UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	**Algebra II**
Course title:	Algebra II

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Matematika, 1. stopnja		**3.**	**6.**
Mathematics, 1st cycle		**3.**	**6.**

Vrsta predmeta / Course type	obvezni/compulsory

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
30		**15**			**75**	**4**

Nosilec predmeta / Lecturer:	Matej BREŠAR

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

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	Prerequisits:
Znanje predmeta Algebra 1.	Knowledge from the Algebra 1 course.

Vsebina:	Content (Syllabus outline):
Kolobarji polinomov. Deljivost v komutativnih kolobarjih. Evklidski in glavni kolobarji. Polja: algebraični in transcendentni elementi, končne razširitve, konstrukcije z ravnilom in šestilom, razpadna polja in algebraično zaprta polja, končna polja, uvod v Galoisovo teorijo.	Polynomial rings. Divisibility in commutative rings. Euclidean rings and principal ideal domains. Fields: algebraic and transcendental elements, finite extensions, straightedge and compass constructions, splitting fields and algebraically closed fields, finite fields, introduction to Galois theory.

Temeljni literatura in viri / Readings:

M. Brešar, Uvod v Algebro, DMFA, 2018.
M. Brešar, Undergraduate Algebra. A Unified Approach, Springer, 2019.
D. S. Dummit, R. M. Foote, Abstract Algebra, Prentice-Hall International, Inc., 1991.
J. Gallian: Contemporary Abstract Algebra, Brooks/Cole, 2013.
I. Vidav, Algebra, DMFA, 1980.

Cilji in kompetence:

Študent spozna pojme iz algebre, ki jih potrebuje pri nadaljnjem študiju matematike. Ob tem se uči abstraktnega načina razmišljanja.

Objectives and competences:

Students learn concepts of algebra that are needed for further study of mathematics. Through this, they also learn abstract thinking.

Predvideni študijski rezultati:

Znanje in razumevanje:
- Poznavanje in razumevanje osnov teorije komutativnih kolobarjev.
- Poznavanje in razumevanje osnov teorije razširitev polj.

Prenesljive/ključne spretnosti in drugi atributi:

Pridobljena znanja so podlaga za več predmetov na drugi stopnji.

Intended learning outcomes:

Knowledge and Understanding:
- Knowledge and understanding of basic commutative ring theory.
- Knowledge and understanding of basic theory of field extensions.

Transferable/Key Skills and other attributes:

The obtained knowledge is a prerequisite for several courses at the second cycle level.

Metode poučevanja in učenja:

- Predavanja
- Teoretične vaje

Learning and teaching methods:

- Lectures
- Theoretical exercises

Načini ocenjevanja:

Assessment:

Izpit:	Delež (v %) / Weight (in %)	Exam:
Pisni izpit (problemi in teorija)	100%	Written exam (problems and theory)

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.