



Univerza v Mariboru

Fakulteta za naravoslovje  
in matematiko

### UČNI NAČRT PREDMETA / COURSE SYLLABUS

<b>Predmet:</b>	<b>Izbrana poglavja iz algebre</b>
<b>Course title:</b>	<b>Selected Topics in Algebra</b>

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Matematika, 2. stopnja		1. ali 2.	1. ali 3.
Mathematics, 2 <sup>nd</sup> cycle		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:**

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

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

**Vsebina:**

**Prerequisites:**

**Content (Syllabus outline):**

Tenzorski produkti vektorskih prostorov, modulov in algeber.

Tensor products of vector spaces, modules and algebras.

### Temeljni literatura in viri / Readings:

M. Brešar, Introduction to Noncommutative Algebra, Springer, 2014.  
M. Brešar, Undergraduate Algebra. A Unified Approach, Springer, 2019.  
M. Brešar, Uvod v algebro, DMFA, 2018.  
D. Dummit, R. Foote, Abstract Algebra, Prentice-Hall, 1991.  
T. W. Hungerford, Algebra, Springer-Verlag, 1980.

### Cilji in kompetence:

Poglobiti znanje osnovnih področij abstraktne algebre.

### Objectives and competences:

Deepening the knowledge of fundamental areas of abstract algebra.

### Predvideni študijski rezultati:

Znanje in razumevanje:

Po zaključku predmeta bo študent seznanjen s klasično abstraktno algebro in s tem pripravljen na študij njenih modernih vsebin.

Prenosljive/ključne spretnosti in drugi atributi:

Algebraične strukture so pojavljajo na vseh matematičnih področjih, zato mora biti z njimi seznanjen vsak matematik.

### Intended learning outcomes:

Knowledge and Understanding:

On the completion of the course, the student will be acquainted with the classical abstract algebra and capable of tackling its modern areas.

Transferable/Key Skills and other attributes:

Algebraic structures occur in all mathematical areas, so their knowledge is a necessity for every mathematician.

### Metode poučevanja in učenja:

- Predavanja
- Seminarske vaje

### Learning and teaching methods:

- Lectures
- Tutorial

### Načini ocenjevanja:

Način (pisni izpit, ustno izpraševanje, naloge, projekt):

Pisni izpit  
Ustni izpit

Vsaka izmed naštetih obveznosti mora biti opravljena s pozitivno oceno.

Opravljen pisni izpit – problemi je pogoj za pristop k ustnemu izpitu – teorija.

Delež (v %) /  
Weight (in %)

50%  
50%

### Assessment:

Type (examination, oral, coursework, project):

Written exam  
Oral exam

A passing grade is required for each of the two exams.

Passing the written test is required for taking the oral exam.

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

1. BREŠAR, Matej. *Undergraduate algebra : a unified approach*, (Springer undergraduate mathematics series). Cham: Springer, cop. 2019. XXIV, 2116 str. ISBN 978-3-030-14052-6. ISBN 978-3-030-14053-3.
2. ALAMINOS, J., BREŠAR, Matej, EXTREMERA, J., VILLENA, A. R. Zero Lie product determined Banach algebras, II. *Journal of mathematical analysis and applications*, ISSN 0022-247X. [Print ed.], June 2019, vol. 474, iss. 2, str. 1498-1511.
3. BREŠAR, Matej, ŠEMRL, Peter. Continuous commuting functions on matrix algebras. *Linear Algebra and its Applications*, ISSN 0024-3795. [Print ed.], May 2019, vol. 568, str. 29-38.
4. BREŠAR, Matej, HANSELKA, Christoph, KLEP, Igor, VOLČIČ, Jurij. Skolem-Noether algebras. *Journal of algebra*, ISSN 0021-8693, March 2018, vol. 498, str. 294-314..
5. BREŠAR, Matej, ZHAO, Kaiming. Biderivations and commuting linear maps on Lie algebras. *Journal of Lie theory*, ISSN 0949-5932, 2018, vol. 28, no. 3, str. 885-900.