



Univerza v Mariboru
University of Maribor



FAKULTETA ZA
NARAVOSLOVJE IN
MATEMATIKO
FACULTY OF
NATURAL SCIENCE and
MATHEMATICS

UČNI NAČRT PREDMETA / SUBJECT SPECIFICATION

Predmet:	Izbrana poglavja iz diskretne matematike
Subject Title:	Topics in Discrete Mathematics

Študijski program Study programme	Študijska smer Study field	Letnik Year	Semester Semester
Matematika		1 ali 2	1 ali 4
Mathematics		1 or 2	1 or 4

Univerzitetna koda predmeta / University subject code:

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Labor work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
30					120	5

Nosilec predmeta / Lecturer:

Jeziki / Predavanja / Lecture:
Languages: Vaje / Tutorial:

Pogoji za opravljanje študijskih obveznosti:

Poznanje temeljnih konceptov diskretne matematike: klasične in algebraične kombinatorike, teorije grafov, teorije načrtov. Poznavanje osnov linearne algebre, teorije grup, kombinatorike delno urejenih množic.

Vsebina:

Izbrana so posebna poglavja iz teorije grafov, klasične in algebraične kombinatorike, uporab diskretne matematike, ali katerega drugega modernega področja diskretne matematike. Izbira poglavij je odvisna od interesa in raziskovalne usmerjenosti študentov ter trendov v sodobni diskretni matematiki. Spodaj navedena literatura praviloma služi le kot osnova in je nadgrajena z bolj specializiranimi teksti.

Prerequisites:

Basic knowledge of fundamental concepts of discrete mathematics: classical and algebraic combinatorics, graph theory, design theory. Knowledge of basic linear algebra, group theory, combinatorics of partially ordered sets.

Content (Syllabus outline):

Special topics in graph theory, classical and algebraic combinatorics, applications of discrete mathematics, or some other area of contemporary discrete mathematics are chosen. The choice depends on students' interests and their research orientation, as well as on trends in modern discrete mathematics. The literature below in principle serves only as a basis, and is combined with more specialized texts.

Temeljna literatura in viri / Textbooks:

- M. Aigner, Discrete Mathematics, American Mathematical Society, Providence, 2007.
- R. Diestel, Graph Theory, Third Edition, Springer, Berlin, 2005.
- C. Godsil, G. Royle, Algebraic Graph Theory, Springer, New York, 2001.
- P. Hell, J. Nešetřil, Graphs and Homomorphisms, Oxford University Press, Oxford, 2004.
- W. Imrich, S. Klavžar, Product Graphs : Structure and Recognition, Wiley-Interscience, New York, 2000.
- J. H. van Lint, R. M. Wilson, A Course in Combinatorics, Cambridge University Press, Cambridge, 2001.
- B. Mohar, C. Thomassen, Graphs on Surfaces, Johns Hopkins University Press, Baltimore, 2001.

Cilji:

- študentu predstaviti izbrano področje moderne diskretne matematike, kar lahko služi kot uvod v raziskovalno delo;
- razvijati sposobnosti študenta za samostojno reševanje problemov in razumevanje zahtevnih matematičnih konceptov.

Objectives:

- to present a selected area of modern discrete mathematics, which can serve as an introduction to student's research work;
- to develop student's skills for solving problems and for understanding deep mathematical concepts.

Predvideni študijski rezultati:Znanje in razumevanje:

- poglobljeno znanje posebnega področja diskretne matematike;
- poglobljeno razumevanje nekaterih posebnih pojmov diskretne matematike.

Prenesljive/ključne spretnosti in drugi atributi:

- podlaga za raziskovalno delo na posebnem področju diskretne matematike.

Intended learning outcomes:Knowledge and understanding:

- a deeper knowledge of a special topic in discrete mathematics;
- a deeper understanding of some special concepts in discrete mathematics.

Transferable/Key Skills and other attributes:

- a basis for research in a special area of discrete mathematics.

Metode poučevanja in učenja:

- predavanja;
- priprava seminarja;
- konzultacije;
- samostojni študij.

Teaching and learning methods:

- lectures;
- seminar work;
- consultations;
- self-study.

Načini ocenjevanja:Način (pisni izpit, ustno izpraševanje, naloge, projekt):

- seminarsko predavanje;
- pisni izdelek;
- ustni izpit.

Delež (v %) /
Weight (in %)20 %
30 %
50 %**Assessment methods:**Type (examination, oral, coursework, project):

- seminar talk;
- written work;
- oral examination.