UČNI NAČRT PREDMETA / COURSE SYLLABUS (leto / year 2016/17)

Predmet:	Izbrana poglavja iz analize
Course title:	Topics in analysis

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Doktorski študijski program Matematika in fizika	Matematika	1 ali 2	prvi ali drugi
Doctoral study programme Mathematics and Physics	Mathematics	1 or 2	first or second

Vrsta predmeta / Course type	izbirni / elective

Univerzitetna koda predmeta / University course code:	M3125

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30					150	6

Nosilec predmeta / Lecturer:	prof. dr. Miran Černe, prof. dr. Barbara Drinovec Drnovšek, prof. dr. Roman Drnovšek, prof. dr. Franc Forstnerič, prof. dr. Jasna Prezelj, prof. dr. Peter Šemrl

Jeziki / Languages:	Predavanja / Lectures:	slovenski / Slovene, angleški / English
	Vaje / Tutorial:	slovenski / Slovene, angleški / English

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	Prerequisites:
Vpis v letnik študija.	Enrolment in the programme.

Vsebina:	Content (Syllabus outline):

Izbrane bodo nekatere standardne teme iz podiplomske analize. Možna poglavja so kompleksna analiza, harmonična analiza, globalna analiza, navadne in parcialne diferencialne enačbe, funkcionalna analiza, teorija operatorjev itd. Izbira je odvisna od interesov in raziskovalne usmeritve študentov.	The content consists of a selection of standard topics in graduate analysis. Possible themes include complex analysis, harmonic analysis, global analysis, ordinary and parcial differential equations, functional analysis, operator theory etc. The choice may depend on students' research interests.

Temeljni literatura in viri / Readings:

N. Dunford, J. T. Schwartz: Linear operators, Parts I, II, III. Wiley Classics Library, John Wiley & Sons, New York 1988.

L. C. Evans: Partial Differential Equations, American Mathematical Society, Providence, 1998.

L. Grafakos: Classical and Modern Fourier Analysis, Pearson/Prentice Hall, 2004.

L. Hörmander: An introduction to complex analysis in several variables, Third edition., 7. North-Holland Publishing Co., Amsterdam, 1990.

T. W. Palmer: Algebras and Banach algebras, Cambridge Univ. Press, 1994.

R. O. Wells: Differential Analysis on Complex Manifolds, Springer, New York, 1980.

Cilji in kompetence:	**Objectives and competences:**
Namen predmeta je seznaniti študente z nekaterimi pomembnimi temami analize.	The main goal of the course is to provide students with some important topics in analysis.

Predvideni študijski rezultati: **Intended learning outcomes:**

Znanje in razumevanje predstavljenih konceptov. Sposobnost uporabe pridobljenega znanja in spretnosti.	Knowledge and comprehension of presented concepts. Ability to use acquired knowledge and skills.

Metode poučevanja in učenja:

Learning and teaching methods:

Predavanja, konzultacije, reševanje problemov	Lectures, consultations, problem sessions

Načini ocenjevanja: Delež (v %) / Weight (in %) **Assessment:**

Pisni izpit (domače naloge), ustni izpit. Ocene: 1-5 (negativno), 6-10 (pozitivno) (po Statutu UL)	100 %	Writen exam (homeworks), oral exam. Grading: 1-5 (fail), 6-10 (pass) (according to the Statute of UL)

Reference nosilca / Lecturer's references:

Miran Černe:
ČERNE, Miran, ZAJEC, Matej. Boundary differential relations for holomorphic functions on the disc. Proceedings of the American Mathematical Society, ISSN 0002-9939, 2011, vol. 139, no. 2, str. 473-484 [COBISS.SI-ID 15710553]
ČERNE, Miran, FLORES, Manuel. On Beurling's boundary differential relation. Israel journal of mathematics, ISSN 0021-2172, 2014, vol. 199, iss. 2, str. 831-840 [COBISS.SI-ID 17144153]
ČERNE, Miran. Beurling's boundary differential relations on multiply connected domains. Journal of mathematical analysis and applications, ISSN 0022-247X. [Print ed.], 2015, vol. 428, iss. 1, str. 544-562 [COBISS.SI-ID 17270873]
Barbara Drinovec Drnovšek:

DRINOVEC-DRNOVŠEK, Barbara, KUZMAN, Uroš. Lelong functional on almost complex manifolds. Complex variables and elliptic equations, ISSN 1747-6933, 2015, vol. 60, iss. 2, str. 168-180. [COBISS.SI-ID 16979289]

DRINOVEC-DRNOVŠEK, Barbara, FORSTNERIČ, Franc. The Poletsky-Rosay theorem on singular

complex spaces. Indiana University mathematics journal, ISSN 0022-2518, 2012, vol. 61, no. 4, str. 1407-1423. [COBISS.SI-ID 16679257]

DRINOVEC-DRNOVŠEK, Barbara, FORSTNERIČ, Franc. Disc functionals and Siciak-Zaharyuta extremal functions on singular varieties. V: Proceedings of Conference on Several Complex Variables on the occasion of Professor Józef Siciak's 80th birthday : July 4-8, 2011, Kraków, Poland, (Annales Polonici Mathematici, ISSN 0066-2216, Vol. 106). Warsaw: Institute of Mathematics, Polish Academy of Sciences, 2012, str. 171-191. [COBISS.SI-ID 16436057]
Roman Drnovšek:
DRNOVŠEK, Roman. Common invariant subspaces for collections of operators. Integral equations and operator theory, ISSN 0378-620X, 2001, vol. 39, no. 3, str. 253-266
DRNOVŠEK, Roman. Invariant subspaces for operator semigroups with commutators of rank at most one. Journal of functional analysis, ISSN 0022-1236, 2009, vol. 256, iss. 12, str. 4187-4196
DRNOVŠEK, Roman. An irreducible semigroup of idempotents. Studia Mathematica, ISSN 0039-3223, 1997, let. 125, št. 1, str. 97-99
Franc Forstnerič:

ALARCÓN, Antonio, FORSTNERIČ, Franc. Null curves and directed immersions of open Riemann surfaces. Inventiones Mathematicae, ISSN 0020-9910, 2014, vol. 196, iss. 3, str. 733-771. [COBISS.SI-ID 16655705]

FORSTNERIČ, Franc, RITTER, Tyson. Oka properties of ball complements. Mathematische Zeitschrift, ISSN 0025-5874, 2014, vol. 277, iss. 1-2, str. 325-338. [COBISS.SI-ID 17142873]

ALARCÓN, Antonio, FORSTNERIČ, Franc. Every bordered Riemann surface is a complete proper curve in a ball. Mathematische Annalen, ISSN 0025-5831, 2013, vol. 357, iss. 3, str. 1049-1070. [COBISS.SI-ID 17142617]
Jasna Prezelj:
PREZELJ-PERMAN, Jasna. A relative Oka-Grauert principle for holomorphic submersions over 1-convex spaces. Transactions of the American Mathematical Society, ISSN 0002-9947, 2010, vol. 362, no. 8, str. 4213-4228
PREZELJ-PERMAN, Jasna, SLAPAR, Marko. The generalized Oka-Grauert principle for 1-convex manifolds. Michigan mathematical journal, ISSN 0026-2285, 2011, vol. 60, iss. 3, str. 495-506
PREZELJ-PERMAN, Jasna. Positivity of metrics on conic neighborhoods of 1-convex submanifolds. International journal of mathematics, ISSN 0129-167X, 2016, vol. 27, no. 5, 1650047 [str. 1-24]
Peter Šemrl:

ŠEMRL, Peter. The optimal version of Hua's fundamental theorem of geometry of rectangular matrices. Memoirs of the American Mathematical Society, ISSN 0065-9266, 2014, vol. 232, no. 1089, str. 1-74. [COBISS.SI-ID 16947545]

PLEVNIK, Lucijan, ŠEMRL, Peter. Maps preserving complementarity of closed subspaces of a Hilbert space. Canadian journal of mathematics, ISSN 0008-414X, 2014, vol. 66, no. 5, str. 1143-1166. [COBISS.SI-ID 17137753]