

UČNI NAČRT PREDMETA / COURSE SYLLABUS

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| Ime predmeta: | UPORABA STATISTIČNIH METOD V LOGISTIKI |
| Course title: | APPLICATION OF STATISTICAL METHODS IN LOGISTICS |

| Študijski program in stopnja Study programme and cycle | Študijska smer Study option | Letnik Year of study | Semester Semester |
|--|---------------------------------------|--------------------------------|-----------------------------|
| GOSPODARSKA IN TEHNIŠKA LOGISTIKA 1. stopnja | | 2. | 3 |
| PROFESSIONAL HIGHER EDUCATION STUDY PROGRAMME ECONOMIC AND TECHNICAL LOGISTICS 1 st degree | | 2. | 3 |

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| Vrsta predmeta (obvezni ali izbirni) / Course type (compulsory or elective) | OBVEZNI |
| | COMPULSORY |

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| Univerzitetna koda predmeta / University course code: | VS |
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| Predavanja Lectures | Seminar Seminar | Vaje Tutorial | | | Klinične vaje Clinical training | Druge oblike študija Other forms of study | Samost. delo Individual work | ECTS |
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| | | a-V | e-V | LV | | | | |
| 21 e-P 24 a-P | | 6 | 12 | 12 | | | 105 | 6 |

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| Nosilec predmeta / Course coordinator: | TOMAŽ KRAMBERGER |
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| Jeziki /Languages: | Predavanja / Lectures: | SLOVENSKI/SLOVENE |
| | Vaje / Tutorial: | SLOVENSKI/SLOVENE |

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| Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti: | Prerequisites for enrolling in the course or for performing study obligations: |
| Ni pogojev. | None. |

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| Vsebina (kratek pregled učnega načrta): | Content (syllabus outline): |
| Urejanje in prikazovanje podatkov. Statistične mere: srednje vrednosti, mere variabilnosti, asimetrije, sploščenosti. Osnove verjetnostnega računa. Slučajne spremenljivke, najpomembnejše diskretne in zvezne porazdelitve, številске karakteristike slučajnih spremenljivk. Vzorčni pristop: intervalno ocenjevanje statističnih parametrov. Testiranje domnev o vrednostih statističnih parametrov in o porazdelitvah. Osnove regresije in korelacije. Osnove analize časovnih vrst. | Editing and presenting data. Statistical measures: mean values, variability measures, asymmetries, kurtosis. Basis of probability calculus. Random variables, most important discrete and continuous distributions, numerical characteristics of random variables. Sample approach: interval estimation of statistical parameters. Testing assumptions on values of statistical parameters and on disseminations. Basics of regression and correlation. Basics of analysis of time series. |

Temeljni literatura in viri / Reading materials:

E-gradivo predmeta.

KRAMBERGER, Tomaž. *Osnove modeliranja u logistici*. Subotica: [Ekonomski fakultet], 2015. 290 str., ilustr. ISBN 978-86-84819-98-9. [COBISS.SI-ID [512672317](#)].

Tominc, P.: Statistika v prometu, Univerza v Mariboru, Fakulteta za gradbeništvo, Maribor, 2000.

Spiegel, M.: *Schaum's outline of theory and problems of statistics*, London, McGraw-Hill International, 1992.

Cilji in kompetence:

Cilji predmeta so:

- seznaniti študente z različnimi načini urejanja in prikazovanja podatkov,
- seznaniti študente z različnimi statističnimi merami,
- seznaniti študente z osnovami verjetnostnega računa,
- seznaniti študente s slučajnimi spremenljivkami ter najpomembnejšimi diskretnimi in zveznimi porazdelitvami,
- seznaniti študente z vzorčnim pristopom,
- seznaniti študente z metodami testiranja domnev o vrednosti statističnih parametrov in porazdelitvah,
- seznaniti študente z osnovami statistične regresije in korelacije,
- seznaniti študente z osnovami analize časovnih vrst.

Kompetence, ki jih študentje osvojijo:

- sposobnost urediti in prikazati podatke;
- sposobnost prepoznati različne statistične mere in so jih sposobni uporabiti,
- sposobnost uporabe osnovnega verjetnostnega računa,
- sposobnost prepoznavanja slučajnih spremenljivk ter najpomembnejših diskretnih in zveznih porazdelitev,
- sposobnost uporabe vzorčnega pristopa pri analizi podatkov,
- sposobnost testiranja domnev o vrednosti statističnih parametrov in porazdelitvah,
- sposobnost razumevanja statistične regresije in korelacije,
- sposobnost osnovnega razumevanja analize časovnih vrst.

Objectives and competences:

The objectives of the course are:

- show how to edit and display data;
- present statistical measures,
- present the basics of probability calculus,
- present random variables and the most important discrete and continuous distributions,
- present a model approach,
- show methods of testing assumptions about the value of statistical parameters and distributions,
- show the basics of statistical regression and correlation,
- present the basics of time series analysis.

Competences that students acquire:

- ability to edit and display data;
- the ability to identify and be able to use different statistical measures,
- ability to use the basic probability calculus,
- ability to identify random variables and the most important discrete and continuous distributions,
- ability to use a sample approach in data analysis,
- ability to test assumptions about the value of statistical parameters and distributions,
- ability to understand statistical regression and correlation,
- ability to have a basic understanding of time series analysis.

Predvideni študijski rezultati:

Študent je ob zaključku predmeta zmožen:

- pravilno urediti in prikazati podatke;
- iz podatkov izračunati statistične mere;
- uporabiti verjetnostni račun za izračun verjetnosti za nek dogodek;
- zna prepoznati različne vrste diskretnih in zveznih porazdelitev ter ji glede na to analizirati,
- zna oceniti statistične parametre baze podatkov,
- zna izvesti nekaj statističnih analiz in testov na bazi podatkov,
- iz podatkov zna izračunati korelacijo in regresijo,
- pozna osnove časovnih vrst.

Prenesljive/ključne spretnosti in drugi atributi:

Študenti se usposobijo za uporabo teoretičnega znanja v praktičnih primerih, predvsem pri predmetih Ravnanje z zaposlenimi, Metode in tehnike planiranja logističnih procesov in Vodenje projektov v logistiki.

Pridobljeno teoretično in aplikativno znanje imajo študenti možnost uporabiti pri obveznem praktičnem usposabljanju v organizaciji, ki je del študijskega programa.

Intended learning outcomes:

Upon completion of the course, the student is able to:

- edit and display data correctly;
- calculate statistical measures from the data;
- use a probability account to calculate the probability of an event;
- is able to identify different types of discrete and continuous distributions and analyze them accordingly,
- is able to estimate the statistical parameters of the database,
- can perform some statistical analyzes and tests on a database,
- can calculate correlation and regression from data,
- knows the basics of time series.

Transferable/key skills and other attributes:

Students gain the ability to apply theoretical knowledge in practical examples, especially in courses Managing human resources, Methods and technics for design of logistic processes and Project leadership in logistics.

The acquired theoretical and applicative knowledge enables students to use it at practical training in an organization that is part of the study program.

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 e-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 %) /
Share (in %)

Assessment methods:

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| Opravljene obveznosti e-predavanj in e-vaj so pogoj za pristop k izpitu. | | Successful completion of e-lectures and e-tutorials is a prerequisite for entering the exam. |
| Predavanja: <ul style="list-style-type: none"> ▪ Pisni izpit, | 80 % | Lectures: <ul style="list-style-type: none"> ▪ Written exam |
| Vaje: <ul style="list-style-type: none"> ▪ ocena e-vaj. | 20 % | Tutorials: <ul style="list-style-type: none"> ▪ Grade from e-tutorials. |

Reference nosilca / Course coordinator's references:

1. KRAMBERGER, Tomaž, MONIOS, Jason, ŠTRUBELJ, Gregor, RUPNIK, Bojan. Using dry ports for port competition : the case of Adriatic ports. *International journal of shipping and transport logistics*, ISSN 1756-6525. [Online ed.], 2018, vol. 10, iss. 1, str. 18-44, ilustr. <http://www.inderscience.com/info/inarticle.php?artid=88319>, doi: [10.1504/IJSTL.2018.10008533](https://doi.org/10.1504/IJSTL.2018.10008533). [COBISS.SI-ID [512889661](https://cobiss.si/512889661)].
2. BUTTON, Kenneth John, KRAMBERGER, Tomaž, GROBIN, Klemen, ROSI, Bojan. A note on the effects of the number of low-cost airlines on small tourist airports' efficiencies. *Journal of Air Transport Management*, ISSN 1873-2089. [Online ed.], 2018, vol. 72, str. 92-97. <https://www.sciencedirect.com/science/article/pii/S096969971730114X>, doi: [10.1016/j.jairtraman.2017.12.003](https://doi.org/10.1016/j.jairtraman.2017.12.003). [COBISS.SI-ID [512892733](https://cobiss.si/512892733)].
3. BUTTON, Kenneth John, KRAMBERGER, Tomaž, VIZINGER, Tea, INTIHAR, Marko. Economic implications for Adriatic seaport regions of further opening of the Northern Sea Route. *Maritime economics & logistics*, ISSN 1479-294X. [Spletna izd.], Mar. 2017, vol. 19, iss. 1, str. 52-67, ilustr. <http://www.palgrave-journals.com/mel/journal/vaop/ncurrent/abs/mel201525a.html>, doi: [10.1057/mel.2015.25](https://doi.org/10.1057/mel.2015.25). [COBISS.SI-ID [512702781](https://cobiss.si/512702781)].
4. INTIHAR, Marko, KRAMBERGER, Tomaž, DRAGAN, Dejan. Container throughput forecasting using dynamic factor analysis and ARIMAX model. *Promet*, ISSN 0353-5320. [Print ed.], 2017, vol. 29, no. 5, str. 529-542, ilustr. [COBISS.SI-ID [512879421](https://cobiss.si/512879421)].
5. KRAMBERGER, Tomaž, RUPNIK, Bojan, ŠTRUBELJ, Gregor, PRAH, Klemen. Port hinterland modelling based on port choice. *Promet*, ISSN 0353-5320. [Print ed.], 2015, vol. 27, no. 3, str. 195-203, ilustr. <http://www.fpz.unizg.hr/traffic/index.php/PROMTT/article/view/1611>, doi: [10.7307/ptt.v27i3.1611](https://doi.org/10.7307/ptt.v27i3.1611). [COBISS.SI-ID [512689725](https://cobiss.si/512689725)].