



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Analiza
Course title:	Analysis

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Enovit magistrski študijski program druge stopnje Predmetni učitelj	/	2.	3.
Five-year master's degree program Subject Teacher	/		

Vrsta predmeta / Course type	Obvezni / Compulsory
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Univerzitetna koda predmeta / University course code:	
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Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
45		30			75	5

Nosilec predmeta / Lecturer:	Marko Jakovac
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Jeziki / Languages:	Predavanja / Lectures:	Slovenski / Slovenian
	Vaje / Tutorial:	Slovenski / Slovenian

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

Vsaka izmed naštetih obveznosti v načinih ocenjevanja mora biti opravljena s pozitivno

Prerequisites:

Each of the listed obligations in the assessments must be completed with a positive grade.

oceno.

Pozitivna ocena pri pisnem izpitu je pogoj za pristop k ustnemu izpitu.

Passing grade of the written exam is required for taking the oral exam.

Vsebina:

Odvod: geometrijski pomen, pravila za odvajanje; izreki o srednji vrednosti, višji odvodi, Taylorjeva formula, lokalni ekstremini, L'Hospitalovo pravilo; konveksnost.

Integral: določeni integral, Riemannove in Darbouxjeve vsote; nedoločeni integral; Newton-Leibnizova formula; uporaba integrala.

Funkcijska zaporedja in vrste; potenčne vrste; Taylorjeve vrste.

Content (Syllabus outline):

Differentiation: geometric interpretation, differentiation formulas; mean value theorems, higher derivatives, Taylor's formula, local extrema, L'Hospital rule; convexity.

Integral: definite integral, Riemann and Darboux sums; indefinite integral; Newton-Leibniz formula; applications of integrals.

Sequences and series of functions; power series; Taylor series.

Temeljni literatura in viri / Readings:

1. Dobovišek, M., Hladnik, M., & Omladič, M. (1982). *Rešene naloge iz analize I* (6. natis, Let. 6, str. 88). Društvo matematikov, fizikov in astronomov SRS.
2. Hvala, B. (1996). *Zbirka izpitnih nalog iz analize: z namigi, nasveti in rezultati* (Let. 35, str. 132). Društvo matematikov, fizikov in astronomov Slovenije.
3. Rudin, W. (1987). *Real and complex analysis* (3rd ed., str. XIV, 416). McGraw-Hill.
4. Ghorpade, S. R., & Limaye, B. V. (2006). *A Course in Calculus and Real Analysis*. Springer. <http://link.springer.com/book/10.1007/0-387-36425-0>
5. Knapp, A. W. (2005). *Basic Real Analysis: Along with a companion volume Advanced Real Analysis*. Anthony W. Knapp. <http://link.springer.com/book/10.1007/0-8176-4441-5>

Dodatna literatura / Additional readings:

1. Križanič, F. (1990). *Temelji realne matematične analize* (1. natis, str. 637). Državna založba Slovenije.
2. Fischer, E. (1983). *Intermediate real analysis* (str. XIV, 770). Springer.
3. Mukherjee, M. (2011). *A course in real analysis* (str. 1 zv. (loč. pag.)). Alpha Science International Ltd.

Cilji in kompetence:

Razumevanje osnovnih pojmov v zvezi s funkcijami ene spremenljivke.

Objectives and competences:

Understanding basic concepts concerning functions of one variable.

Predvideni študijski rezultati:

Intended learning outcomes:

Znanje in razumevanje: • Odvoda. • Integrala. • Funkcijskih zaporedij in vrst.	Knowledge and Understanding: • Differentiation • Integration • Sequences and series of functions.
Prenesljive/ključne spretnosti in drugi atributi: Pridobljena znanja so podlaga za večino predmetov v nadaljevanju študija.	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:

Delež (v %) /
Weight (in %)

Assessment:

Pisni izpit	50%	Written exam
Ustni izpit	50%	Oral exam

Opombe:

Pisni izpit se lahko nadomesti s kolokviji.

Comments:

Written exam can be replaced by midterm examination.

Reference nosilca / Lecturer's references:

1. BREŠAR, Boštjan, FERME, Jasmina, HOLUB, Přemysl, JAKOVAC, Marko, MELICHAROVÁ, Petra. S-packing colorings of distance graphs with distance sets of cardinality 2. *Applied mathematics and computation*. [Print ed.]. Apr. 2025, vol. 490, [article no.] 129200, 13 str. ISSN 0096-3003. <https://www.sciencedirect.com/science/article/pii/S0096300324006611>, DOI: [10.1016/j.amc.2024.129200](https://doi.org/10.1016/j.amc.2024.129200). [COBISS.SI-ID [216160771](#)]
2. JAKOVAC, Marko, MESARIČ ŠTESL, Daša. On game chromatic vertex-critical graphs. *Bulletin of the Malaysian Mathematical Sciences Society*. Jan. 2023, vol. 46, iss. 1, str. 1-30, ilustr. ISSN 0126-6705. <https://link.springer.com/article/10.1007/s40840-022-01418-6>, DOI: [10.1007/s40840-022-01418-6](https://doi.org/10.1007/s40840-022-01418-6). [COBISS.SI-ID [139148291](#)]
3. DRAVEC, Tanja, JAKOVAC, Marko, KOS, Tim, MARC, Tilen. On graphs with equal total domination and Grundy total domination numbers. *Aequationes mathematicae*. Feb. 2022, vol. 96, iss. 1, 137-146. ISSN 0001-9054. <https://link.springer.com/article/10.1007/s00010-021-00776-z>, DOI: [10.1007/s00010-021-00776-z](https://doi.org/10.1007/s00010-021-00776-z). [COBISS.SI-ID [100359427](#)]
4. BUJTÁS, Csilla, JAKOVAC, Marko, TUZA, Zsolt. The k -path vertex cover: general bounds and chordal graphs. *Networks*. July 2022, vol. 80, iss. 1, str. 63-76. ISSN 0028-

3045. https://onlinelibrary.wiley.com/doi/10.1002/net.22079 , [COBISS.SI-ID 116964355]	DOI: 10.1002/net.22079 .
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