



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Programska oprema za matematike
Course title:	Software for mathematicians

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester
Enovit magistrski študijski program druge stopnje Predmetni učitelj	/	3. ali/or 4.	6. ali/or 8.
Five-year master's degree program Subject Teacher	/		

Vrsta predmeta / Course type

Izbirni / Elective

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
15			30		45	3

Nosilec predmeta / Lecturer:

Andrej Taranenko

Jeziki /

Predavanja / Lectures:

slovenski

Languages:

Slovenian

Vaje / Tutorial:

slovenski / Slovenian

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

Prerequisites:

Jih ni.

None.

Vsebina:

- Oblikovanje matematičnih besedil: uporaba in osnove programa LaTeX
- Programi za numerično računanje: uporaba in osnove programa za numerično računanje, npr. SciLab, MatLab, Octave, Sage
- Programi za simbolno računanje: uporaba in osnove programa za simbolno računanje, npr. Mathematica, Maxima, Sage
- Programi za statistično obdelavo podatkov: uporaba in osnove programa za statistično obdelavo podatkov, npr. SPSS, R

Content (Syllabus outline):

- Editing mathematical texts: basics and usage of LaTeX
- Software for numerical computing: basics and usage of a numerical computing software like SciLab, Matlab, Octave, Sage
- Software for algebraic computing: basics and usage of a algebraic computing software like Mathematica, Maxima, Sage
- Software for statistics: basics and usage of a software for statistics like SPSS, R

Temeljni literatura in viri / Readings:

Odvisno od izbrane programske opreme. Npr.:

- Oetiker Tobias in drugi, Ne najkrajši uvod v LaTeX. (prosto dostopno na spletu)
- Griffiths D. F., Higham D. J., Learning latex, Philadelphia SIAM, 1997.
- Abell M. L., Braselton J. P., Mathematica by example, San Diego, Academic press, 1997
- Gašperšič M., Matlab do nezavesti, Trzin, 2009.
- Morgan G. A. in drugi, SPSS for introductory statistics: use and interpretation, London : Lawrence Erlbaum, 2004

Cilji in kompetence:

- Spoznati osnove oblikovanja matematičnih besedil s paketom LaTeX
- Spoznati osnove dela s programom za numerično računanje.
- Spoznati osnove dela s programom za simbolno računanje.
- Spoznati osnove dela s programom za statistično obdelavo podatkov.

Objectives and competences:

- To know basics of mathematical text editing using the LaTeX package.
- To know basics of a software for numerical computing.
- To know basics of a software for algebraic computing.
- To know basics of a software for statistical data manipulation.

Predvideni študijski rezultati:

Znanje in razumevanje:

- Zna uporabljati paket LaTeX pri oblikovanju matematičnih besedil.
- Zna uporabljati program za numerično računanje.
- Zna uporabljati program za simbolno računanje.
- Zna uporabljati program za statistično obdelavo podatkov.

Intended learning outcomes:

Knowledge and Understanding:

- Knows how to use LaTeX when editing mathematical texts.
- Knows how to use numerical computing software.
- Knows how to use algebraic computing software.
- Knows how to use statistical data manipulation software.

Prenesljive/ključne spretnosti in drugi atributi:

- Sposoben poiskati ustrezno programsko opremo za reševanje problemov.
- Sposoben določiti vrsto programske opreme za pomoč pri reševanju danega problema.

Transferable/Key Skills and other attributes:

- Is capable to find appropriate software for help with solving problems.
- Is capable to determine thy type of software needed for solving a certain problem.

Metode poučevanja in učenja:

Predavanja

Laboratorijske vaje

Samostojno delo

Learning and teaching methods:

Lectures

Laboratory exercises

Individual work

Delež (v %) /

Načini ocenjevanja:

Weight (in %)

Assessment:

- Domače naloge
- Projekt

Vsaka izmed naštetih obveznosti mora biti opravljena s pozitivno oceno.

50%

50%

- Homework
- Project

Each of the mentioned commitments must be assessed with a passing grade.

Reference nosilca / Lecturer's references:

1. TARANENKO, Andrej, VESEL, Aleksander. 1-factors and characterization of reducible faces of plane elementary bipartite graphs. *Discuss. Math., Graph Theory*, 2012, vol. 32, no. 2, str. 289-297, doi: 10.7151/dmgt.1607. [COBISS.SI-ID 19104264]
2. TARANENKO, Andrej, ŽIGERT, Petra. Resonant sets of benzenoid graphs and hypercubes of their resonance graphs. *MATCH Commun. Math. Comput. Chem. (Krag.)*, 2012, vol. 68, no. 1, str. 65-77. <http://www.pmf.kg.ac.rs/match/content68n1.htm>. [COBISS.SI-ID 16051990]
3. KLAVŽAR, Sandi, SALEM, Khaled, TARANENKO, Andrej. Maximum cardinality resonant sets and maximal alternating sets of hexagonal systems. *Comput. math. appl. (1987)*. [Print ed.], 2010, vol. 59, no. 1, str. 506-513. <http://dx.doi.org/10.1016/j.camwa.2009.06.011>. [COBISS.SI-ID 15383641]
4. TARANENKO, Andrej, VESEL, Aleksander. Characterization of reducible hexagons and fast decomposition of elementary benzenoid graphs. *Discrete appl. math.* [Print ed.], 2008, vol. 156, iss. 10, str. 1711-1724. <http://dx.doi.org/10.1016/j.dam.2007.08.029>, doi:10.1016/j.dam.2007.08.029. [COBISS.SI-ID 16140552]
5. TARANENKO, Andrej, VESEL, Aleksander. On elementary benzenoid graphs: new characterization and structure of their resonance graphs. *MATCH Commun. Math. Comput. Chem. (Krag.)*, 2008, #Vol. #60, #no. #1, str. 193-216, ilustr. [COBISS.SI-ID1939989]