UČNI NAČRT PREDMETA / COURSE SYLLABUS			
Predmet:	Izbrana poglavja iz topologije		
Course title:	Topics in topology		

Študijski program in stopnja **Study programme and level**	**Študijska smer** **Study field**	**Letnik** **Academic year**	**Semester** **Semester**
3MaFi	Matematika	1 ali 2	prvi ali drugi
3MaFi	Mathematics	1 or 2	first or second

Vrsta predmeta / Course type	izbirni
Univerzitetna koda predmeta / University course code:	M3123

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

Nosilec predmeta / Lecturer:	prof. Dušan Repovš, prof. Jaka Smrekar, prof. Janez Mrčun, prof. Petar Pavešić, prof. Sašo Strle

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:**
Vsebina:	**Content (Syllabus outline):**

Izbrane bodo nekatere standardne podiplomske teme iz topologije, ki vključujejo splošno homotopsko teorijo, teorijo ovir, teorijo svežnjev in karakterističnih razredov, K-teorijo, teorijo Liejevih grupoidov, teorijo spektralnih zaporedij, Morsovo teorijo, teorijo vozlov itd. Izbira je odvisna od interesov in raziskovalne usmeritve študentov.	The content consists of a selection of standard graduate topics in topology, such as general homotopy theory, obstruction theory, the theory of fibre bundles. K-theory, the theory of Lie groupoids, the theory of spectral sequences, Morse theory, knot theory etc. The choice depends on students' research interests.

Temeljni literatura in viri / Readings:

[1] G. Burde, H. Zieschang, Knots, de Gruyter Studies in Mathematics 5, Walter de Gruyter & Co., Berlin, 2003.

[2] R. E. Gompf, A. I. Stipsicz, 4-manifolds and Kirby calculus, Graduate Studies in Mathematics 20, AMS, Providence, 1999.

[3] P. Hilton, G. Mislin, J. Roitberg, Localization of nilpotent groups and spaces , Elsevier, Amsterdam 1975.

[4] D. Husemoller, Fibre bundles, Springer, New York, 1994.[5] H. B. Lawson, M. L. Michelsohn, Spin geometry, Princeton Mathematical Series 38, Princeton University Press, Princeton, 1989.

[6] J. McCleary, A user's guide to spectral sequences , Cambridge University Press, Cambridge, 2001.

[7] J. Milnor, Morse theory, Annals of Mathematics Studies 51, Princeton University Press, Princeton, 1963.

[8] C. P. Rourke, B. J. Sanderson, Introduction to piecewise-linear topology, Springer Study Edition, Springer-Verlag, Berlin-New York, 1982.[9] E. Spanier, Algebraic topology, Springer, New York - Heidelberg - Berlin, 1966.

[10] G. W. Whitehead, Elements of homotopy theory, Springer, New York - Heidelberg - Berlin, 1978.

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

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:

Janez Mrčun:

– MOERDIJK, Ieke, MRČUN, Janez. Introduction to foliations and Lie groupoids, (Cambridge studies in advanced mathematics, 91). Cambridge, UK: Cambridge University Press, 2003. IX, 173 str., ilustr. ISBN 0-521-83197-0 [COBISS.SI-ID 12683097]

– JELENC, Blaž, MRČUN, Janez. Homotopy sequence of a topological groupoid with a basegroup and an obstruction to presentability of proper regular Lie groupoids. ArXiv.org, 13 str [COBISS.SI-ID 16400729]

– KALIŠNIK, Jure, MRČUN, Janez. A Cartier-Gabriel-Kostant structure theorem for Hopf algebroids. Advances in mathematics, ISSN 0001-8708, 2013, vol. 232, iss. 1, str. 295-310 [COBISS.SI-ID 16432473]

Petar Pavešić:

– PAVEŠIĆ, Petar. Induced liftings, exchange rings and semi-perfect algebras. Journal of Pure and Applied Algebra, ISSN 0022-4049. [Print ed.], 2010, vol. 214, iss 11, str. 1901-1906 [COBISS.SI-ID

15627865]

– FRANC, Aleksandra, PAVEŠIĆ, Petar. Spaces with high topological complexity. Proceedings. Section A, Mathematics, ISSN 0308-2105, 2014, vol. 144, iss. 4, str. 761-773 [COBISS.SI-ID 17096025]

– PAVEŠIĆ, Petar. Fibrations between mapping spaces. Topology and its Applications, ISSN 0166-8641. [Print ed.], 2014, vol. 178, str. 276-287 [COBISS.SI-ID 17141337]

Dušan Repovš:

– REPOVŠ, Dušan. A two-parameter control for contractive-like multivalued mappings. V: 2010 International Conference on Topology and its Applications, June 26-30, 2010, Nafpaktos, Greece. 2010 International Conference on Topology and its Applications, (Topology and its applications, ISSN 0166-8641, Vol. 159, iss. 7). Amsterdam [etc.]: Elsevier, 2012, str. 1899-1905 [COBISS.SI-ID 16224857]

– GARITY, Dennis, REPOVŠ, Dušan. Homogeneity groups of ends of open 3-manifolds. Pacific journal of mathematics, ISSN 0030-8730, 2014, vol. 269, no. 1, str. 99-112 [COBISS.SI-ID 17071961]

– HEGENBARTH, Friedrich, REPOVŠ, Dušan. Controlled homotopy equivalences and structure sets of manifolds. Proceedings of the American Mathematical Society, ISSN 0002-9939, 2014, vol. 142, no. 11, str. 3987-3999 [COBISS.SI-ID 17080665]

Jaka Smrekar:

– SMREKAR, Jaka. Homotopy type of mapping spaces and existence of geometric exponents. Forum mathematicum, ISSN 0933-7741, 2010, vol. 22, no. 3, str. 433-456 [COBISS.SI-ID 15638105]

– SMREKAR, Jaka. Homotopy type of space of maps into a K(G,n). Homology, homotopy, and applications, ISSN 1532-0073, 2013, vol. 15, no. 1, str. 137-149 [COBISS.SI-ID 16643929]

– SMREKAR, Jaka. Turning a self-map into a self-fibration. Topology and its Applications, ISSN 0166-8641. [Print ed.], 2014, vol. 167, str. 76-79 [COBISS.SI-ID 16943705]

Sašo Strle:

– GRIGSBY, J. Elisenda, RUBERMAN, Daniel, STRLE, Sašo. Knot concordance and Heegaard Floer homology invariants in branched covers. Geometry & topology, ISSN 1364-0380, 2008, vol. 12, iss. 4, str. 2249-2275 [COBISS.SI-ID 14892121]

– OWENS, Brendan, STRLE, Sašo. Dehn surgeries and negative-definite four-manifolds. Selecta mathematica. New series, ISSN 1022-1824, 2012, vol. 18, iss. 4, str. 839-854 [COBISS.SI-ID 16808025]

– RUBERMAN, Daniel, STRLE, Sašo. Concordance properties of parallel links. Indiana University mathematics journal, ISSN 0022-2518, 2013, vol. 62, no. 3, str. 799-814 [COBISS.SI-ID 16946265]