

SYLLABUS

1. Course title:

INSTRUMENTAL METHODS

2. Code:

Do not fill up

3. Cycle of study:

1

4. ECTS credits:

6

5. Type of course:

☒ Mandatory ☐ Elective

6. Prerequisites:

Previously attended lectures and laboratory classes from the course: ANALYTICAL CHEMISTRY

7. Class restrictions:

No

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 Technology

11. Department/study program:

Chemical Engineering and Technologies, Food Technology

12. Lecturer:

Hatidža Pašalić, associate professor

13. Lecturer's e-mail:

hatidza.pasalic@untz.ba

14. Web site:

www.untz.tf

15. Course aims:

The acquisition of new knowledge related to the theoretical principles of instrumental methods used in qualitative and quantitative analysis and the acquisition of practical skills for the use of some of the most important instrumental methods, planning, setting up and conducting analyzes as well as the interpretation of the results of the analysis.

16. Learning outcomes:

Identify and comment on the basic principles of instrumental analytical methods and the principles of the work of the instruments, and solve problems in practice independently, starting from the choice of appropriate analytical method, planning and analysis, to the interpretation of the obtained results.

17. Course content:

Introduction to the curriculum, instructions for work. Introduction. Division of analytical methods. Analytical determination parameters. Calibration. Electroanalytical methods (Potentiometry, Electrogravimetry, Kulometry, Voltammetry). Thermal methods. Introduction to spectrometry. Atomic spectrometry (AAS, EAS, FAS). Molecular spectrometry (UV, visible, IR). X-ray spectroscopy. Nuclear magnetic resonance (H-NMR). Methods of separation. Division and basic principles of chromatographic methods. Chromatographic methods.

18. Learning methods:

The most important learning methods in the course are:

- Lectures with the use of multimedia resources, with active participation of students in discussion and interpretation of the above mentioned examples.
- Appropriate lecture units are followed by laboratory classes. For this reason, it is necessary to study theoretical basics in order to understand the conduction of the exercise. For each exercise, one should write a report that should not be a transcript of the obtained instruction for work, but should contain a description of his own work, calculations and conclusions.

19. Assessment methods:

The examination of the knowledge will be done through two colloquia and three partial exams from the appropriate teaching units. On the "final exam" students who have won the required number of points can enter the final passing grade. Students who have passed one partial part of the exam, take the remaining two parts in an integral (as a whole). The students who passed the two partial parts of the exam, take the remaining part at the "final exam". Students who have not passed any partial part of the exam, take the whole exam integrally, at the "final exam".

- The same applies to terms of "correctional exam" and "additional correctional exam". Students who have not passed the exam in the academic year when they first attend the course, will take the remaining test assignments under the "Rules of study at the I cycle of the University of Tuzla". The examination is based on the total number of points the student has obtained by fulfilling the prerequisites and passing the exam, and according to the quality of the acquired knowledge and skills, and it contains a maximum of 100 points.

20. Assessment components:

1. Pre-exam activities (19 to 30 points): attendance at lectures (3-5 credits), experimental exercises (10-15 points), colloquium (3-5 points), II colloquium (3-5 points).
2. Exam results (35 to 70 points): I partial (10-20 points), II partial (15-30 points), III partial (10-20 points).
- The score is based on the total number of points achieved on the pre-exam activities and partial exams results (min. 19 + 35 = 54 and max. 30 + 70 = 100), and according to the approved Evaluation rules.

21. Required reading list:

D.A.Skoog, F.J.Holler, T.A.Neiman (1992) Principles of Instrumental Analysis, SCP, Chicago.

M.Kaštelan-Macan (2003) Kemijska analiza u sustavu kvalitete, ŠK, Zagreb.

H.Pašalić (2013) Instrumentalne metode-opći principi, Off-set, Tuzla.

Instructions for exercises (int.script)

22. Web sources:**23. Applicable starting from the academic year:**

2015/2016

24. Adopted in the Faculty/Academy session: