Univerza v Mariboru
University of Maribor

FAKULTETA *za*
NARAVOSLOVJE *in*
MATEMATIKO
FACULTY *OF*
NATURAL SCIENCE *and*
MATHEMATICS

UČNI NAČRT PREDMETA / SUBJECT SPECIFICATION

Predmet:	Izbrana poglavja iz analize
Subject Title:	Topics in analysis

Študijski program **Study programme**	**Študijska smer** **Study field**	**Letnik** **Year**	**Semester** **Semester**
Matematika		1. ali 2.	2.
Mathematics		1. or 2.	2.

Univerzitetna koda predmeta / University subject code:

Predavanja **Lectures**	**Seminar** **Seminar**	**Sem. vaje** **Tutorial**	**Lab. vaje** **Labor work**	**Teren. vaje** **Field work**	**Samost. delo** **Individ. work**	**ECTS**
30	0	0			120	**5**

Nosilec predmeta / Lecturer: | Uroš Milutinović

Jeziki /	**Predavanja / Lecture:**	Slovenski in angleški jezik; Slovene and English
Languages:	**Vaje / Tutorial:**	

Pogoji za opravljanje študijskih obveznosti:

Znanje osnovnih pojmov in rezultatov iz analize (zveznost, diferenciabilnost in integrabilnost; zaporedja in vrste).

Prerequisites:

Basic knowledge of fundamental notions and results of analysis (continuity, differentiability and integrability).

Vsebina:

Izbrana so posebna poglavja iz realne analize, teorije mere in integriranja, kompleksne analize, teorije potenciala, več kompleksnih spremenljivk, posebnih funkcij, zaporedij, vrst, sumabilnosti, Fourirjeve analize, analize na mnogoterostih ali katerega drugega modernega področja iz analize. Izbira poglavij je odvisna od interesa in raziskovalne usmerjenosti študentov. Spodaj navedena literatura praviloma služi le kot osnova in je nadgrajena z bolj specializiranimi teksti.

Content (Syllabus outline):

Special topics in real analysis, measure and integration theory, complex analysis, potential theory, several complex variables, special functions, sequences, series, summability, Fourier analysis, analysis on manifolds, or some other area of contemporary analysis are chosen. The choice depends on students' interests and their research orientation. The literature below in principle serves only as a basis, and is combined with more specialized texts.

Temeljna literatura in viri / Textbooks:

W. Rudin, Principles of mathematical analysis, McGraw-Hill, 1986
W. Rudin, Real and complex analysis, McGraw-Hill, 1987
R.C. Buck, E.F. Buck: Advanced calculus, McGraw-Hill, 1965
M. Spivak: Calculus on manifolds, W.A. Benjamin, 1968
W.H. Fleming: Functions of several variables, Springer, 1977
M. Protter, C. Morrey, A first course in real analysis, Springer, 1991
L.V. Ahlfors, Complex analysis, McGraw-Hill, 1979
Z. Nehari, Conformal mapping, McGraw-Hill, 1952
M.P. Do Carmo, Differential forms and applications, Springer, 1994
M.P. Do Carmo, Riemannian geometry, Birkhäuser, 1992
S. Lang, Differential and Riemannian manifolds, Springer, 1995
D.J. Struik, Lectures on classical differential geometry, Addison-Wesley, 1950
S.G. Krantz, Function theory of several complex variables, John Wiley, 1982

Cilji:	**Objectives:**

• študentu predstaviti moderno področje iz analize, kar lahko služi kot uvod v raziskovalno delo; • razvijati sposobnosti študenta za samostojno reševanje problemov in raziskovalno delo na tem področju.	• to present a modern area from analysis, which can serve as an introduction to student's research work; • to develop student's skills for solving problems and for research in the area.

Predvideni študijski rezultati:

Intended learning outcomes:

Znanje in razumevanje:	Knowledge and understanding:
• poglobljeno znanje posebnega področja iz analize; • poglobljeno razumevanje nekaterih posebnih pojmov iz analize.	• a deeper knowledge of a special topic from analysis; • a deeper understanding of some special concepts from analysis.
Prenesljive/ključne spretnosti in drugi atributi: • podlaga za raziskovalno delo na posebnem področju iz analize.	Transferable/Key Skills and other attributes: • a basis for research in a special area of analysis

Metode poučevanja in učenja:

Teaching and learning methods:

• predavanja; • priprava seminarja; • praktični primeri; • konzultacije; • samostojni študij.	• lectures; • seminar work; • practical exercises; • consultations; • self-study.

Načini ocenjevanja:

Assessment methods:

Način (pisni izpit, ustno izpraševanje, naloge, projekt):	Delež (v %) / Weight (in %)	Type (examination, oral, coursework, project):
• seminar; • reševanje praktičnih primerov; • ustni izpit.	**20 %** **30 %** **50 %**	• seminar; • solutions of practical exercises; • oral examination.