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; posplošeni integrali.

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; improper 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:

Learning and teaching methods:

• Predavanja • Teoretične vaje	• Lectures • Theoretical exercises

Delež (v %) /

Načini ocenjevanja: Weight (in %) **Assessment:**

Izpiti:		Exams:
Pisni izpit – problemi	50%	Written exam – problems
Ustni izpit – teorija	50%	Oral exam – theory
Vsaka izmed naštetih obveznosti mora biti opravljena s pozitivno oceno.		Each of the mentioned assessments must be assessed with a passing grade.
Opravljen pisni izpit – problemi je pogoj za pristop k ustnemu izpitu – teorija.		Passing grade of written exam – problems is required to take the oral exam – theory.
Pisni izpit – problemi se lahko nadomesti z dvema delnima testoma (sprotne obveznosti).		Written exam – problems can be replaced with two mid-term tests.

Reference nosilca / Lecturer's references:

1. JAKOVAC, Marko. Relating the annihilation number and the 2-domination number of block graphs. *Discrete applied mathematics*, ISSN 0166-218X. [Print ed.], May 2019, vol. 260, str. 178-187, doi: 10.1016/j.dam.2019.01.020.

2. BUJTÁS, Csilla, JAKOVAC, Marko. Relating the total domination number and the annihilation number of cactus graphs and block graphs. *Ars mathematica contemporanea*, ISSN 1855-3966. [Tiskana izd.], 2019, vol. 16, no. 1, str. 183-202, doi: 10.26493/1855-3974.1378.11d.

3. JAKOVAC, Marko, PETERIN, Iztok. The b-chromatic number : a survey. *Discrete applied mathematics*, ISSN 0166-218X. [Print ed.], 2018, vol. 235, str. 184-201. http://dx.doi.org/10.1016/j.dam.2017.08.008, doi: 10.1016/j.dam.2017.08.008.

4. GOLOGRANC, Tanja, JAKOVAC, Marko, PETERIN, Iztok. The security number of lexicographic products. *Quaestiones mathematicae*, ISSN 1607-3606, 2018, vol. 41, iss. 5, str. 601-613. https://doi.org/10.2989/16073606.2017.1393705, doi: 10.2989/16073606.2017.1393705.

5. YERO, Ismael G., JAKOVAC, Marko, KUZIAK, Dorota. The security number of strong grid-like graphs. *Theoretical computer science*, ISSN 0304-3975, 2016, vol. 653, str. 1-14, doi: 10.1016/j.tcs.2016.09.013.