COURSE NAME	Foundations of geometry					
Code	PMM812	Year of study	2nd year of undergraduate study or 1st year of graduate study			
Course teacher	Vlasta Matijević	Credits (ECTS)	6			
Associate teachers		Type of instruction (number of hours)	L	S	E	
			45		30	
Status of the course	Compulsory course	Percentage of application of e-learning	30%			

COURSE DESCRIPTION	
Course objectives	The course objective is to introduce students with the axiomatic theory of Euclidean and Non-Euclidean geometry
Course enrolment requirements and entry competences required for the course	None
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	It is expected that a student wil be able - to discuss historical development of new geometries and explain the key role of Euclid's Fifth postulate - to show understanding of the difference between Euclidean and Non-Euclidean geometry and use both geometries efficiently - to write and communicate proofs of geometric statements using direct geometric arguments or the method of proof by contradiction - to understand the development of axiomatic structures and demonstrate increased level of critical and analytical thinking about geometric results
Course content broken down in detail by weekly class schedule (syllabus)	- Historical survey (6 hours) Euclid and his Elements. First book of Elements. Euclid's Fifth Postulate. Discovery of hyperbollic geometry. Principles of Hilbert's system of axioms. - Absolute geometry (21 hours) Axioms of incidence and their consequences (3 hours). Axioms of betweenness and their consequences (6 hours). Axioms of congruence and their consequences (6 hours). Axiom of continuity and its consequences (6 hours). - Hyperbolic geometry (18 hours) Axiom of parallels, parallel and ultraparallel lines (3 hours). Asymptotic triangles (3 hours). Lobachevsky function (3 hours). Quadrilaterals with two right angles (3 hours). Common perpendiculars (3 hours). Ponicare model of hyperbolic geometry (3 hours).
Format of instruction	Lectures and exercises
Student responsibilities	Attendance at lectures and exercises, written assignments, self-study using required and optional literature
Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Lecture attendance 0,5 ECTS Exam 5,5 ECTS

Grading and evaluating student work in class and at the final exam	The exam consists of written and oral part. The oral part comes after positively graded (at least 50%) written part Both parts of the exam are equally evaluated in the final grade.
Required literature (available in the library and via other media)	G. A. Venema, *The foundations of Geometry*, Pearson Prentice Hall, New Jersey, 2006. M. J. Greenberg, *Euclidean and Non-Euclidean Geometries*, W.H. Freeman and Company, New York, 1999. A. Fetisov, *O euklidskoj i neeuklidskim geometrijama*, Školska knjiga, Zagreb, 1981.
Optional literature (at the time of submission of study programme proposal)	Euklid, *Elementi I-VI*, Kruzak, Zagreb, 1999. B. Artmann, *Euclid – The Creation of Mathematics,* Springer-Verlag, New York, 1999.
Quality assurance methods that ensure the acquisition of exit competences	Exam statistics and students' quality evaluation through anonymous poles
Other (as the proposer wishes to add)	