

| UČNI NAČRT PREDMETA / COURSE SYLLABUS (leto / year 2017/18) | | | | | | |
|--|----------------|--|----------------------|------------------------------------|----------------------|-----------------|
| Predmet: | | Izbrana poglavja iz analize | | | | |
| Course title: | | Topics in analysis | | | | |
| Študijski program in stopnja | | Študijska smer | | Letnik | | Semester |
| Study programme and level | | Study field | | Academic year | | 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 | Seminar | Vaje | Klinične vaje | Druge oblike | Samost. delo | ECTS |
| Lectures | Seminar | Tutorial | work | študija | Individ. work | |
| 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 partial 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:

Namen predmeta je seznaniti študente z nekaterimi pomembnimi temami analize.

Objectives and competences:

The main goal of the course is to provide students with some important topics in analysis.

Predvideni študijski rezultati:

Intended learning outcomes:

| | |
|--|--|
| <p>Znanje in razumevanje predstavljenih konceptov.</p> <p>Sposobnost uporabe pridobljenega znanja in spretnosti.</p> | <p>Knowledge and comprehension of presented concepts.</p> <p>Ability to use acquired knowledge and skills.</p> |
|--|--|

Metode poučevanja in učenja:

Predavanja, konzultacije, reševanje problemov

Learning and teaching methods:

Lectures, consultations, problem sessions

Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

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

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]

ŠEMRL, Peter. Symmetries of Hilbert space effect algebras. *Journal of the London Mathematical Society*, ISSN 0024-6107, 2013, vol. 88, part 2, str. 417-436. [COBISS.SI-ID 16756569]