



Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS						
Predmet:	Teorija grup					
Course title:	Group Theory					
Študijski program in stopnja Study programme and level	Študijska smer Study field			Letnik Academic year	Semester Semester	
Matematika, 2. stopnja	Modul S2			1. ali 2.	1. ali 3.	
Mathematics, 2 nd degree	Module S2			1. or 2.	1. or 3.	
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			135	7
Nosilec predmeta / Lecturer: Dušan PAGON						
Jeziki / Languages:	Predavanja / Lectures:	SLOVENSKO/SLOVENE				
	Vaje / Tutorial:	SLOVENSKO/SLOVENE				
Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:				Prerequisites:		
Ne.				None.		
Vsebina:				Content (Syllabus outline):		
Simetrične grupe. Konjugirani elementi in podgrupe. Delovanje grupe na množico. Linearne grupe: glavne lastnosti in primeri.				Symetric groups. Conjugated elements and subgroups. The action of a group on a set. Linear groups: main properties and examples.		
Izreki Sylowa. Podajanje grupe z generatorji in relacijami. Direktni produkt grup. Abelove grupe.				Sylow's theorems. Definition of a group by generators and relations. Direct product of groups. Abelian groups.		
Enostavne grupe. Komutant grupe, rešljivost končnih p-grup in grupe zgornje trikotnih matrik.				Simple groups. Derived group, solvability of finite p-groups and the group of upper triangular matrices.		
Upodobitve grup: osnovni pojmi in primeri.				Representations of groups: concepts and examples.		

Temeljni literatura in viri / Readings:

W. Y. Gilbert, W. K. Nicholson, Modern Algebra with Applications, Wiley, Chichester 2004
 S. Lang, Undergraduate Algebra, Springer, 2005
 J. F. Humphreys, A Course in Group Theory, Oxford University Press, 1997
 I. Vidav, Algebra, DMFA, Ljubljana 1980

Cilji in kompetence:

Študentje poglobijo znanje osnove teorije grup in njihovih upodobitev.

Objectives and competences:

Students deepen the knowledge of the basic concepts of the theory of groups and their representations.

Predvideni študijski rezultati:

Znanje in razumevanje:

- Razumevanje osnov teorije grup in njihovih upodobitev.
- Poznavanje osnovnih značilnosti in tipičnih primerov grup.

Prenesljive/ključne spretnosti in drugi atributi:

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

Intended learning outcomes:

Knowledge and Understanding:

- To understand the main concepts of groups and their representations.
- To recognize the typical properties and main examples of groups.

Transferable/Key Skills and other attributes:

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

Metode poučevanja in učenja:

- Predavanja
- Seminarske vaje

Learning and teaching methods:

- Lectures
- Tutorial

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](https://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](#)]