



Course ID: HAH367	Course name: SELECTED SPECTROMETRIC METHODS OF ANALYSIS		
Cycle: FIRST	Year: THIRD	Semester: VI	ECTS credits: 5
Course status: MANDATORY		Total course hours: 75 Lectures: 30 Laboratory: 45	
Teaching participants:	Teachers and associates with expertise in the field to which the subject belongs		
Prerequisite for enrollment:	-		
Course aims:	Acquisition of basic theoretical and practical knowledge in the field of selected spectrometric methods of analysis and possibilities of their application in quantitative chemical analysis. Student will be introduced to the principle of instruments operation used for spectrometric determination.		
Thematic course units:	<ol style="list-style-type: none">1. Introduction to spectrometric methods: classes, radiation properties2. Transmission of radiation through matter, electromagnetic spectrum3. Absorption and emission of radiation, absorption and emission spectra, qualitative analysis4. Quantitative analysis, Beer's law: application and limitations;5. Mixture analysis, error of results: origin and methods for decrease6. Molecular fluorescence and phosphorescence spectrometry7. Basic components of spectrometric instruments. Examples of calculation and processing of results8. Midterm9. Basic components of spectrometric instruments. Instruments for measurement in the UV/VIS spectrum10. Atomic absorption spectrometry, flame, flameless, hydride technique and cold vapor technique11. AAS: interference, background radiation correction, matrix modifiers12. Atomic emission spectrometry (AES, ICP)13. Methods based on absorption, fluorescence and diffraction of X-ray		

	14. Nephelometry and turbidimetry 15. Examples of calculation and processing of results																																													
Learning outcomes:	After completing the course, the student will be able to: - explain the basic concepts and principles of the selected spectrometric methods of analysis - explain the basic components of spectrometric instruments and their working principle - understand the importance of choosing the exact method for analysis - select the appropriate spectrometric method of analysis for determination of analytes in a real sample - apply spectrometric methods of analysis for the analysis of real samples - calculate the analyte content in the sample based on the data obtained by applying selected spectrometric methods analysis - present the results of the analysis																																													
Teaching methodology:	Lectures Laboratory exercises																																													
Assessment methods and grading system¹:	<table border="1"> <thead> <tr> <th colspan="3">Grading criteria</th> </tr> <tr> <th>Criteria</th> <th>Maximal score</th> <th>Required score</th> </tr> </thead> <tbody> <tr> <td>1. Class attendance</td> <td>5</td> <td>3</td> </tr> <tr> <td>2. Class activities*</td> <td>15</td> <td>8</td> </tr> <tr> <td>3. Midterms</td> <td>40</td> <td>22</td> </tr> <tr> <td>4. Final exam</td> <td>40</td> <td>22</td> </tr> <tr> <td>Total</td> <td>100</td> <td>55</td> </tr> </tbody> </table> <p>* Class activity is scored through the engagement of students in laboratory exercises</p> <table border="1"> <thead> <tr> <th colspan="3">Scores and grading</th> </tr> <tr> <th>Score</th> <th>Grade (BiH)</th> <th>Grade (ECTS)</th> </tr> </thead> <tbody> <tr> <td>< 55</td> <td>5</td> <td>F, FX</td> </tr> <tr> <td>55-64</td> <td>6</td> <td>E</td> </tr> <tr> <td>65-74</td> <td>7</td> <td>D</td> </tr> <tr> <td>75-84</td> <td>8</td> <td>C</td> </tr> <tr> <td>85-94</td> <td>9</td> <td>B</td> </tr> <tr> <td>95-100</td> <td>10</td> <td>A</td> </tr> </tbody> </table>	Grading criteria			Criteria	Maximal score	Required score	1. Class attendance	5	3	2. Class activities*	15	8	3. Midterms	40	22	4. Final exam	40	22	Total	100	55	Scores and grading			Score	Grade (BiH)	Grade (ECTS)	< 55	5	F, FX	55-64	6	E	65-74	7	D	75-84	8	C	85-94	9	B	95-100	10	A
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Literature²:	Mandatory literature: 1. M. Memić, Spektroskopske metode analize – odabrana																																													

¹ The grading structure for each subject is determined by the Council of the organizational unit before the beginning of the academic year in which the subject is taught as per Article 64, paragraph 6 of the Law on Higher Education of Sarajevo Canton

² The Senate of the higher education institution, as an institution, or the Council of the organizational unit of the higher education institution, as a public institution, determines by a special decision, which is published on its website before the beginning of the academic year obligatory, mandatory and recommended textbooks and manuals, as well as other recommended literature based on which exams are prepared and taken as per Article 56, paragraph 3 of the Law on Higher Education of the Sarajevo Canton

- poglavlja, PMF, Sarajevo, 2012
2. M. Memić, S. Žero, Praktikum iz instrumentalnih metoda analize, PMF, Sarajevo, 2016
 3. M. Memić, J. Huremović, E. Ruždić, Zbirka zadataka iz instrumentalnih metoda analize, PMF, Sarajevo, 2016
 4. D. A. Skoog, D. M. West, F. J. Holler, Osnovi analitičke kemije, šesto izdanje (englesko), prvo izdanje (hrvatsko), Školska knjiga, Zagreb, 1999
 5. M. Tomljanović, Instrumentalne kemijske metode I dio, U.G: Hijatus, Zenica, 2000 J. Đuković, Hemija atmosfere, Rudarski institut Beograd, 2001.

Supplementary literature:

1. D. A. Skoog, J. J. Leary, Principles of instrumental analysis, (fourth edition), Saunders College, Philadelphia (Pa.), 1992