

UČNI NAČRT PREDMETA / COURSE SYLLABUS						
Predmet:		Elementarna geometrija				
Course title:		Elementary geometry				
Študijski program in stopnja Study programme and level		Študijska smer Study field		Letnik Academic year	Semester Semester	
Univerzitetni študijski program Matematika		ni smeri		3	drugi	
First cycle academic study programme Mathematics		none		3	second	
Vrsta predmeta / Course type				izbirni		
Univerzitetna koda predmeta / University course code:				M0247		
Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
45		30			105	6
Nosilec predmeta / Lecturer:		prof. Boris Lavrič				
Jeziki / Languages:		Predavanja / Lectures:		slovenski/Slovene		
		Vaje / Tutorial:		slovenski/Slovene		
Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:				Prerequisites:		
Vsebina:				Content (Syllabus outline):		

<p>Evklidovi elementi. Hilbertov sistem aksiomov geometrije – pregled osnovnih idej in rezultatov evklidske in hiperbolične ravninske geometrije. Osnove sferne geometrije. Izometrije, simetrije, podobnost in skladnost. Talesovi izreki. Evklidovi izreki o krogu. Tetivni in tangenti štirikotnik. Potenca točke na krožnico. Inverzija. Poincarejeva modela hiperbolične ravnine. Hiperbolična trigonometrija. Apolonijeva krožnica in Apolonijev problem. Simsonova premica. Cevov in Stewartov izrek. Eulerjeva premica. Krožnica devetih točk. Menelajev, Pappusov in Desarguesov izrek. Fagnanov problem. Trilinearne koordinate. Morleyev izrek. Pravilni večkotniki in trisekcija kota. Platonska telesa. Poliedri in Eulerjeva formula.</p>	<p>Euklid's Elements. Hilbert's axioms – overview of basic ideas of Euclidean and Hyperbolic (plane) geometry. Basics of Spheric geometry. Isomerics, symetries, sylimilarity and congruency. Tales theorems. Euclid's circle theorems. Chord and tangent quadrilaterals. Power of a point. Inversion. Poincaré models of the hyperbolic plane. Hyperbolic trigonometry. Apollonian circle and Apollonian problem. Simson's line. Stewart's and Ceva's theorems. Euler's line. Nine point circle. Menelaus, Pappus and Desargues theorems. Fagnano's problem. Trilinear coordinates. Morley's theorem. Equilaterals and angle trisection. Platon's solids. Polyhedron's and Euler's formula.</p>
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Temeljni literatura in viri / Readings:

<p>N. Altshiller-Court: College Geometry, 2nd edition, Dover Publications, Mineola, New York, 2007. B. Artmann: Euclid - The Creation of Mathematics, Springer, New York, 2001. H. S. M. Coxeter: Introduction to Geometry, 2nd edition, John Wiley & Sons, New York, 1989. H. Dörrie: 100 Great Problems of Elementary Mathematics : Their History and Solution, Dover Publications, New York, 1982. M. J. Greenberg: Euclidean and Non-Euclidean Geometries: development and history, Freeman, New York, 1973. S.Lang, G. Murrow: Geometry: a high school course, Springer, New York, 1983. D. Pagon: Osnove evklidske geometrije, DZS, Ljubljana, 1995.</p>
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Cilji in kompetence:

<p>Študent spozna osnove elementarne geometrije. Ob reševanju elementarnih matematičnih problemov z elementarnimi sredstvi se uči matematičnega načina razmišljanja. Predmet po tematiki in načinu razmišljanja pogloblja temeljna matematična znanja, ki jih potrebuje učitelj matematike.</p>

Objectives and competences:

<p>Student acquires the basic knowledge and skills in elementary geometry. Solving the elementary problems, student enhances his or her mathematical thinking and comprehension. The course by its content and methods of teaching deepens a prospective teacher's essential mathematical knowledge and skills.</p>

Predvideni študijski rezultati:

Znanje in razumevanje:
 Poznavanje in razumevanje osnovnih pojmov in definicij iz elementarne geometrije ter uporaba konceptov pri reševanju elementarnih matematičnih problemov.

Intended learning outcomes:

Knowledge and understanding:
 Knowledge and comprehension of essential concepts and definitions of elementary geometry and acquired ability to use these methods in elementary mathematical problems.

Metode poučevanja in učenja:

Predavanja, vaje, konzultacije

Learning and teaching methods:

Lectures, tutorial sessions, individual consultations

Delež (v %) /

Načini ocenjevanja:

Weight (in %)

Assessment:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)
 Izpit iz vaj
 Izpit iz teorije

50 %
 50 %

Type (examination, oral, coursework, project):
 exercise test
 theory exam

Reference nosilca / Lecturer's references:

Boris Lavrič:

– LAVRIČ, Boris. Vsote praštevil in vsote njihovih kvadratov. Obzornik za matematiko in fiziko, ISSN 0473-7466, 1996, let. 43, št. 5, str. 161-167 [COBISS.SI-ID 7003737]

– LAVRIČ, Boris. Parketiranje ravnine s konveksnimi mnogokotniki. Obzornik za matematiko in fiziko, ISSN 0473-7466, 1980, let. 27, št. 4, str. 97-101, graf. prikazi [COBISS.SI-ID 8007513]

– LAVRIČ, Boris. The isometries of certain maximum norms. Linear Algebra and its Applications, ISSN 0024-3795. [Print ed.], 2005, vol. 405, str. 249-263 [COBISS.SI-ID 13679961]

