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

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
45		30			75	5

Nosilec predmeta / Lecturer: Marko Jakovac

Jeziki / Languages:	Predavanja / Lectures:	Slovenski / Slovenian
	Vaje / Tutorial:	Slovenski / Slovenian

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

Prerequisits:

Jih ni	There are none.

Vsebina:

Odvod: geometrijski pomen, pravila za odvajanje; izreki o srednji vrednosti, višji odvodi, Taylorjeva formula, lokalni ekstremi, 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:

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.

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:

Znanje in razumevanje:

- Odvoda.
- Integrala.
- Funkcijskih zaporedij in vrst.

Prenesljive/ključne spretnosti in drugi atributi:

Pridobljena znanja so podlaga za večino predmetov v nadaljevanju študija.

Intended learning outcomes:

Knowledge and Understanding:

- Differentiation
- Integration
- Sequences and series 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

<div align="center">Delež (v %) /</div>

Načini ocenjevanja:	Weight (in %)	Assessment:
Izpiti: 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).	50% 50%	Exams: 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. 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. [COBISS.SI-ID 139148291]

2. 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. [COBISS.SI-ID 100359427]

3. 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, DOI: 10.1002/net.22079. [COBISS.SI-ID 116964355]

4. BREŠAR, Boštjan, JAKOVAC, Marko, MESARIČ ŠTESL, Daša. Indicated coloring game on Cartesian products of graphs. *Discrete applied mathematics*. [Print ed.]. Jan. 2021, vol. 289, str. 320-326. ISSN 0166-218X. https://www.sciencedirect.com/science/article/pii/S0166218X2030500X, DOI: 10.1016/j.dam.2020.11.007. [COBISS.SI-ID 41803267]

5. JAKOVAC, Marko, OTACHI, Yota. On the security number of the Cartesian product of graphs. *Discrete applied mathematics*. [Print ed.]. Dec. 2021, vol. 304, str. 119-128. ISSN 0166-218X. DOI: 10.1016/j.dam.2021.07.030. [COBISS.SI-ID 72524547]