in the lectures and exercises. The test consists of tasks and theoretical questions. Maximum score in the first test is 20 points. After the second third of the semester, the students take the second mid-term test which includes the topics covered in the second third of the semester. The test consists of tasks and theoretical questions. Maximum score in the second test is 20 points. Students can score a maximum of 20 points for continuous activity in the lectures and practical laboratory work during the entire semester. At the end of the semester, students take a written final exam which covers the remaining topics from the lectures. The test consists of theoretical questions. Maximum score in the written final exam is 20 points.
All examination forms form part of the cumulative grade. Students pass the exam only if they pass each individual part of it.
The minimum requirement to pass the exam is 54 cumulative points.

20. Assessment components:

The final grade is based on the total number of points before and during the exam. The maximum score is 100 points, and it is calculated according to the following:

Students' tasks	Points
Attendance	10
Laboratory work	10
Colloquia	20
Tests	40
Final examination	20

21. Required reading list:

1. Skoog D. A., West D. M., Holler F. J. (1999). Osnove analitičke hemije. Zagreb: Školska knjiga.
2. Savić J., M. Savić M. (1990). Osnove analitičke hemije. Sarajevo: Svetlost.
3. Harris D. C. (1999). Quantitative Chemical Analysis. New York: W.H.

22. Web sources:

23. Applicable starting from the academic year:

2012/2013

24. Adopted in the Faculty/Academy session: