

Study program		Study cycle		First study cycle					
		Orientation		Geography in education					
SUBJECT									
Subject name		Mathematical Cartography							
Subject code		Semester		Subject status		ECTS credits	Contact hours		
FG-107.1-1		I		mandatory		5	125		
Assigned professors and assistants		Subject Leader		Dr. Sc. Lejla Žunić, assistant professor					
		Teaching Assistants							
Subject objectives		<ul style="list-style-type: none"> • To achieve knowledge of the Earth shape and its representing on 2D map • To understand coordinate systems and their practical application • To get the knowledge of mathematical elements of map: scale, cartographic projections, geodetic markers and map borders • To achieve the skills of methodology of cartographic projections • To achieve the skills of mapping and use mathematical fundament of maps <ul style="list-style-type: none"> - the graphical construction of map projection - construction of map scale - calculating geographical coordinates (φ, x; λ, y) 							
SUBJECT CONTENT									
#	Teaching units			Contact hours					
				L	P	S	C		
1.	Cartography/ Mathematical Cartography introduction: definitions, etc.			2	2		1		
2.	Geographic map- definition, characteristics, types, elements of map			2	2	2	1		
3.	Map scale- characteristics, construction and practical application			2	2	1	1		
4.	Geodetic markers: rectangular and geographic coordinates; triangulation			2	2	1	1		
5.	The Earth shape and size- aprx.: geoid, sphere, sferoid/ elipsoid, WGS84			2	2	1	1		
6.	Cartographic mapping- basics and its characteristics; ellipse of distortion			2	2	1	1		
7.	TEST 1			2			1		
8.	Cartographic projections- definition, types and characteristics			2	2	1	1		
9.	Planar azimuthal projections- perspective: ortographic, stereographic, gnomonic (central); characteristics and construction			2	4	1	1		
10.	Planar azimuthal projections- nonperspective: Lambert', Postel'; characteristics and construction			2	2	1	1		
11.	Cylindrical projections- perspective and nonperspectivr: Lambert', Gall', Merkator', characteristics and construction; Gaus-Krüger, UTM, characteristics and its practical application (use)			2	4	3	1		
12.	Pseudocylindrical projetiions: Sanson', characteristics and construction			2	2	1	1		
13.	Conic projections: Ptolemy, characteristics and construction			2	2	1	1		
14.	Alternative projections: Nicolosi globural; characteristics and construction			2	2	1	1		
15.	TEST 2			2			1		
STUDENT WORKLOAD (HOURS)									
Contact Hours (L+P)		60	Practical work			Seminars	15	Exam study time	20
Literature – reading		15	Written papers			Consultations	15	TOTAL	125
LITERATURE					EVALUATION OF KNOWLEDGE AND CRITERIA				
1. Campbell, J.E., Shin, M. (2012): "Geographic Information System Basics". University of Carolina, Los Angeles 2. Elektronska zbirka: GIS; USA University Host; NASA modeli i prikazi 3. Gašparović, R. (1969): "Matematička geografija". Geografsko društvo SR BiH, Sarajevo, 67-124 4. Kennedy, M. (2000): "Understanding Map Projections". Environmental Systems Research Institute, New York 5. Maps & Cartography. Geospatial Resources & Map					PARAMETERS		Maximum Points	Minimum points	
					1.	Attendance	5	3	
					2.	Active participation	5	3	
					3.	Seminar	10	5	
					4.	Test 1,2/ Final exam	2x40/ 80	2x22/ 44	
Total					100	55			
Remarks: Students that succesfully passed both tests and fulfilled their obligations, have all rights to receive									

<p>Collection, Maps tutorial: The Elements of a Map. Ball State University Libraries, Indiana, USA</p> <p>6. Pavišić, N. (1976): "Osnovi kartografije", Obod, Cetinje</p> <p>7. Snyder, J.P. (1987): "Map Projections- A Working Manual". The U.S. Department of The Interior (DOI), Washington</p> <p>8. Šobić, D. (1955): "Matematička kartografija". Geografski institut Jugoslovenske narodne armije, Beograd</p> <p>9. Toskić, A. "Kartografske projekcije". Skripta predavanja, pdf. Odsjek za geografiju Prirodno-matematičkog fakulteta Univerziteta u Zagrebu</p>	<p><i>a final grade without additional knowledge testing (The Law on Higher Education at University of Sarajevo- Article 64. (7))</i></p> <p><i>If both tests is negative assessment, students are required to take integral test. Criteria for integral (final) test is equal as for the two tests (Test 1 & Test 2)</i></p> <p><i>- Student engagement: 1-3 (total: 20).</i></p>
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