



Univerza v Mariboru



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Fakulteta za naravoslovje in
matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Topologija
Course title:	Topology

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Matematika	Splošna matematika	3.	6.
Mathematics	General Mathematics	3.	6.

Vrsta predmeta / Course type

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		45			210	10

Nosilec predmeta / Lecturer: Uroš MILUTINOVIČ

Jeziki /

Languages:

Predavanja /

Lectures:

Vaje / Tutorial:

SLOVENSKO/SLOVENE

SLOVENSKO/SLOVENE

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:

Jih ni.

Prerequisites:

There are none.

Vsebina:

Matematika kot teorije struktur. Grupe, vektorski prostori, kolobarji, delno urejene množice, linearno urejene množice, metrični prostori. Kategorije in funktorji. Izomorfizmi. Topološki prostori in zvezne preslikave - osnovni pojmi. Baza in podbaza prostora. Osnovne operacije: zaprtje, notranjost, rob, odvod. Osnovne konstrukcije: inducirane in koinducirane topologije, produkti, vsote, relativna topologija, kvocientni prostori, zleпки. Prostori funkcij. Urejeni topološki prostori.

Content (Syllabus outline):

Mathematics as theories of structures. Groups, vector spaces, rings, partially ordered sets, linearly ordered sets, metric spaces. Categories and functors. Isomorphisms.

Topological spaces and continuous mappings. Basis and subbasis for a topology. Basic operations: closure, interior, boundary, derived set. Basic constructions: induced and coinduced topologies, products, sums, relative topology, quotient topology, attaching of spaces. Spaces of

Separacijski aksiomi. Kompaktnost. Lokalna kompaktnost. Kompaktifikacije. Povezanost. Povezanost s potmi. Lokalna povezanost. Kontinuumi.

Števnost v topologiji.

mappings. Ordered topological spaces.

Separation axioms. Compactness. Local compactness. Compactifications. Connectedness. Local connectedness. Continua.

Countability in topology.

Temeljni literatura in viri / Readings:

J.R.Munkres: Topology: a first course, Englewood Cliffs, NJ, Prentice-Hall, 1975
 S.Lipschutz: Schaum's outline of theory and problems of general topology, New York (etc.), McGraw-Hill, 1965
 P.Pavešić, A.Vavpetič: Rešene naloge iz topologije, Ljubljana, Društvo matematikov, fizikov in astronomov Slovenije, 1997
 M.Cencelj, D.Repovš: Topologija, Ljubljana, Pedagoška fakulteta, 2001

Cilji in kompetence:

Seznani se s pristopom k matematiki preko struktur. Obvladati osnovne tehnike dela s topološkimi prostori.

Objectives and competences:

Students learn about approach to mathematics via structures. They learn how to use the basic techniques of work with topological spaces.

Predvideni študijski rezultati:

Znanje in razumevanje:

- Pojem matematičnih struktur.
- Sposobnost uporabe osnovnih tehnik dela s topološkimi prostori.

Prenesljive/ključne spretnosti in drugi atributi:

- Topologija (posebej v obliki pojma zveznosti) je prisotna pri večini drugih matematičnih predmetov.

Intended learning outcomes:

Knowledge and Understanding:

- The notion of mathematical structures.
- Be able to use the basic techniques of work with topological spaces.

Transferable/Key Skills and other attributes:

- Topology (especially in the form of continuity) is present in most other mathematical subjects.

Metode poučevanja in učenja:

- Predavanja
- Teoretične vaje

Learning and teaching methods:

- Lectures
- Theoretical exercises

Načini ocenjevanja:

Assessment:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)	Delež (v %) / Weight (in %)	Type (examination, oral, coursework, project):
Pisni test – praktični del	50%	Written test – practical part
Izpit (ustni) – teoretični del	50%	Exam (oral) – theoretical part
Vsaka izmed naštetih obveznosti mora biti opravljena s pozitivno oceno.		Each of the mentioned commitments must be assessed with a passing grade.
Pozitivna ocena pri pisnem testu je pogoj za pristop k izpitu.		Passing grade of the written test is required for taking the exam.

Reference nosilca / Lecturer's references:		
1. BANIČ, Iztok, ČREPNJAK, Matevž, MERHAR, Matej, MILUTINOVIĆ, Uroš, SOVIČ, Tina. Ważewski's universal dendrite as an inverse limit with one set-valued bonding function. <i>Preprint series</i>, 2012, vol. 50, št. 1169, str. 1-33. http://www.imfm.si/preprinti/PDF/01169.pdf. [COBISS.SI-ID 16194137] 2. BANIČ, Iztok, ČREPNJAK, Matevž, MERHAR, Matej, MILUTINOVIĆ, Uroš. Paths through inverse limits. <i>Topol. appl.</i>. [Print ed.], 2011, vol. 158, iss. 9, str. 1099-1112. http://dx.doi.org/10.1016/j.topol.2011.03.001. [COBISS.SI-ID 18474504] 3. BANIČ, Iztok, ČREPNJAK, Matevž, MERHAR, Matej, MILUTINOVIĆ, Uroš. Limits of inverse limits. <i>Topol. appl.</i>. [Print ed.], 2010, vol. 157, iss. 2, str. 439-450. http://dx.doi.org/10.1016/j.topol.2009.10.002. [COBISS.SI-ID 15310169] 4. KLAVŽAR, Sandi, MILUTINOVIĆ, Uroš, PETR, Ciril. Stern polynomials. <i>Adv. appl. math.</i>, 2007, vol. 39, iss. 1, str. 86-95. http://dx.doi.org/10.1016/j.aam.2006.01.003. [COBISS.SI-ID 14276441] 5. IVANŠIĆ, Ivan, MILUTINOVIĆ, Uroš. Closed embeddings into Lipscomb's universal space. <i>Glas. mat.</i>, 2007, vol. 42, no. 1, str. 95-108. [COBISS.SI-ID 14338393]		