



Univerza v Mariboru

Fakulteta za naravoslovje  
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS						
<b>Predmet:</b>	Geometrija					
<b>Course title:</b>	Geometry					
<b>Študijski program in stopnja</b> Study programme and level	<b>Študijska smer</b> Study field			<b>Letnik</b> Academic year	<b>Semester</b> Semester	
Matematika				3.	6.	
Mathematics				3.	6.	
<b>Vrsta predmeta / Course type</b>						
<b>Univerzitetna koda predmeta / University course code:</b>						
<b>Predavanja</b> Lectures	<b>Seminar</b> Seminar	<b>Sem. vaje</b> Tutorial	<b>Lab. vaje</b> Laboratory work	<b>Teren. vaje</b> Field work	<b>Samost. delo</b> Individ. work	<b>ECTS</b>
45		30			135	7
<b>Nosilec predmeta / Lecturer:</b> Dušan PAGON						
<b>Jeziki / Languages:</b>	<b>Predavanja / Lectures:</b>	SLOVENSKO/SLOVENE				
	<b>Vaje / Tutorial:</b>	SLOVENSKO/SLOVENE				
<b>Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:</b>				<b>Prerequisites:</b>		
Jih ni.				There are none.		
<b>Vsebina:</b>				<b>Content (Syllabus outline):</b>		
Hilbertov aksiomatski sistem za absolutno geometrijo: aksiomi povezave, urejenosti, skladnosti in zveznosti. Aksiom o vzporednicah in njegovi ekvivalenti. Aritmetični model dvorazsežne evklidske geometrije.  Aksiomi projektivne geometrije, Desarguesov izrek. Harmonični elementi. Homogene in nehomogene koordinate v projektivni ravnini. Projektivne transformacije.				Hilbert's axiomatic system for absolute geometry: incidence axioms, ordering axioms, congruence axioms and continuity axioms. Parallel postulate and its equivalents. The arithmetic model of Euclidean plane.  Axioms of projective geometry, Desargues' theorem. Harmonic elements. Homogeneous and non-homogeneous coordinate systems in the projective plane. Projective transformations.		

**Temeljni literatura in viri / Readings:**

M. Hvidsten, *Geometry with Geometry Explorer*, McGraw-Hill, NY 2005  
 H. S. M. Coxeter, *Projective Geometry*, Springer 2003  
 C.-A. Faure, A. Frölicher, *Modern Projective Geometry*, Kluwer 2000  
 D. Pagon, *Osnove evklidske geometrije*, DZS, Ljubljana 1995

**Cilji in kompetence:**

Študentje spoznajo aksiomatsko zasnovo evklidske geometrije ter osnove projektivne geometrije.

**Objectives and competences:**

Students get familiar with axiomatic approach to Euclidean geometry and the basic concepts of projective geometry.

**Predvideni študijski rezultati:**

Znanje in razumevanje:

- Razumevanje Hilbertovega aksiomatskega sistema za evklidsko geometrijo.
- Poznavanje osnovnih pojmov projektivne geometrije.

Prenesljive/ključne spretnosti in drugi atributi:

- Pridobljena znanja prispevajo k razumevanju ostalih predmetov s področja geometrije in topologije.

**Intended learning outcomes:**

Knowledge and Understanding:

- To understand the Hilbert axiomatic system for Euclidean geometry.
- To recognize the basic concepts of projective geometry

Transferable/Key Skills and other attributes:

- The obtained knowledge contributes to better understanding of other subjects in fields of geometry and topology.

**Metode poučevanja in učenja:**

- Predavanja
- Teoretične vaje

**Learning and teaching methods:**

- Lectures
- Theoretical exercises

**Načini ocenjevanja:**

Način (pisni izpit, ustno izpraševanje, naloge, projekt)  
 Pisni izpit – praktični del  
 Ustni izpit – teoretični del

Pisni izpit – praktični del se lahko nadomesti z dvema delnima testoma (sprotni obveznosti).

Delež (v %) /  
 Weight (in %)

50%  
 50%

Type (examination, oral, coursework, project):  
 Written exam – practical part  
 Oral exam – theoretical part

Written exam – practical part can be replaced by two partial tests (mid-term testing).

**Reference nosilca / Lecturer's references:**

1. PAGON, Dušan, REPOVŠ, Dušan, ZAICEV, Mikhail. On the codimension growth of simple color Lie superalgebras. *J. Lie theory*, 2012, vol. 22, no. 2, str. 465-479.  
<http://www.heldermann.de/JLT/JLT22/JLT222/jlt22017.htm>. [COBISS.SI-ID [16070233](#)]
2. PAGON, Dušan. Simplified square equation in the quaternion algebra. *International journal of*

*pure and applied mathematics*, 2010, vol. 61, no. 2, str. 231-240. [COBISS.SI-ID [17718024](#)]

**3.** GUTIK, Oleg, PAGON, Dušan, REPOVŠ, Dušan. On chains in H-closed topological pospaces. *Order (Dordr.)*, 2010, vol. 27, no. 1, str. 69-81. <http://dx.doi.org/10.1007/s11083-010-9140-x>. [COBISS.SI-ID [15502169](#)]

**4.** GUTIK, Oleg, PAGON, Dušan, REPOVŠ, Dušan. The continuity of the inversion and the structure of maximal subgroups in countably compact topological semigroups. *Acta math. Hung.*, 2009, vol. 124, no. 3, str. 201-214. <http://dx.doi.org/10.1007/s10474-009-8144-8>, doi: [10.1007/s10474-009-8144-8](http://dx.doi.org/10.1007/s10474-009-8144-8). [COBISS.SI-ID [15212121](#)]

**5.** PAGON, Dušan. The dynamics of selfsimilar sets generated by multibranching trees. *International journal of computational and numerical analysis and applications*, 2004, vol. 6, no. 1, str. 65-76. [COBISS.SI-ID [14037081](#)]