Univerza v Mariboru

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**
Matematika		**3.**	**6.**
Mathematics		**3.**	**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**
45		**30**			**105**	**6**

Nosilec predmeta / Lecturer:	Tanja Dravec

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

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisits:**
Jih ni.	There are none.
Vsebina:	**Content (Syllabus outline):**
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):	Delež (v %) / Weight (in %)	Type (examination, oral, coursework, project):
Pisni izpit – praktični del	50%	Written exam – practical part
Ustni izpit – teoretični del	50%	Oral exam – theoretical part
Pisni izpit – praktični del se lahko nadomesti z dvema delnima testoma (sprotni obveznosti).		Written exam – practical part can be replaced by two partial tests (mid-term testing).

Assessment:

Reference nosilca / Lecturer's references:

1. GOLOGRANC, Tanja, REPOLUSK, Polona. Toll number of the strong product of graphs. *Discrete Mathematics*, 2019, vol. 342, iss. 3, str. 807-814. [COBISS.SI-ID 24329224]

2. GOLOGRANC, Tanja. Steiner convex sets and Cartesian product. *Bulletin of the Malaysian Mathematical Sciences Society*, 2018, vol. 41, iss. 2, str. 627-636. [COBISS.SI-ID 24621832]

3. BREŠAR, Boštjan, GOLOGRANC, Tanja, KOS, Tim. Convex and isometric domination of (weak) dominating pair graphs. *Theoretical computer science*, 2018, vol. 730, str. 32-43. [COBISS.SI-ID 18371161]

4. GOLOGRANC, Tanja, JAKOVAC, Marko, PETERIN, Iztok. The security number of lexicographic products. *Quaestiones mathematicae*, 2018, vol. 41, iss. 5, str. 601-613. [COBISS.SI-ID 18407257]

5. BREŠAR, Boštjan, BUJTÁS, Csilla, GOLOGRANC, Tanja, KLAVŽAR, Sandi, KOŠMRLJ, Gašper, PATKÓS, Balázs, TUZA, Zsolt, VIZER, Máté. Grundy dominating sequences and zero forcing sets. *Discrete optimization*, 2017, vol. 26, str. 66-77. [COBISS.SI-ID 18163289]