



Univerza v Mariboru
University of Maribor

Fakulteta za naravoslovje in
matematiko / Faculty of Natural
Sciences and Mathematics



OPIS PREDMETA / SUBJECT SPECIFICATION

Predmet:	Topološki digitalni prostori
Subject Title:	Topological Digital Spaces

Študijski program Study programme	Študijska smer Study field	Letnik Year	Semester Semester
Matematika / Mathematics	Splošna Matematika / General Mathematics	1. ali 2.	1., 2. ali 3.

Univerzitetna koda predmeta / University subject code:

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. Vaje Lab. Work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
45	-	30	-	-	135	7

Nosilec predmeta / Lecturer:

Iztok BANIČ

Jeziki /

Predavanja / Lecture:

slovenski / Slovenian

Languages:

Vaje / Tutorial:

slovenski / Slovenian

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

Prerequisites:

Poznavanje splošne topologije.

Knowledge of general topology.

Vsebina:

Contents (Syllabus outline):

Digitalni prostori.
Topologija na digitalnih prostorih. Prostori z najmanjšo bazo. Topološke lastnosti. Povezanost.

Digital spaces.
Topology on digital spaces.
Spaces with a smallest basis. Topological properties. Connectedness.

Topologije na digitalni premici. Premica Khalimskega. n -prostor Khalimskega.

Topologies on the Digital Line. The Khalimsky Line. Khalimsky n -space.

Zvezne funkcije.
Razširitve zveznih funkcij.

Continuous functions.
Extensions of continuous functions.

Digitalne premice.
Digitalizacija. Rosenfeldove premice. Povezane premice.

Digital lines.
Digitization. Rosenfeld lines. Connected lines.

Mnogoterosti Khalimskega.
Lok in mnogoterost Khalimskega. Khalimskeova povezanost s potmi. Klasifikacija 1-mnogoterosti Khalimskega. 2-mnogoterosti in ploskve.

Khalimsky manifolds.
Khalimsky arcs and manifolds. Khalimsky path connectedness. Classification of Khalimsky 1-manifolds. 2-manifolds and surfaces.

Temeljni študijski viri / Textbooks:

J.R.Munkres: Topology: a first course, Englewood Cliffs, NJ, Prentice-Hall, 1975

C. O. Kiselman: Digital geometry and mathematical morphology, Lecture Notes, Uppsala University, Department of Mathematics, (2002). Dostopno na www.math.uu.se/~kiselman

E. Melin: Connectedness and continuity in digital spaces with the Khalimsky topology. Project Report, Uppsala University, Department of Mathematics, 9 (2003). Dostopno na www.math.uu.se/~melin

Cilji:

Temeljito spoznati topološke digitalne prostore in njihove lastnosti.

Temeljito spoznati prostor Khalimskega.

Objectives:

To know thoroughly about topological digital spaces and their properties.

To know thoroughly Khalimsky space.

Predvideni študijski rezultati:

Znanje in razumevanje:

Razumevanje in uporaba osnovnih lastnosti digitalnih prostorov, digitalne premice in topologije na njih.

Razumevanje zveznih funkcij na digitalnih prostorih.

Prenesljive/ključne spretnosti in drugi atributi:

Prenos znanja v zvezi digitalnimi prostori na druga področja (računalništvo, teorija grafov).

Intended learning outcomes:

Knowledge and Understanding:

Be able to understand and implement basic properties of digital spaces, digital lines and topology on them.

Be able to understand about continuous functions on digital spaces.

Transferable/Key Skills and other attributes:

Knowledge transfer of the concepts, connected with digital spaces into other fields (computer science, graph theory).

Metode poučevanja in učenja:

- Predavanja
- Seminarske vaje
- Individualno delo

Learning and teaching methods:

- Lectures
- Tutorial
- Individual work

Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

Pisni izpit
Ustni izpit

50%, 50%

Written exam –problems
Oral exam

Materialni pogoji za izvedbo predmeta :

- Predavalnica

Material conditions for subject realization

- Lecture hall

Obveznosti študentov:

(pisni, ustni izpit, naloge, projekti)

Pisni izpit
Ustni izpit

Students' commitments:

(written, oral examination, coursework, projects):

Written exam
Oral exam