



Univerza v Mariboru



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Fakulteta za naravoslovje in
matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Osnove analize
Course title:	Basic Analysis

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Izobraževalna matematika – dvopredmetni, 1. stopnja		1.	2.
Educational mathematics – Double-major, 1 st degree		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		30			90	6

Nosilec predmeta / Lecturer:

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

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

Prerequisites:

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.
Vrste: konvergenca; vrste s pozitivnimi členi;

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 sequences.

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.
 Osnovno o odvodih in njihovi uporabi.

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.
 Basic of derivatives and their use.

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
- Vaje
- Individualno delo

Learning and teaching methods:

- Lectures
- Tutorial
- Individual work

Načini ocenjevanja:

Assessment:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)	Delež (v %) / Weight (in %)	Type (examination, oral, coursework, project):
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Pisni test – praktični del Izpit (ustni) – teoretični del Vsaka izmed naštetih obveznosti mora biti opravljena s pozitivno oceno. Pozitivna ocena pri pisnem testu je pogoj za pristop k izpitu.	50% 50%	Written test – practical part Exam (oral) – theoretical part 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. BANIČ, Iztok, ČREPNJAK, Matevž, MERHAR, Matej, MILUTINOVIĆ, Uroš, SOVIČ, Tina. Ważewski's universal dendrite as an inverse limit with one set-valued bonding function. *Preprint series*, 2012, vol. 50, št. 1169, str. 1-33. <http://www.imfm.si/preprinti/PDF/01169.pdf>. [COBISS.SI-ID 16194137]
2. BANIČ, Iztok, ČREPNJAK, Matevž, MERHAR, Matej, MILUTINOVIĆ, Uroš. Paths through inverse limits. *Topol. appl.*. [Print ed.], 2011, vol. 158, iss. 9, str. 1099-1112. <http://dx.doi.org/10.1016/j.topol.2011.03.001>. [COBISS.SI-ID 18474504]
3. BANIČ, Iztok, ČREPNJAK, Matevž, MERHAR, Matej, MILUTINOVIĆ, Uroš. Limits of inverse limits. *Topol. appl.*. [Print ed.], 2010, vol. 157, iss. 2, str. 439-450. <http://dx.doi.org/10.1016/j.topol.2009.10.002>. [COBISS.SI-ID 15310169]
4. KLAVŽAR, Sandi, MILUTINOVIĆ, Uroš, PETR, Ciril. Stern polynomials. *Adv. appl. math.*, 2007, vol. 39, iss. 1, str. 86-95. <http://dx.doi.org/10.1016/j.aam.2006.01.003>. [COBISS.SI-ID 14276441]
5. IVANŠIĆ, Ivan, MILUTINOVIĆ, Uroš. Closed embeddings into Lipscomb's universal space. *Glas. mat.*, 2007, vol. 42, no. 1, str. 95-108. [COBISS.SI-ID 14338393]