



Univerza v Mariboru



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Fakulteta za naravoslovje in
matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Analiza I
Course title:	Analysis I

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Matematika	Uporabna matematika	1.	2.
Mathematics	Applied Mathematics	1.	2.

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
60		45			165	9

Nosilec predmeta / Lecturer:

Boštjan BREŠAR

Jeziki /

Languages:

Predavanja /

Lectures:

Vaje / Tutorial:

SLOVENSKO/SLOVENE

SLOVENSKO/SLOVENE

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

Jih ni.

Prerequisites:

There are none.

Vsebina:

Realna števila: aksiomi; supremum, maksimum; 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.

Content (Syllabus outline):

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

Complex numbers: basic properties; trigonometric form.

Sequences: convergence, operations on sequences; monotone sequences, the number e ; subsequences, subsequential limits; Cauchy

Vrste: konvergenca; vrste s pozitivnimi členi; absolutna in pogojna konvergenca; vsota in produkt vrst. Funkcije: limite; zveznost; monotone funkcije; zvezne funkcije na zaprtih intervalih, enakomerna zveznost; eksponentna in druge elementarne funkcije.	sequences. Series: convergence, series of positive terms; absolute and conditional convergence; addition and multiplication of series. Functions: limits, continuity, monotone functions; functions continuous on a closed interval, uniform continuity; exponential and other elementary functions.
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Temeljni literatura in viri / Readings:

M. Dobovišek, M. Hladnik, M. Omladič, Rešene naloge iz analize, DMFA, Ljubljana, 1980.
E. Fischer, Intermediate real analysis, Springer, 1983.
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.
I. Vidav, Višja matematika I, DZS, Ljubljana, 1974.

Cilji in kompetence:

Razumevanje osnovnih pojmov analize.

Objectives and competences:

Understanding the basic concepts of analysis.

Predvideni študijski rezultati:

Znanje in razumevanje:

- Realnih in kompleksnih števil.
- Zaporedij in vrst.
- Limit in zveznosti funkcij.

Prenesljive/ključne spretnosti in drugi atributi:

- Pridobljena znanja so podlaga za večino predmetov v nadaljevanju študija.

Intended learning outcomes:

Knowledge and Understanding:

- Real and complex numbers
- Sequences and series
- Limits and continuity of functions.

Transferable/Key Skills and other attributes:

- The obtained knowledge is a basis for most of the later subjects.

Metode poučevanja in učenja:

- Predavanja
- Teoretične vaje

Learning and teaching methods:

- Lectures
- Theoretical exercises

Načini ocenjevanja:

Assessment:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)	Delež (v %) / Weight (in %)	Type (examination, oral, coursework, project):
Pisni test – praktični del	50%	Written test – practical part
Izpit (ustni) – teoretični del	50%	Exam (oral) – theoretical part

Vsaka izmed naštetih obveznosti mora biti opravljena s pozitivno oceno. Pozitivna ocena pri pisnem testu je pogoj za pristop k izpitu.		Each of the mentioned commitments must be assessed with a passing grade. Passing grade of the written test is required for taking the exam.
Reference nosilca / Lecturer's references:		
1. BOKAL, Drago, BREŠAR, Boštjan, JEREŠIĆ, Janja. A generalization of Hungarian method and Hall's theorem with applications in wireless sensor networks. <i>Discrete appl. math.</i>. [Print ed.], 2012, vol. 160, iss. 4-5, str. 460-470. http://dx.doi.org/10.1016/j.dam.2011.11.007. [COBISS.SI-ID 16191577] 2. BREŠAR, Boštjan, CHALOPIN, Jérémie, CHEPOI, Victor, GOLOGRANC, Tanja, OSAJDA, Damian. Bucolic complexes. <i>Preprint series</i>, 2012, vol. 50, št. 1171, str. 1-24. http://www.imfm.si/preprinti/PDF/01171.pdf. [COBISS.SI-ID 16207961] 3. BALAKRISHNAN, Kannan, BREŠAR, Boštjan, CHANGAT, Manoj, KLAVŽAR, Sandi, PETERIN, Iztok, SUBHAMATHI, Ajitha R. Almost self-centered median and chordal graphs. <i>Taiwan. j. math.</i>, 2012, vol. 16, no. 5, str. 1911-1922. http://journal.taiwanmathsoc.org.tw/index.php/TJM/article/view/2393/1403. [COBISS.SI-ID 16376409] 4. BREŠAR, Boštjan, KARDOŠ, František, KATRENIČ, Ján, SEMANIŠIN, Gabriel. Minimum k-path vertex cover. <i>Discrete appl. math.</i>. [Print ed.], 2011, vol. 159, iss. 12, str. 1189-1195. http://dx.doi.org/10.1016/j.dam.2011.04.008. [COBISS.SI-ID 15929689] 5. BREŠAR, Boštjan, KRANER ŠUMENJAK, Tadeja, TEPEH, Aleksandra. The geodetic number of the lexicographic product of graphs. <i>Discrete math.</i>. [Print ed.], 2011, vol. 311, iss. 16, str. 1693-1698. http://dx.doi.org/10.1016/j.disc.2011.04.004. [COBISS.SI-ID 15929945]		