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
Matematika, 3. stopnja		**1. ali 2.**	**1. ali 3. ali 4.**
Mathematics, 3rd cycle		**1st or 2nd**	**1st or 3rd or 4th**

Vrsta predmeta / Course type izbirni/elective

Univerzitetna koda predmeta / University course code:

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

Nosilec predmeta / Lecturer: Iztok Banič

Jeziki / Languages:	Predavanja / Lectures:	**Slovenski jezik; Slovene**
	Vaje / Tutorial:	

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

Prerequisits:

Znanje osnovnih pojmov in rezultatov iz topologije (topološki prostori, zvezne preslikave). Vsaka izmed naštetih obveznosti v načinih ocenjevanja mora biti opravljena s pozitivno oceno. Pozitivna ocena pri sprotnih nalogah je pogoj za pristop k ustnemu izpitu.

Basic knowledge of fundamental notions and results of topology (topological spaces, continuous mappings). Each of the mentioned commitments must be assessed with a passing grade. Passing grade of the coursework is required for taking the oral exam.

Vsebina:

Izbrana so posebna poglavja iz algebrske topologije, splošne topologije, teorije kontinuumov, teorije dimenzij, teorije dinamičnih sistemov ali katerega drugega modernega topološkega področja. 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 algebraic topology, general topology, continuum theory, dimension theory, theory of dynamical systems, or some other area of contemporary topology 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.

Temeljni literatura in viri / Readings:

- C. R. F. Maunder, Algebraic topology. Dover Publications, 1980
- J. R. Munkres, Topology. A first course. Prentice-Hall, 1975
- S. B. Nadler, Jr., Continuum theory. An introduction. Marcel Dekker, 1992
- E. H. Spanier, Algebraic topology. McGraww-Hill, 1966

Dodatna literatura / Additional Readings:
- J. Dugundji, Topology, Allyn and Bacon, 1966
- Hatcher, Algebraic topology. Cambridge University Press, 2002
- J. Nagata, Modern dimension theory, Helderman Verlag, 1983
- W.T. Ingram, W. S. Mahavier: Inverse limits: from continua to chaos, Springer, New York, 2012

Cilji in kompetence:

- študentu predstaviti moderno topološko področje, kar lahko služi kot uvod v raziskovalno delo;
- Doseči poglobljeno razumevanje teoretskih in metodoloških konceptov s področja topologije
- Razviti sposobnost za samostojno reševanje najzahtevnejših problemov iz topologije
- Zmožnost razvijanja kritične refleksije na področju topologije

Objectives and competences:

- to present a modern topological area, which can serve as an introduction to student's research work;
- To achieve a deeper understanding of theoretical and methodological concepts of topology
- To develop the ability for solving the most challenging problems in topology
- Ability to develop critical reflection in topology

Predvideni študijski rezultati:

Znanje in razumevanje:

- poglobljeno znanje posebnega topološkega področja;
- poglobljeno razumevanje nekaterih posebnih topoloških pojmov.

Prenesljive/ključne spretnosti in drugi atributi:

- podlaga za raziskovalno delo na posebnem področju topologije.

Intended learning outcomes:

Knowledge and understanding:

- a deeper knowledge of a special topological topic;
- a deeper understanding of some special topological concepts.

Transferable/Key Skills and other attributes:

- a basis for research in a special topological area

Metode poučevanja in učenja:	Learning and teaching methods:
- predavanja; - konzultacije; - samostojni študij.	- lectures; - consultations; - self-study.

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
Sprotne naloge Teoretični izpit	50 % 50 %	Coursework Theoretical exam

Reference nosilca / Lecturer's references:

1. BANIČ, Iztok, TARANENKO, Andrej. Span of a graph : keeping the safety distance. *Discrete mathematics & theoretical computer science*. 2023, vol. 25, no. 1, 19 str. ISSN 1365-8050. DOI: 10.46298/dmtcs.9859. [COBISS.SI-ID 148408835], [JCR]
kategorija: 1A3

2. BANIČ, Iztok, KAC, Teja. Mapping theorems for rigid continua and their inverse limits. *Qualitative theory of dynamical systems*. 2022, vol. 21, iss. 4, str. 1-29. ISSN 1575-5460. DOI: 10.1007/s12346-022-00647-1. [COBISS.SI-ID 120844547], [JCR]
kategorija: 1A3

3. BANIČ, Iztok, GREENWOOD, Sina. A characterisation of the dimension of inverse limits of set-valued functions on intervals. *Fundamenta mathematicae*. 2020, vol. 249, no. 1, str. 1-19. ISSN 0016-2736. DOI: 10.4064/fm708-5-2019. [COBISS.SI-ID 24853768], [JCR]
kategorija: 1A3

4. BANIČ, Iztok, ERCEG, Goran, KENNEDY, Judy A. The Lelek fan as the inverse limit of intervals with a single set-valued bonding function whose graph is an arc. *Mediterranean journal of mathematics*. Jun. 2023, vol. 20, iss. 3, article no. 159, 24 str. ISSN 1660-5446. DOI: 10.1007/s00009-023-02323-3. [COBISS.SI-ID 148424195], [JCR]
kategorija: 1A2

5. BANIČ, Iztok, ČREPNJAK, Matevž, KAC, Teja. Markov set-valued functions on compact metric spaces. *Glasnik matematički. Serija 3*. 2024, vol. 59, no. 1, str. 193-212. ISSN 0017-095X. https://web.math.pmf.unizg.hr/glasnik/59.1/59(1)-09.pdf, DOI: 10.3336/gm.59.1.09. [COBISS.SI-ID 201394179], [Odprti dostop, JCR, SNIP, Scopus]
kategorija: 1A3