



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet: Številске množice in zaporedja

Course title: Number sets and sequences

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Matematika		1.	1.
Mathematics		1.	1.

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
30		45			135	7

Nosilec predmeta / Lecturer: Boštjan BREŠAR

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

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

Jih ni.

Prerequisites:

There are none.

Vsebina:

Osnovni matematični pojmi. Množice. Funkcije.

Realna števila: aksiomi, supremum, maksimum; potence, koreni; iracionalna števila; intervali; absolutna vrednost.

Kompleksna števila: osnovne lastnosti; polarni zapis.

Zaporedja: konvergenca, operacije z zaporedji; monotona zaporedja, število e ; podzaporedja, stekališča; Cauchyjeva zaporedja; potence z realnimi eksponenti.

Content (Syllabus outline):

Basic mathematical concepts. Sets. Functions.

Real numbers: axioms, supremum, maximum; powers, roots; irrational numbers; intervals; absolute value.

Complex numbers: basic properties; trigonometric form.

Sequences: convergence, operations on sequences; monotone sequences, the number e ; subsequences, accumulation points; Cauchy sequences; powers with real exponents.

Temeljni literatura in viri / Readings:

M. Dobovišek, M. Hladnik, M. Omladič, Rešene naloge iz analize, DMFA, Ljubljana, 1980.
 J. M. Howie, Real analysis, Springer, 2001.
 B. Hvala, Zbirka izpitnih nalog iz analize, DMFA, Ljubljana, 1996.
 F. Morgan, Real analysis, AMS, 2005.
 M. A. Robdera, A concise approach to mathematical analysis, Springer, 2003.
 W. Rudin, Principles of mathematical analysis, McGraw Hill Book Co., 1976.
 T. Tao, Analysis 1, 3rd edition, Hindustan Book Agency, New Delhi, 2014.
 I. Vidav: Višja matematika I, Ljubljana, DZS, 1974.

Cilji in kompetence:

Obvladati teorijo realnih in kompleksnih števil ter zaporedij in njihovih lastnosti.

Objectives and competences:

Students learn the theory of real and complex numbers as well as sequences and their properties.

Predvideni študijski rezultati:

Znanje in razumevanje:

- Številskih množic.
- Zaporedij.

Prenosljive/ključne spretnosti in drugi atributi:

- Pridobljena znanja so osnova za vse druge matematične predmete.

Intended learning outcomes:

Knowledge and Understanding:

- Number sets.
- Sequences.

Transferable/Key Skills and other attributes:

- The obtained knowledge forms a foundation for all the other mathematical courses.

Metode poučevanja in učenja:

- Predavanja
- Teoretične vaje

Learning and teaching methods:

- Lectures
- Theoretical exercises

Načini ocenjevanja:**Assessment:**Izpit:

Pisni izpit – problemi

Ustni izpit – teorija

Vsaka izmed naštetih obveznosti mora biti opravljena s pozitivno oceno.

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

Pisni izpit – problemi se lahko nadomesti z dvema delnima testoma (sprotne obveznosti).

Delež (v %) /
Weight (in %)

50%

50%

Exam:

Written exam – problems

Oral exam – theory

Each of the mentioned assessments must be assessed with a passing grade.

Passing grade of written exam – problems is required to take the oral exam – theory.

Written exam – problems can be replaced with two mid-term tests.

Reference nosilca / Lecturer's references:		
1. BREŠAR, Boštjan, KLAVŽAR, Sandi, RALL, Douglas F., WASH, Kirsti. Packing chromatic number versus chromatic and clique number. <i>Aequationes mathematicae</i>, ISSN 0001-9054, 2018, vol. 92, iss. 3, str. 497-513. https://doi.org/10.1007/s00010-017-0520-9. 2. BONOMO, Flavia, BREŠAR, Boštjan, GRIPPO, Luciano, MILANIČ, Martin, SAFE, Martin Dario. Domination parameters with number 2 : interrelations and algorithmic consequences. <i>Discrete applied mathematics</i>, ISSN 0166-218X. [Print ed.], Jan. 2018, vol. 235, str. 23-50. http://doi.org/10.1016/j.dam.2017.08.017. 3. BREŠAR, Boštjan, MOVARRAEI, Nazanin. On the number of maximal independent sets in minimum colorings of split graphs. <i>Discrete applied mathematics</i>, ISSN 0166-218X. [Print ed.], Oct. 2018, vol. 247, str. 352-356. https://doi.org/10.1016/j.dam.2018.03.083, doi: 10.1016/j.dam.2018.03.083. 4. BREŠAR, Boštjan, HARTINGER, Tatiana Romina, KOS, Tim, MILANIČ, Martin. 1-perfectly orientable K_4-minor-free and outerplanar graphs. <i>Discrete applied mathematics</i>, ISSN 0166-218X. [Print ed.], 2018, vol. 248, str. 33-45. https://doi.org/10.1016/j.dam.2017.09.017, doi: 10.1016/j.dam.2017.09.017. 5. BREŠAR, Boštjan, FERME, Jasmina. An infinite family of subcubic graphs with unbounded packing chromatic number. <i>Discrete Mathematics</i>, ISSN 0012-365X. [Print ed.], Aug. 2018, vol. 341, iss. 8, str. 2337-2342. https://doi.org/10.1016/j.disc.2018.05.004, doi: 10.1016/j.disc.2018.05.004.		