



Subject code: GIS-202-4		Subject name: Geoinformatics	
Study cycle: I	Year: II	Semester: III	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 primary objectives of the course are: – To familiarize students with the collection, preparation, and geoinformatics modeling of geographic data. – To introduce students to the structure and components of geoinformatics systems. – To provide knowledge about computer system hardware. – To educate students on the characteristics and functions of system and application software. – To explain the structure, organization, and application of geodatabases in modeling. – To teach the geoinformatics organization of graphical data and concepts for their application in modeling. – To provide insights into geoinformatics models for spatial content management for regional and spatial planning. – To introduce the most well-known digital models of the Earth and its regions and their application possibilities in primary and secondary education.	
Teaching units:		1. Geoinformatics - Definition, objectives, tasks, and study subjects. Geoinformatics data - Definition, types, collection, and organization. 2. Computer systems and their components. History of computer development. Types of computers. 3. Architecture of computer systems. Hardware - Definition, structure, and functioning of computers. BIOS system. 4. Hardware components. Internal hardware components. Input-output devices. Optional external devices. 5. System software - Definition, structure, and	



	application. Control and management software. Operating systems - Definition, structure, and application. 6. Operating Systems: MS-DOS - Main functions and user interface. Windows - Main functions and user interface. LINUX. MAC OS. 7. First test. 8. Application software - Definition, classification, and importance. Types of application software. MS Office. Corel Draw. 9. Geoinformatics software - Definition, classification, and importance. Types of geoinformatics software. GIS - Definition, classification, and types. 10. Geoinformatics organization of geodatabases and their structure. Basic models of geodata operations. 11. Graphical geoinformatics data - Definition, importance, and types. Sources of graphical geoinformatics data. Raster data - Definition, types, and sources. 12. Vector data - Definition, importance, structure, and types. Sources of vector data. 13. Basic modules of geoinformatics software. Preparation of geographic data for geoinformatics processing. 14. Geoprocessing. Geovisualization. Sets of thematic data. 15. Global computer networks. Internet sources of geoinformatics data. The most well-known internet applications of digital models of the Earth and continents.
Learning outcomes:	Knowledge: – The student defines the geoinformatics system, its structure, and components. – The student describes the hardware of the computer system and highlights the characteristics and functions of system and application software for geographic data processing. Skills: – The student organizes geodatabases geoinformatically, correlating their structure and organization. – The student breaks down geographic data geoinformatically and graphically represents their applications in modeling.



	Competencies: – The student evaluates geoinformatically geographic data on natural and social contents for regional and spatial planning needs. – The student assesses geoinformatically geographic data on the most well-known digital models of the Earth and its regions and their applications in regional and spatial planning. – The student evaluates geoinformatically geographic data on spatial and infrastructural resources and their potentials for regional, spatial, and urban planning needs.																																										
Teaching methods:	Multimedia presentations and discussions (lectures) Independent research work by students, joint analysis, and practical student work in relevant application software (practical courses).																																										
Knowledge testing methods with grading structure¹:	<table><tr><td></td><td><i>Maximum Points</i></td><td><i>Minimum points</i></td></tr><tr><td>Attendance</td><td>5</td><td>3</td></tr><tr><td>Participation on lectures</td><td>5</td><td>3</td></tr><tr><td>Tests</td><td>40</td><td>22</td></tr><tr><td>Seminar paper</td><td>10</td><td>6</td></tr><tr><td>Final exam</td><td>40</td><td>21</td></tr><tr><td>TOTAL</td><td>100</td><td>55</td></tr></table> Assessment: <table><tr><td><i>Grade</i></td><td><i>ECTS grade</i></td><td><i>Points scale</i></td></tr><tr><td>10</td><td>(A) excellent</td><td>95 - 100</td></tr><tr><td>9</td><td>(B) very good</td><td>85 - 94</td></tr><tr><td>8</td><td>(C) good</td><td>75 - 84</td></tr><tr><td>7</td><td>(D) satisfactory</td><td>66 - 74</td></tr><tr><td>6</td><td>(E) sufficient</td><td>55 - 64</td></tr><tr><td>5</td><td>(F, FX) insufficient</td><td>55</td></tr></table>		<i>Maximum Points</i>	<i>Minimum points</i>	Attendance	5	3	Participation on lectures	5	3	Tests	40	22	Seminar paper	10	6	Final exam	40	21	TOTAL	100	55	<i>Grade</i>	<i>ECTS grade</i>	<i>Points scale</i>	10	(A) excellent	95 - 100	9	(B) very good	85 - 94	8	(C) good	75 - 84	7	(D) satisfactory	66 - 74	6	(E) sufficient	55 - 64	5	(F, FX) insufficient	55
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Literature²:	Mandatory: 1. Đug S., Drešković, N., Odžak, S. (2015) Daljinska istraživanja–principi i primjena u prirodnim naukama. Univerzitetski udžbenik. Univerzitet u Sarajevu.																																										

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

² The Senate of the higher education institution as an institution or a 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 act which is required to 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.



Sarajevo.

2. Burrough, P. A., McDonnel, R. A. (2006): Principi geoinformacionih Sistema–drugo izdanje. Oxford University Press. Prevod sa engleskog jezika.
3. Kvarternik, R. (1988): Uvod u operativne sisteme. Informator. Zagreb.
4. Rožić, N. (1996): Geoinformatika III. Rukopis. Zagreb
4. Rožić, N. (1996): Geoinformatika III. Rukopis. Zagreb.

Recommended:

1. Kurtović – Numić, S. (2002): Informatika, Fojnica.
2. Vodič za računarske sisteme (2015)
3. Vodič za OS Windows(2015)
4. Vodič za Microsoft Office (2015)
5. Vodič za Corel Draw (2015)
6. Vodič za ESRI (2015)
7. Malakhov, D., & Dolnya, O., 2023: Remote sensing as a tool of biological conservation and grassland monitoring in mountain areas of Southeastern Kazakhstan. Journal of Geoinformatics & Environmental Research, 4(01), 1 - 14. <https://doi.org/10.38094/jgier40169>
8. Wong, R.CW., Eldawy, A., 2023: Guest Editorial: Special issue on spatial and temporal database management. Geoinformatica 27, 373–374 <https://doi.org/10.1007/s10707-023-00490-9>
9. Zhang, Y., Zhang, Y., Du, B. et al., 2022: Parallel discriminative subspace for city target detection from high dimension images. Geoinformatica 26, 299–322 <https://doi.org/10.1007/s10707-020-00399-7>
10. Naučni časopis The Journal of Geoinformatics and Environmental Research (JGIER), Interdisciplinary Publishing Academia (IP Academia) – selected articles <https://jgier.org/index.php/jgier/issue/archive>