UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	Proizvodna logistika in vodenje proizvodnje
Course title:	Production Logistics and Production Management

Študijski program in stopnja **Study programme and level**	**Študijska smer** **Study field**	**Letnik** **Academic year**	**Semester** **Semester**
Tehnologije in sistemi – prva stopnja	/	tretji	peti
Technologies and Systems – 1st cycle	/	third	fifth

Vrsta predmeta / Course type	obvezni/obligatory
Univerzitetna koda predmeta / University course code:	TS 3 UN 2

Predavanja **Lectures**	**Seminar** **Seminar**	**Vaje** **Tutorial**	**Laboratorijske vaje** **work**	**Druge oblike študija**	**Samost. delo** **Individ. work**	**ECTS**
45		15	15		85	5

Nosilec predmeta / Lecturer:	doc. dr. Tomaž Perme

Jeziki / **Languages:** slovenski/ slovenian	**Predavanja /** **Lectures:**	Slovenski/Slovenian
	Vaje / Tutorial:	Slovenski/Slovenian

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisits:**
• vpis v tretji letnik študija.	• enrollment in the third year of study.

Vsebina:	**Content (Syllabus outline):**
• *Uvod. Predstavitev predmeta in načina dela, razdelitev seminarskih nalog ter opredelitev področij, ki jih obravnavajo* notranja in proizvodna logistika ter načrtovanje in vodenje proizvodnje. • *Logistični podsistemi v proizvodnem podjetju.* Nabavna, notranja oziroma proizvodna, distribucijska, poprodajna in povratna logistika ter povezava med logističnimi podsistemi in vodenjem proizvodnje.	• *Introduction*. Presentation of processes and working methods, division of the seminar tasks and definition of the areas of responsibility of internal and production logistics as well as production planning and management. • *Logistic subsystems in a manufacturing company*. Procurement, internal or production, distribution, after-sales and returns logistics and the relationship between logistics subsystems and production management.

- *Procesi logističnega sistema proizvodnega podjetja.* zunanji in notranji transport, skladiščenje, strega ter oskrba delovnih mest z materialom in sredstvi.
- *Osnove načrtovanja in vodenja proizvodnje.* Proizvodni program, načrtovanje tehnoloških procesov in delovnih operacij, določitev tehnoloških časov, načrtovanje proizvodnih zmogljivosti, napovedovanje, dolgoročno in kratkoročno planiranje, izdelava proizvodnega plana, organizacija, vodenje in nadzor proizvodnje.
- *Analiza in ključni kazalniki poslovanja proizvodnje in logistike.* Analiza ABC in XYZ, gostota toka materiala, načrt toka vrednosti, pretočni čas, logistična zmogljivost, obrat zalog, skupna učinkovitost opreme (OEE) ter produktivnost, storilnost in gospodarnost.
- *Gospodarjenje z materialom in optimiziranje logističnih stroškov:* osnove izračuna stroškov zalog, transporta in skladiščenja, analitične in izkustvene metode za optimizacijo zalog in toka materiala; analiza, načrtovanje in optimizacija toka materiala z modeliranjem in diskretno simulacijo.
- *Embalaža v logističnem in proizvodnem sistemu:* namen in vrste embalaže; načrtovanje, razvoj in oblikovanje embalaže; skladiščne, transportne in pakirne enote; formiranje in označevanje transportnih in skladiščnih enot.
- *Logistična opreme:* transportne in strežne naprave, skladiščna oprema, oprema za avtomatizacijo proizvodne logistike, oprema za vizualizacijo proizvodne in logistike.
- *Informacijska podpora:* informacijski sistemi za načrtovanje, organiziranje, vodenje in nadzor logističnih in proizvodnih sistemov (proizvodni in logistični informacijski sistem, sistem za vodenje skladišč), tehnologije označevanja in samodejnega prepoznavanja pakirnih enot in materiala (črtna koda, matrična koda, RFID, industrijski vid, OCR).

- *Processes of the logistics system of the manufacturing company*. External and internal transport, storage, service and supply of workplaces with materials and resources.
- *Basics of production planning and management*. Production program, planning of technological processes and operations, determination of technological times, planning of production capacities, forecasting, long-term and short-term planning, preparation of a production plan, organization, management and control of production.
- *Analysis and key indicators of production and logistics operations.* ABC and XYZ analysis, material flow quality, value stream planning, flow time, logistics capacity, inventory turnover, overall equipment effectiveness (OEE), and productivity, productivity and profitability.
- *Material management and optimization of logistics costs:* starting from the calculation of inventory, transportation and storage costs, analytical and empirical methods to optimise inventory and material flow; analysis, design and optimization of material flow through modeling and discrete simulation.
- *Packaging in the logistics and production system:* purpose and types of packaging; planning, development and design of packaging; storage, transport and packaging units; formation and identification of transport and storage units.
- *Logistics equipment*: transport and service equipment, warehouse equipment, equipment for automation of production logistics, equipment for visualization of production and logistics.
- *Information support*: information systems for planning, organisation, management and control of logistics and production systems (production and logistics information system, warehouse management system), marking technology and automatic identification of packaging units and

- *Menedžment dobavne verige:* osnove dobavne oziroma preskrbovalne verige, informacijske povezave v verigi, načrtovanje in vodenje dobavne verige, zunanje izvajanje logističnih storitev.
- *Vitka proizvodnja in logistika:* načela, metode in orodja vitke organizacije; uporaba metod in orodij vitke organizacije v proizvodnji in logistiki.;

materials (barcode, matrix code, RFID, industrial, video, OCR).
- *Supply chain management:* supply chain basics, information links in the chain, supply chain planning and management, outsourcing of logistics services.
- *Lean production and logistics*: principles, methods and tools of lean organisation; the application of lean organisation methods and tools in production and logistics.

Temeljni literatura in viri / Readings:

Kaltnekar, Z (1993). Logistika v proizvodnem podjetju, Kranj: Moderna organizacija.
Ljubič, T. (2000). Planiranje in vodenje proizvodnje. Kranj:Založba Moderna organizacija.
Polajnar, A. (2006) *Priprava proizvodnje*. Maribor: Univerza v Mariboru, Fakulteta za strojništvo.
Buchmeister, B., Polajnar, A. (2000). *Priprava proizvodnje za delo v praksi*, Maribor: Univerza v Mariboru, Fakulteta za strojništvo, Maribor.
Polajnar, A., Buchmeister, B., Leber, M., Pandža, K., Kalpič, B., Rojs, T., Vujica-Herzog, N., Palčič, I., Fulder, T., Meža, P. (2004). Menedžment proizvodnih sistemov – sodobni pristopi, maribor: Univerza v Mariboru, Fakulteta za strojništvo, Maribor.
Logožar, K. (2004) *Poslovna logistika.* Ljubljana: GV Izobraževanje.
Halevi, G., Weill, R. D. (1995). Principles of Process Planning, Chapman & Hall, London.
Harrison, D. K., Petty, D. J. (2002). Systems for Planning and Control in Manufacturing, Newnes, Oxford.
Gourdin, K. N. (2001) *Global logistics management*. Oxford: Blackwell Business.
Coyle, J. J. (2003) *The management of business logistics.* Mason (Ohio): South–Western/Thomas Learning.

Cilji in kompetence:

Učna enota prispeva predvsem k razvoju naslednjih splošnih in specifičnih kompetenc:

- sposobnost evidentiranja problema in njegove analize ter predvidevanja operativnih rešitev v tehnološkem smislu ali v procesu organizacije in vodenja,
- sposobnost uporabe pridobljenega teoretičnega znanja v praksi,
- sposobnost obvladovanja razvoja in napredka,
- razumevanje raznolikosti in globalnega ter socialnega vpliva tehnologij na okolje,
- sposobnost razumevanja in uporabe sodobnih teorij s področja tehniških, tehnoloških in naravoslovnih ved,

Objectives and competences:

The learning unit mainly contributes to the development of the following general and specific competences:

- the ability to grasp and analyse a problem, as well as foresee operational solutions in the technological sense or in the process of organisation and management,
- the ability to use acquired theoretical knowledge in practice,
- he ability to manage development and progress,
- understanding the diversity and global and social impact of technologies on the environment,

• sposobnost interdisciplinarnega povezovanja znanja, • sposobnost reševanja konkretnih delovnih problemov na področju tehnologij in sistemov z uporabo standardnih strokovnih metod in postopkov, • sposobnost stalne uporabe informacijske in komunikacijske tehnologije na svojem strokovnem področju, • poznavanje, uporabljanje in spremljanje metode celovite kakovosti tehnologij, proizvodnje in logistike, • usposobljenost za komuniciranje z interesnimi skupinami (dobavitelji, kupci, konkurenco, strokovnjaki z različnih področij, politiki itd.).	• the ability to understand and apply modern theories in the fields of technical, technological and natural sciences, • the ability to integrate knowledge in an interdisciplinary manner, • the ability to solve specific work problems in the field of technologies and systems using standard professional methods and procedures, • the ability to continuously use information and communication technology in one's professional field, • knowledge, use and monitoring of the comprehensive quality method of technologies, production and logistics, • competence in communicating with interest groups (suppliers, customers, competition, experts from various fields, politicians, etc.).

Predvideni študijski rezultati:	**Intended learning outcomes:**
Znanje in razumevanje: *Študent/študentka:* • pozna in razume pomen logistike ter načrtovanja in vodenja proizvodnje za uspešnost in učinkovitost poslovanja proizvodnih podjetij, • pozna in uporablja osnovne pojme, metode in orodja načrtovanja in vodenja logistike in proizvodnje pri nenehnem izboljševanju poslovanja, • pozna in uporablja analitične in napredne metode pri analizi in oblikovanju najboljše rešitve na področju proizvodne logistike ter načrtovanja in vodenja proizvodnje, • pridobljeno znanje zna uporabiti pri pripravi podlag za odločanje, zna voditi poslovne pogovore, sestanke, razprave, posvetovanja, pogajanja in dogovarjanja, • zna nazorno prikazati uporabnost različnih zasnov in teorij na področju logističnih sistemov ter načrtovanja in vodenja proizvodnje, • osmišlja in kritično ovrednoti različne izkušnje s področja logistike ter načrtovanja in vodenja proizvodnje,	Knowledge and understanding: *Student:* • knows and understands the importance of logistics and production planning and management to the success and efficiency of manufacturing company operations, • knows and uses the basic concepts, methods and tools of logistics and production planning and management for continuous improvement of business, • knows and uses analytical and advanced methods in the analysis and design of the best solution in the field of production logistics and production planning and management, • is able to use the acquired knowledge in the development of decision-making bases, is able to conduct business conversations, meetings, discussions, consultations, negotiations and agreements, • can clearly demonstrate the applicability of various concepts and theories in the field of logistics systems and production planning and management,

• izbere in uporablja gradiva iz drugih strokovnih ved in jih poveže s področjem logistike ter načrtovanja in vodenja proizvodnje, • dejavno in kritično spremlja aktualna dogajanja na področju logistike ter načrtovanja in vodenja proizvodnje tako v poslovnem sistemu kot v širšem družbenem okolju, • v povezavi z drugimi predmeti pozna in razume zapletenost strokovnih in družbenih nalog zaposlenih na različnih področjih gospodarjenja in je pripravljen na ustvarjalno soočanje z logističnimi problemi in izzivi načrtovanja in vodenja proizvodnje v delovnem okolju, • pozna in razume umeščenost svojega strokovnega področja v širše družbene, kulturne in vrednotne miselne povezave ter z njihovim osmišljanjem oblikuje umsko dejaven in izoblikovan odnos do sveta.	• can make sense of and critically evaluate various experiences in the field of logistics and production planning and management, • selects and uses materials from other professional disciplines and connects them to the field of logistics and production planning and management, • actively and critically follows current events in the field of logistics and production planning and management, both in the business system and in the broader social environment, • in connection with other courses, knows and understands the complexity of the professional and social tasks of employees in various areas of management and is prepared to deal creatively with logistical problems and challenges of planning and managing production in the work environment, • knows and understands the classification of his professional field in larger social, cultural and value-related thinking contexts and forms an intelectually active and developed attitude towards the world by understanding them.

Metode poučevanja in učenja:	**Learning and teaching methods:**
• *predavanja* z aktivno udeležbo študentov (razlaga, razprava, vprašanja, primeri, reševanje problemov, komentiranje in kritično ocenjevanje trenutnega dogajanja v okolju), • *računske in laboratorijske vaje* z aktivno udeležbo študentov (reševanje primerov iz prakse z analitičnimi metodami ter v laboratoriju z računalniško podprtimi metodami), • *seminarska naloga,* ki je pogoj za opravljanje izpita, • *strokovne ekskurzije in ogledi najboljših praks.*	• *lectures* with active participation of students (explanation, discussion, questions, examples, problem solving, commenting and critical assessment of current events in the environment), • *calculation and laboratory tutorials* with the active participation of students (solving cases from practice using analytical methods and in the laboratory using computer-supported methods), • *a seminar assignment*, which is a condition for passing the exam, • *professional excursions and tours of best practices*.

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
Način (pisni izpit, ustno izpraševanje, naloge, projekt): • seminarska naloga • pisni izpit Ocenjevalna lestvica: ECTS.	 40 % ocene 60 % ocene	Type (examination, oral, coursework, project): • seminar paper • written exam Grading scale: ECTS.