



Univerza v Mariboru



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Fakulteta za naravoslovje in
matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Geometrija
Course title:	Geometry

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Izobraževalna matematika – dvopredmetni, 1. stopnja		3.	5. ali 6.
Educational mathematics – Double-major, 1 st degree		3.	5. or. 6.

Vrsta predmeta / Course type

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
15		15			150	6

Nosilec predmeta / Lecturer:

Jeziki / Languages:	Predavanja / Lectures:	SLOVENSKO/SLOVENE
	Vaje / Tutorial:	SLOVENSKO/SLOVENE

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:

Prerequisites:

Vsebina:

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.

Content (Syllabus outline):

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

Projektivne transformacije.

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 test – praktični del

Izpit (ustni) – teoretični del

Vsaka izmed naštetih obveznosti mora biti opravljena s pozitivno oceno.

Pozitivna ocena pri pisnem testu je pogoj za pristop k izpitu.

Delež (v %) /
Weight (in %)

50%

50%

Type (examination, oral, coursework, project):

Written test – practical part

Exam (oral) – theoretical part

Each of the mentioned commitments must be assessed with a passing grade.

Passing grade of the written test is required for taking the exam.

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. [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]