COURSE NAME	Euclidean spaces					
Code	PMM104	Year of study	2nd year of undergraduate study			
Course teacher	Anka Golemac	Credits (ECTS)				
Associate teachers		Type of instruction (number of hours)	L	S	E	
			30		30	
Status of the course	Elective course	Percentage of application of e-learning	40%			
COURSE DESCRIPTION						
Course objectives	The aim of this course is to give the basic concepts and theorems of transformations and geometries in spaces of higher dimension. This course represents the basis for some advanced courses.					
Course enrolment requirements and entry competences required for the course	Prerequisites: Taken course Linear algebra Entry competences: Basic knowledge of the analytic geometry at the secondary school level. Skills in computing with vectors, matrices and determinants and in solving systems of linear equations.					
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Upon completion of the course a student will be able to: - give the definition and formulate theorems of affine space and introduce a suitable coordinate system; - understand affine subspaces, write down their descriptions and determine their mutual position; - give the definition of the Euclidean space and introduce Cartesian coordinate system as the specialization of affine coordinate system; - determine equations of orthogonal subspaces, compute distances and angles of Euclidean subspaces; - use the analytic geometry methods for solving problems.					
Course content broken down in detail by weekly class schedule (syllabus)	Affine spaces, essential properties and examples. (2) Subspaces and their descriptions. Mutual position of subspaces, especially for hyperplanes. (2) Affine coordinate system and its transformations. The equations of subspaces (*k*-planes). (3) Parallelotope, barycentric coordinates, simplex. (3) Affine transformations, the affine group. (5) Affine unitary space, Euclidean spaces. The volume of a parallelotope and simplex. (3) Cartesian coordinate system. Analytic geometry of the Euclidean space. (6) Isometries of the Euclidean space, movement, equivalent isometries, classification of planar isometries, translations, rotations, reflections. (6)					
Format of instruction	Lectures and tutorial sessions.					
Student responsibilities	Class attendance. Students are expected to be present at least 70% of classes.					
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)*	Class attendance: 2 ECTS. Partial exams/Written exam: 1.5 ECTS Final exam: 1.5 ECTS.					
Grading and evaluating student	Two partial written exams / one final written exam and final oral exam. There are 2 partial written exams during the semester. Passing both partial exams					

work in class and at the final exam	allows students to take the oral exam. Successfully passing the oral exam leads to successful completion of the course.
Required literature (available in the library and via other media)	T. Vučičić, A. Golemac, S. Braić, Euklidski prostori, skripta, PMF, Split, 2013. D. M. Bloom, Linear Algebra and Geometry, Cambridge Univ. Press, Cambridge, 1988. S. Kurepa, Konačno dimenzionalni vektorski prostori i primjene, Liber, Zagreb, 1992.
Optional literature (at the time of submission of study programme proposal)	K. Horvatić, Linearna algebra I, II i III, PMF – Matematički odjel, HMD, Zagreb, 1995. K. W. Gruenberg, A. J. Weir, Linear Geometry, Springer, New York, 1977. J. R. Silvester, Geometry: ancient and modern, Oxford Univ. Press, 2001
Quality assurance methods that ensure the acquisition of exit competences	Anonymous student evaluations according to the regulations of the University of Split and summarizing test results.
Other (as the proposer wishes to add)	