



UČNI NAČRT PREDMETA / COURSE SYLLABUS						
<b>Predmet:</b>	Teorija grup					
<b>Course title:</b>	Group Theory					
<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	
Izobraževalna matematika – enopredmetna, 2. Stopnja	Modul I2			1. ali 2.	1. ali 3.	
Educational mathematics - single-major, 2nd degree	Module I2			1. or 2.	1. or 3.	
<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.			None.			
<b>Vsebina:</b>			<b>Content (Syllabus outline):</b>			
Simetrične grupe. Konjugirani elementi in podgrupe. Delovanje grupe na množico. Linearne grupe: osnovne 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 osnovnih pojmov, povezanih z grupami in njihovimi upodobitvami.
- 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:

### Assessment:

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

### 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](#)]