

# TRANSPORTNI SISTEMI IN LOGISTIKA

## UČNI NAČRT PREDMETA/COURSE SYLLABUS

<b>Predmet:</b>	TRANSPORTNI SISTEMI IN LOGISTIKA
<b>Course title:</b>	TRANSPORTATION SYSTEMS AND LOGISTIC
<b>Članica nosilka/UL Member:</b>	UL FS

<b>Študijski programi in stopnja</b>	<b>Študijska smer</b>	<b>Letnik</b>	<b>Semestri</b>	<b>Izbirnost</b>
Strojništvo, tretja stopnja, doktorski	Konstrukcijsko mehanske inženirske znanosti (smer)	1. letnik, 2. letnik	Celoletni	izbirni

**Univerzitetna koda predmeta/University course code:**

0033444

**Koda učne enote na članici/UL Member course code:**

7120

<b>Predavanja /Lectures</b>	<b>Seminar /Seminar</b>	<b>Vaje /Tutorial s</b>	<b>Klinične vaje /Clinical tutorials</b>	<b>Druge oblike študija /Other forms of study</b>	<b>Samostojno delo /Individual student work</b>	<b>ECTS</b>
90					160	10

**Nosilec predmeta/Lecturer:**

Boris Jerman

**Izvajalci predavanj:**

Boris Jerman

**Izvajalci seminarjev:**

**Izvajalci vaj:**

**Izvajalci kliničnih vaj:**

**Izvajalci drugih oblik:**

**Izvajalci praktičnega usposabljanja:**

**Vrsta predmeta/Course type:**

Izbirni predmet /Elective course

**Jeziki/Languages:**

Predavanja/Lectures:

Angleščina, Slovenščina

Vaje/Tutorial:

Angleščina, Slovenščina

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

Veljajo splošni pogoji za doktorski študij.

General prerequisites for the third level studies.

**Vsebina:****Content (Syllabus outline):**

Transportni sistemi in specifični problemi. Sodobna žerjavogradnja in specifičnost funkcij: dinamika na vrveh obešenega bremena, dinamika in dimenzioniranje nosilnih elementov in konstrukcij žerjavov. Transportni sistemi za kontinuirani transport: dinamika in deformabilnost elementov tračnih transporterjev, obratovalne razmere in specifične žičniških naprav, značilnosti pri pnevmatskih transporterjih.

Logistika in transportni sistemi ter kompleksi. Teoretske osnove tehniške logistike. Predstavitev modelov in sistemov. Logistika produkcije in oskrbovalna logistika. Proizvodna logistika in logistika skladišč. Dobavna veriga in logistični sistemi ter distribucijska logistika. Logistika gradnje tehniških sistemov.

Transport systems and specific problems by existing equipments. The problem definition methods. Modern crane design and specialty of their functions, load dynamics on the ropes, dynamics and dimensioning of elements and construction carrying of it. Transport systems for continuously transport, conveyer's dynamics and deformability of their elements, operation mode and specific problems by rope lifting systems. Pneumatic transport systems and actual specific in environment.

Logistic and transport systems inside the complexity of environment. Theoretical basis by technical logistic. Presentation of the models and systems at logistic. Production logistic, chain management and supply logistics. Stock and distribution logistic. Logistic in the production systems of technical systems at all. Logistic of technical systems refection;

**Temeljna literatura in viri/Readings:**

- [1] C. Seeßelberg: Kranbahnen, Bemessung und konstruktive Gestaltung; Bauwerk Verlag GmbH, Berlin 2005 (COBISS.SI-ID - 8929819)
- [2] Lawrence K. Shapiro; Jay P. Shapiro: Cranes and derricks; McGraw-Hill, New York 2011 (COBISS.SI-ID - 11891739)
- [3] H.Buhrke, H.J.Kecke, H.Richter: Strömungsförderer : Hydraulischer und pneumatischer Transport in Rohrleitungen; VEB Verlag Technik, Berlin, 1988 (COBISS.SI-ID - 4929550)
- [4] Dieter Arnold: Materialflusslehre, 2. verbesserte Auflage, Vieweg 1998 (COBISS.SI-ID - 2860571)

- [5] Heinrich Martin: Transport- und Lagerlogistik; Planung, Aufbau und Steuerung von Transport- und Lagersystemen; Friedr. Vieweg & Sohn Verlagsgesellschaft mbH, Braunschweig, 1995 (COBISS.SI-ID - 1264411)
- [6] Carlos F. Daganzo: Logistic Systems Analysis; Springer Verlag, 1999 (COBISS.SI-ID - 3254811)
- [7] Paul Myerson: Lean supply chain and logistics management; McGraw-Hill, New York 2012 (COBISS.SI-ID - 2349411)
- [8] Sumit Ghosh, Tony Lee: Intelligent transportation systems: new principles and architectures; CRC Press, Boca Raton 2000 (COBISS.SI-ID - 5496091)

### **Cilji in kompetence:**

#### **Cilji:**

Študent ob prepoznanjih konstrukcijskih rešitvah posameznih naprav lahko raziskuje specifične fizikalne in druge lastnosti, ki so pomembne za opredelitev novih spoznanj ali vplivov v posameznih okoljih. Pridobi naj poglobljeno znanje o vlogi in pomenu transportnih sistemov in logistike v sodobnem svetu s ciljem snovanja kompleksnih sistemov in razvoja novih enot ter samostojnega raziskovanja na tem izjemno širokem znanstvenem področju.

#### **Kompetence:**

Študent osvoji funkcionalne zahteve in jih poglobljeno poveže z znanimi konstrukcijskimi rešitvami posameznih transportnih naprav, sistemov ali kompleksov v posplošenih logističnih sistemih. Sposoben je zasnovati transportni sistem ter načrtovati njegovo delovanje po logističnih principih. Posebej je usposobljen za raziskave logističnih sistemov v smislu optimalne izrabe transportnih sistemov glede na variacijo parametrov transportne logistike. Usposobljen je za samostojen razvoj in raziskave na tem področju.

### **Objectives and competences:**

#### **Goals:**

The student could research on the basic design solution at the typical equipments. The research should do on the physics and others phenomena, which are important for new characteristic in the different environment. He will deeply study about the rule and meaning of the transport systems and logistic in the new era. The main goal is should be basic understanding for the development of the complex systems and innovative units, self and independent research on these huge and complex fields, which has important rule in our modern life.

#### **Competences:**

The student should understand the complex of functional request and could be integrated in the existing design solution by the typical transport equipment, systems and complex in the integrated logistic systems. He should be qualified the transport system and developed his processing on the logistic principles for the economic conditions. His competences are used also for optimization and research of transport systems, where are the parameters of transport logistic nonlinear. He has capabilities for self development and research work on those fields.

### **Predvideni študijski rezultati:**

Študent osvoji funkcionalne zahteve in jih poglobljeno poveže z znanimi

### **Intended learning outcomes:**

#### **Knowledge and understanding:**

konstrukcijskimi rešitvami posameznih transportnih naprav, sistemov ali kompleksov v posplošenih logističnih sistemih. Sposoben je zasnovati transportni sistem ter načrtovati njegovo delovanje po logističnih principih. Posebej je usposobljen za raziskave logističnih sistemov v smislu optimalne izrabe transportnih sistemov glede na variacijo parametrov transportne logistike. Usposobljen je za samostojen razvoj in raziskave na tem področju.	The student should understand the complex of functional request and could be integrated in the existing design solution by the typical transport equipment, systems and complex in the integrated logistic systems. He should be qualified the transport system and developed his processing on the logistic principles for the economic conditions. His competences are used also for optimization and research of transport systems, where are the parameters of transport logistic nonlinear. He has capabilities for self development and research work on those fields.
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#### **Metode poučevanja in učenja:**

#### **Learning and teaching methods:**

Predavanja, laboratorijske vaje, seminarsko delo, e-izobraževanje, konzultacije. Seminarsko delo v čim večji meri navezuje se na področje doktorskega raziskovanja. Študij z uporabo priporočene literature.	Lectures, laboratory practice & seminar work, e-education, consulting. The seminar work is related, as much as possible, to the student's doctoral research field. Study on a recommended literature basis.
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#### **Načini ocenjevanja:**

#### **Delež/Weight**

#### **Assessment:**

Način (pisni izpit, ustno izpraševanje, naloge, projekt): - naloge (10%) - projekt (seminarska naloga) (70%) - ustno izpraševanje (20%)		Method (written exam, oral examination, assignments, project) • assignments (10%) • project seminar (70%) • oral examination (20%)
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#### **Ocenjevalna lestvica:**

#### **Grading system:**

5 - 10, pri čemer velja, da je pozitivna ocena od 6 - 10	5 - 10, a student passes the exam if he is graded from 6 to 10
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#### **Reference nosilca/Lecturer's references:**

##### **doc.dr. Boris Jerman**

JERMAN, Boris, ZRNIĆ, Nenad Đ., JENKO, Matjaž, LERHER, Tone. Energy regeneration in automated high bay warehouse with stacker cranes : Elektronski vir. Tehnički vjesnik, ISSN 1848-6339, 2017, vol. 24, iss. 5, str. 1411-1416.

VUJIČIĆ, Andrija, ZRNIĆ, Nenad Đ., JERMAN, Boris. Ports sustainability : a life cycle assessment of zero emission cargo handling equipment. Strojniški vestnik,

ISSN 0039-2480, Sep. 2013, vol. 59, no. 9, str. 547-555

JERMAN, Boris, HRIBAR, Anton. Dynamics of the mathematical pendulum suspended from a moving mass. Tehnički vjesnik : znanstveno-stručni časopis tehničkih fakulteta Sveučilišta u Osijeku, ISSN 1330-3651, 2013, vol. 20, no. 1, str. 59-64,

LANGERHOLC, Marko, ZRNIĆ, Nenad Đ., ĐORĐEVIĆ, Miloš, JERMAN, Boris. Conveyor design optimization as the provision of sustainability. Tehnički vjesnik : znanstveno-stručni časopis tehničkih fakulteta Sveučilišta u Osijeku, ISSN 1330-3651, 2013, god. 20, br. 5, str. 837-846