



UNIVERSITY OF SARAJEVO – FACULTY OF SCIENCE
SUBJECT DESCRIPTION

Form SP2

Page 1 of 3

Subject code: GE-345.1-4		Subject name: Methods for air quality analysis	
Ciklus: I	Year: III	Semester: V	ECTS credits: 6
Status: Mandatory		Contact hours: 60	
		Lectures: 30 Practical courses: 30	
Assigned professors and assistants:		Lecturers and assistants selected for the field to which the course belongs	
Prerequisites:		/	
Subject objectives:		The goal is to acquire knowledge about various processes and procedures for air quality analysis. Additionally, students will be introduced to the methodological process of creating an air pollution cadastral registry and its monitoring. Students will gain knowledge about sampling methods, defining air quality, interpolation, and graphical visualization techniques.	
Teaching units:		1. Introduction lectures 2. Planning of air quality control network 3. Creation of the air pollution source cadastral registry 4. Development of air quality monitoring programs and control of pollution sources 5. Sampling methods for air, field and laboratory/desk-based research 6. Methods for determining the content of gases and pollutants in the air 7. Methods for identifying specific forms of air pollution 8. Installation of automatic air quality monitoring systems 9. Partial exam 10. Methods for determining gas and pollutant content using automatic instruments 11. Methods for determining radiation – natural and anthropogenic radiation sources 12. Creation of air quality databases – statistical and graphical interpretation of databases 13. Interpolation, 2D and 3D modeling of air quality and spatial distribution of gases and pollutants 14. Legislative regulations, institutional and legal framework for air quality protection and management 15. Air pollution protection measures – technical, technological, environmental protection measures, urban planning measures.	



Learning outcomes:	Knowledge: • Understands the legislative regulations, institutional, and legal framework for air quality protection and management • Recognizes different types of pollutants • Analyzes basic air quality indicators Skills: • Applies relevant sampling methods and determines gases, pollutants, and specific forms of air pollution • Uses data from relevant institutions and agencies on air quality Competencies: • Independently assesses air quality based on collected data • Independently interpolates, creates models of air quality, and spatial distribution of gases and pollutants • Proposes measures for air pollution protection																																																			
Teaching methods:	Multimedia presentation and conversation (lecture); research independent work of students and joint analysis (practical courses).																																																			
Knowledge testing methods with grading structure ¹:	<table><tr><th>Criterion</th><th>Points</th><th>Requirment</th></tr><tr><td>1. Attendance</td><td>5</td><td>3</td></tr><tr><td>2. Participation on lectures</td><td>5</td><td>3</td></tr><tr><td>3. Midterm exam</td><td>40</td><td>22</td></tr><tr><td>4. Seminar paper</td><td>10</td><td>5</td></tr><tr><td>5. Student project</td><td></td><td></td></tr><tr><td>6. Laboratory report</td><td></td><td></td></tr><tr><td>7. Colloquium</td><td></td><td></td></tr><tr><td>8. Final exam</td><td>40</td><td>22</td></tr><tr><td>Total</td><td>100</td><td>55</td></tr></table> Gradeing: <table><tr><th>Grade</th><th>E CTS grade</th><th>Points</th></tr><tr><td>10</td><td>(A)</td><td>95 - 100</td></tr><tr><td>9</td><td>(B)</td><td>85 - 94</td></tr><tr><td>8</td><td>(C)</td><td>75 - 84</td></tr><tr><td>7</td><td>(D)</td><td>65 - 74</td></tr><tr><td>6</td><td>(E) d</td><td>55 - 64</td></tr><tr><td>5</td><td>(F,FX)</td><td><55</td></tr></table>	Criterion	Points	Requirment	1. Attendance	5	3	2. Participation on lectures	5	3	3. Midterm exam	40	22	4. Seminar paper	10	5	5. Student project			6. Laboratory report			7. Colloquium			8. Final exam	40	22	Total	100	55	Grade	E CTS grade	Points	10	(A)	95 - 100	9	(B)	85 - 94	8	(C)	75 - 84	7	(D)	65 - 74	6	(E) d	55 - 64	5	(F,FX)	<55
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¹ The structure of points and point criteria 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 in accordance with Article 64, paragraph 6 of the Law on Higher Education of Sarajevo Canton



Literature²:

MANDATORY:

- 1.D. Taieb and A. Ben Brahim: 2013: Methodology for developing an air quality index (AQI) for Tunisia, Int. J. Renewable Energy Technology, Vol. 4, No. 1.
- 2.Fontes, T., et all, 2018: A proposed methodology for impact assessment of air quality traffic-related measures: The case of PM2.5 in Beijing, Environ Pollut. 2018 Aug;239:818-828. doi: 10.1016:
- 3.Kelly F., et all, 2011: The impact of the congestion charging scheme on air quality in London. Part 1. Emissions modeling and analysis of air pollution measurements, Res Rep Health Eff Inst. 2011 Apr;(155):5-71;
- 4.Pravilnik o načinu vršenja monitoringa kvaliteta zraka i definiranju vrsta zagađujućih materija, graničnih vrijednosti i drugih standarda kvaliteta zraka, "Službene novine FBiH", broj: 01/12;
- 5.Zakonu o zaštiti zraka "Službene novine Federacije BiH", broj: 33/03;
6. Uznir, U., 2015: An Amalgamation of 3D City Models in Urban Air Quality Modeling for Improving Visual Impact Analysis, WIT Transactions on Ecology and the Environment, DOI: 10.2495/AIR150051.

RECOMMENDED:

1. Federalni hidrometeorološki zavod i Hidrometeorološki zavod Republike Srpske, 2021: Priručnik za osiguranje i kontrolu kvaliteta (qa/qc) pri vršenju monitoringa (mjerenja) kvaliteta zraka
<https://www.fhmzbih.gov.ba/PUBLIKACIJE/zrak/QAQC.pdf>
2. Federalni hidrometeorološki zavod, 2020, Godišnji izvještaj o kvalitetu zraka u Federaciji Bosne i Hercegovine za 2020. godinu
<https://www.fhmzbih.gov.ba/PUBLIKACIJE/zrak/izvjestaj-2020.pdf>
3. J.U. Zavod za javno zdravstvo Kantona Sarajevo, 2021: Izvještaj o monitoringu kvaliteta zraka u Kantonu Sarajevo za 2021. godinu.
4. Methodology for assessing exposure and impacts of air pollutants in school children: Data collection, analysis and health effects – A literature review.

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 mandatory and recommended textbooks and manuals, as well as other recommended literature on the basis of which exams are prepared by a special decision which must be published on its website before the beginning of the academic year in accordance with Article 56, paragraph 3 of the Law on Higher Education of the Sarajevo Canton