Subject code: FG-108-1	**Subject name:** Mathematical Geography		
Study cycle: I	**Year:** I	**Semester:** I	**ECTS credits:** 5
Status: Mandatory		**Contact hours:** 60 Lectures: 30 Exercises: 30	
Assigned professors and assistants:			
Prerequisits:	/		
Subject objectives:	Acquaintance of students with mathematical basics of astronomical phenomena and processes that affect the planet Earth, and training for orientation in space and time, with a special focus on the horizon and the celestial sphere.		
Teaching units:	1. Introductory considerations; 2. Definition, object, subject and task of mathematical geography. Brief overview of the development of the basic idea of mathematical geography; 3. Universe – Earth in Universe. Basic features, origin and development of the Universe. Sun – structure, composition and source of solar energy. Planets and other celestial bodies in Solar system; 4. Earth and the celestial sphere viewed from a point on the Earth surface; 5. Horizon and celestial sphere. Determining the position of objects on the horizon; 6. Orientation on the celestial sphere. Horizontal coordinate system. Equatorial coordinate system I. Equatorial coordinate system II. Ecliptic coordinate system; 7. Daily circles of the stars and Sun in relation to the horizon and the celestial sphere; 8. First test; 9. Earth shape and size – astronomical and geodetic measurements; 10. Motions of the Earth (Earth rotation and orbit – evidences for rotation and orbit); 11. Secular motions of the Earth; 12. Moon and its motions; 13. Eclipse; 14. Time and timekeeping;		

	15. Second test.
Learning outcomes:	**Knowledge:** • student lists, defines and classifies significant objects in Universe, i.e. celestial sphere; • explains astronomical phenomena and processes that affect planet Earth. **Skills:** • student applies methods of orientation in space and time; • uses geographical coordinate system for precise locating objects on the Earth surface; • reads the apparent position of celestial bodies in coordinate systems of horizon, equator I and II, as well as ecliptic; • uses relevant mathematical formulas and procedures to solve certain problems of geographical and astronomical character. **Competencies:** • student applies interdisciplinary approach in geography, by using elements of mathematical and astronomical literacy.
Teaching methods:	Multimedia presentation, demonstration and discussion (lectures); individual work, demonstration and discussion (exercises).
Knowledge testing methods with grading structure[1]:	*Points* Attendance 10 Participation on lectures 5 Tests 30 Seminar 15 Final exam 40 TOTAL 100 **Assessment:** *Grade* — *ECTS grade* — *Points scale* 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

[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

Literature[2]:	**Mandatory:** 1. Gašparović, R. (1969). Matematička geografija. Geografsko društvo SRBiH, Sarajevo. 2. Vujnović, V. (1994). Astronomija I i Astronomija II. Školska knjiga, Zagreb. **Recommended:** 1. Burnham, R., Dyer, A. i Kanipe, J. (2003). Astronomija. Dušević & Kršovnik, Rijeka. 2. Hadžibegović, Z., Mujić, N. i Mindoljević, V. (2009). Astronomija (Priručnik za nastavnike i studente) – skripta. 3. Fix, J. D. (1999). Astronomy – Journey to the Cosmic Frontier. McGraw-Hill. 4. Arny, T. T. (1996). Explorations – An Introduction to Astronomy. McGraw-Hill.

[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.