

**UČNI NAČRT PREDMETA/COURSE SYLLABUS**

|               |                        |
|---------------|------------------------|
| Predmet:      | MATEMATIČNE METODE 1   |
| Course title: | MATHEMATICAL METHODS 1 |

| Študijski program in stopnja<br>Study programme and level | Študijska smer<br>Study field | Letnik<br>Academic year | Semester<br>Semester |
|---|-------------------------------|-------------------------|----------------------|
| LOGISTIKA SISTEMOV 1.stopnja                              |                               | 1.                      | 2.                   |
| SYSTEM LOGISTICS 1 <sup>st</sup> degree                   |                               | 1.                      | 2.                   |

Vrsta predmeta / Course type: OBVEZNI

Univerzitetna koda predmeta / University course code: UN

| Predavanja<br>Lectures | Seminar<br>Seminar | Vaje<br>Tutorial | Klinične vaje<br>Laboratory work | Druge oblike študija<br>Field work | Samost. delo<br>Individ. work | ECTS |
|------------------------|--------------------|------------------|----------------------------------|------------------------------------|-------------------------------|------|
| 36 a-P<br>24 e-P       |                    | 27 a-V<br>18 e-V |                                  |                                    | 135                           | 8    |

Nosilec predmeta / Lecturer: MAJA FOŠNER

Jeziki / Predavanja / Lectures: SLOVENSKI / SLOVENE  
 Languages: Vaje / Tutorial: SLOVENSKI / SLOVENE

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti: Ni pogojev. Prerequisites: None.

**Vsebina:**

- Uvod: množice, številske množice, primeri.
- Procentni, obrestni račun.
- Matrična algebra: matrice, računanje z matrikami, determinante, inverzna matrika, računanje inverzne matrice, matrične enačbe, sistemi linearnih enačb, primeri.
- Vektorska algebra: vektorji, seštevanje in odštevanje vektorjev, množenje vektorja s skalarjem, skalarni produkt, vektorski produkt, mešani produkt, vektorski prostor, primeri.
- Zaporedja in vrste: zaporedja, limita, stekališče, omejenost, monotonost, vrste, geometrijska vrsta, primeri.
- Funkcije ene spremenljivke: osnovni pojmi, zveznost funkcije, limita funkcije, lastnosti zveznih funkcij, pregled elementarnih funkcij, načrtovanje funkcij, primeri.
- Kombinatorika, verjetnost.

**Content (Syllabus outline):**

- Introduction: sets, number sets, examples.
- Ratios, rates, & percentages.
- Matrix algebra: matrices, calculating with matrices, determinants, inverse matrix, calculating inverse matrices, matrix equations, systems of linear equations, examples.
- Vector algebra: vectors, addition and subtraction of vectors, multiplication of a vector by a scalar, the scalar product, the vector product, the mixed product, the vector area, examples.
- Sequences and series: sequences, limit, accumulation point, limitation, monotony, geometric series, examples.
- Functions of one variable: basic terminology, continuity of a function, function limit, characteristics of continuous functions, overview of continuous functions, function planning, examples.
- Combinatorics, probability.

**Temeljna literatura in viri / Readings:**

E-gradivo predmeta.  
 FOŠNER, Maja. Matematične metode: elektronski učbenik. Celje: Fakulteta za logistiko, 2009. 1 optični disk (CD-ROM). ISBN 978-961-6562-29-4.  
 FOŠNER, Maja, MARCEN, Benjamin. Zbirka nalog iz matematičnih metod I. Celje: Fakulteta za logistiko, 2010. 125 str., graf.prikazi. ISBN 978-961-6562-47-8.

[http://fl.uni-mb.si/wp-content/uploads/2011/04/Prirocnik\\_Zbirka\\_nalog\\_MM1.pdf](http://fl.uni-mb.si/wp-content/uploads/2011/04/Prirocnik_Zbirka_nalog_MM1.pdf).

Dodatna literatura:

Jamnik J.: Matematika, Ljubljana, Društvo matematikov, fizikov in astronomov, Ljubljana, 1990 ISBN 961-212-034-X, COBISS.SI-ID 43443968.

Vidav, I.: Višja matematika I, Ljubljana: Društvo matematikov, fizikov in astronomov Slovenije, 1994 ISBN: 961-212-031-5 COBISS.SI-ID:40515072.

Usenik, J.: Matematične metode v prometu, UL FPP, 1998, ISBN 961-6044-31-1 COBISS.SI-ID: 75814400.

FOŠNER, Maja, ZMAZEK, Blaž, ŽEROVNIK, Janez. Matematične metode v logistiki : zapiski predavanj. Celje: Fakulteta za logistiko, 2008. 259 str., ilustr. ISBN 978-961-6562-25-6. [COBISS.SI-ID 242349824].

POVH, Janez, PUSTAVRH, Simona, FOŠNER, Maja, GORŠE PIHLER, Melita, ZALAR, Bojana. Matematične metode v uporabi, (Izbrana poglavja iz matematike in računalništva, 42). 1. natis. Ljubljana: DMFA - založništvo, 2010. 269 str., ilustr. ISBN 978-961-212-200-3. [COBISS.SI-ID 235459328].

Cilji in kompetence:

Študenti spoznajo in osvojijo pojme linearne algebre, matematične analize, kombinatorike ter se naučijo natančnosti izražanja, pisanja in razmišljanja.

Cilj: kritično razmišljanje in uporaba teoretičnega znanja v konkretnih primerih in iskanju rešitev problemov ter njihove realizacije na področju logistike.

Objectives and competences:

Students are familiarized with and grasp the concepts of algebra and mathematical analysis. They learn to write, think and express themselves accurately and they gain the ability to apply their theoretical knowledge in practice in the field of logistics.

Goal: critically thinking and use theoretical knowledge in concrete cases, and find solutions to problems and their realization in the field of logistics.

Predvideni študijski rezultati:

- Sposobnost obvladanja standardnih metod in postopkov matematične analize, algebre ter kombinatorike.
- Sposobnost uporabe pridobljenega teoretičnega znanja v praksi.
- Avtonomnost v svojem strokovnem delu.

Pridobljeno teoretično in aplikativno znanje imajo študenti možnost uporabiti pri znanstveno raziskovalnem delu.

Intended learning outcomes:

- Ability to master standard methods and procedures of mathematical analysis, algebra and combinatorics.
- Ability to use the acquired knowledge in practice.
- Independence in professional work.

Students acquire the theoretical and applicative knowledge in the field of scientific research.

Metode poučevanja in učenja:

Predavanja: pri predavanjih študent spozna teoretične vsebine predmeta. Del predavanj se izvaja na klasični način v predavalnici, del pa v obliki e-predavanj (e-predavanja se lahko izvajajo na videokonferenčni način ali s pomočjo posebej v ta namen didaktično pripravljenih e-gradiv v virtualnem elektronskem učnem okolju).

Vaje: pri vajah študent utrdi teoretično znanje in spozna aplikativne možnosti. Del vaj se izvaja na klasični način v predavalnici, del pa v obliki vaj (e-vaje se lahko izvajajo na videokonferenčni način ali s pomočjo posebej v ta namen didaktično pripravljenih e-gradiv v virtualnem elektronskem učnem okolju).

Learning and teaching methods:

Lectures: Students understand the theoretical frameworks of the course. Part of the lecture course is in a classroom while the rest is in the form of e-learning (e-lectures may be given via video-conferencing or with the help of specially designed e-material in a virtual electronic learning environment).

Tutorials: Students enhance their theoretical knowledge and are able to apply it. Part of the seminar is in a classroom while the rest is in the form of e-learning (e-tutorials may be given via video-conferencing or with the help of specially designed e-material in a virtual electronic learning environment).

Načini ocenjevanja: Delež (v %) / Weight (in %) Assessment:

|   |              |   |
|---|--------------|---|
| Opravljenе obveznosti e-predavanj in e-vaj so pogoj za pristop k izpitu.<br>Pisni izpit (računski del).<br>Pisni del (teorija). | 80 %<br>20 % | Successful completion of e-lectures and e-tutorials is a prerequisite for entering the exam.<br>Written examination (calculation part).<br>Oral examination (theory). |
|---|--------------|---|

Reference nosilca / Lecturer's references:

1. FOŠNER, Maja, MARCEN, Benjamin, VUKMAN, Joso. On functional equation related to  $(m, n)$ -Jordan centralizers in prime rings. *Bulletin of the Malaysian mathematical sciences society*, ISSN 2180-4206, 2018, str. [1-17]. [https://link.springer.com/article/10.1007/s40840-018-0650-9?wt\\_mc=Internal.Event.1.SEM.ArticleAuthorOnlineFirst](https://link.springer.com/article/10.1007/s40840-018-0650-9?wt_mc=Internal.Event.1.SEM.ArticleAuthorOnlineFirst), doi: [10.1007/s40840-018-0650-9](https://doi.org/10.1007/s40840-018-0650-9). [COBISS.SI-ID [512927037](https://www.cobiss.si/record/512927037)].
2. FOŠNER, Maja, MARCEN, Benjamin, VUKMAN, Joso. On functional equation related to a class of generalized inner derivations in prime rings. *Bulletin of the Malaysian Mathematical Society*, ISSN 0126-6705, 2018, vol. 41, iss. 2, str. 687-707, doi: [10.1007/s40840-016-0341-3](https://doi.org/10.1007/s40840-016-0341-3). [COBISS.SI-ID [22067208](https://www.cobiss.si/record/22067208)].
3. FOŠNER, Maja, MARCEN, Benjamin, VUKMAN, Joso. A result in the spirit of Herstein theorem. *Glasnik matematički. Serija 3*, ISSN 0017-095X, 2018, vol. 53, no. 1, str. 73-95. <http://dx.doi.org/10.3336/gm.53.1.06>, doi: [10.3336/gm.53.1.06](https://doi.org/10.3336/gm.53.1.06). [COBISS.SI-ID [18389081](https://www.cobiss.si/record/18389081)].
4. FOŠNER, Maja, MARCEN, Benjamin, VUKMAN, Joso. A result in the spirit of Herstein theorem. *Glasnik matematički*, ISSN 1846-7989, 2018, vol. 53, no. 1, str. 73-95. [https://web.math.pmf.unizg.hr/glasnik/53.1/53\(1\)-06.pdf](https://web.math.pmf.unizg.hr/glasnik/53.1/53(1)-06.pdf). [COBISS.SI-ID [512926525](https://www.cobiss.si/record/512926525)].
5. FOŠNER, Maja, MARCEN, Benjamin, VUKMAN, Joso. On some functional equation arising from  $(m, n)$ -Jordan derivations of prime rings. *Publicationes mathematicae*, ISSN 2064-2849. [Online ed.], 2018, vol. 92, iss. 1/2, str. 133-146. [http://publi.math.unideb.hu/load\\_jpg.php?p=2198](http://publi.math.unideb.hu/load_jpg.php?p=2198), doi: [10.5486/PMD.2018.7780](https://doi.org/10.5486/PMD.2018.7780). [COBISS.SI-ID [512895549](https://www.cobiss.si/record/512895549)].
6. FOŠNER, Maja, REHMAN, Nadeem Ur, BANO, Tarannum. A note on generalized derivations on prime rings. *Arabian journal of mathematics*, ISSN 2193-5351, 2017, str. [1-5]. <https://link.springer.com/content/pdf/10.1007/s40065-017-0193-1.pdf>, doi: [10.1007/s40065-017-0193-1](https://doi.org/10.1007/s40065-017-0193-1). [COBISS.SI-ID [512895293](https://www.cobiss.si/record/512895293)].
7. FOŠNER, Maja, ŠIROVNIK, Nejc, VUKMAN, Joso. A result related to Herstein theorem. *Bulletin of the Malaysian Mathematical Society*, ISSN 0126-6705, Jul. 2016, vol. 39, iss. 3, 885-899 str. <http://link.springer.com/article/10.1007/s40840-015-0196-z>, doi: [10.1007/s40840-015-0196-z](https://doi.org/10.1007/s40840-015-0196-z). [COBISS.SI-ID [512695869](https://www.cobiss.si/record/512695869)].
8. FOŠNER, Maja, MARCEN, Benjamin, REHMAN, Nadeem Ur. On skew-commuting mappings in semiprime rings. *Mathematica slovacica*, ISSN 1337-2211, Avg. 2016, vol. 66, iss. 4, str. 811-814. <https://doi.org/10.1515/ms-2015-0183>, doi: [10.1515/ms-2015-0183](https://doi.org/10.1515/ms-2015-0183). [COBISS.SI-ID [512822589](https://www.cobiss.si/record/512822589)].
9. FOŠNER, Maja. A result concerning additive mappings in semiprime rings. *Mathematica slovacica*, ISSN 0139-9918, Dec. 2015, vol. 65, iss. 6, str. 1271-1276. <http://www.degruyter.com/view/j/ms.2015.65.issue-6/ms-2015-0088/ms-2015-0088.xml?format=INT>, doi: [10.1515/ms-2015-0088](https://doi.org/10.1515/ms-2015-0088). [COBISS.SI-ID [512753213](https://www.cobiss.si/record/512753213)].