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** **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 / Languages:		
	Predavanja / Lectures:	**slovenski** **Slovenian**
	Vaje / Tutorial:	**slovenski / Slovenian**

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisits:**
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:	Transferable/Key Skills and other attributes:
• Sposoben poiskati ustrezno programsko opremo za reševanje problemov. • Sposoben določiti vrsto programske opreme za pomoč pri reševanju danega problema.	• 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:	**Learning and teaching methods:**
Predavanja Laboratorijske vaje Samostojno delo	Lectures Laboratory exercises Individual work

Načini ocenjevanja:	Delež (v %) / 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. ZHU, Enqiang, TARANENKO, Andrej, SHAO, Zehui, XU, Jin. On graphs with the maximum edge metric dimension. Discrete applied mathematics, ISSN 0166-218X. [Print ed.], March 2019, vol. 257, str. 317-324. https://doi.org/10.1016/j.dam.2018.08.031, doi: 10.1016/j.dam.2018.08.031. [COBISS.SI-ID 18584665]
2. PETERIN, Iztok, SCHREYER, Jens, FECKOVÁ ŠKRABUL'ÁKOVÁ, Erika, TARANENKO, Andrej. A note on the Thue chromatic number of lexicographic produts of graphs. Discussiones mathematicae, Graph theory, ISSN 1234-3099, 2018, vol. 38, iss. 3, str. 635-643. http://www.discuss.wmie.uz.zgora.pl/php/discuss3.php?ip=&url=pdf&nIdA=25507&nIdSesji=-1, doi: 10.7151/dmgt.2032. [COBISS.SI-ID 18373465]
3. KELENC, Aleksander, KUZIAK, Dorota, TARANENKO, Andrej, YERO, Ismael G. Mixed metric dimension of graphs. Applied mathematics and computation, ISSN 0096-3003. [Print ed.], 2017, vol. 314, str. 429-438, doi: 10.1016/j.amc.2017.07.027. [COBISS.SI-ID 23331080]
4. BANIČ, Iztok, TARANENKO, Andrej. Measuring closeness of graphs - the Hausdorff distance. Bulletin of the Malaysian Mathematical Society, ISSN 0126-6705, 2017, vol. 40, iss. 1, str. 75-95, doi: 10.1007/s40840-015-0259-1. [COBISS.SI-ID 21722376]
5. KELENC, Aleksander, TARANENKO, Andrej. On the Hausdorff distance between some families of chemical graph. MATCH Communications in Mathematical and in Computer Chemistry, ISSN 0340-6253, 2015, vol. 74, no. 2, str. 223-246. http://match.pmf.kg.ac.rs/electronic_versions/Match74/n2/match74n2_223-246.pdf. [COBISS.SI-ID 21391368]