



## **Topic Areas for Admission**

**Study Programme:** Logistics

### **Topics**

1. Basic Legislation in Transport (Transport policy in the EU, basic European directives and regulations, international agreements, legislation regulating the operation of individual modes of transport).
2. Transport Infrastructure (specific features of transport infrastructure, financing of transport infrastructure, TEN-T network, interoperability in rail transport).
3. Providers of Transport and Shipping Services (characteristics and division of the transport services market, characteristics of the basic services provided on the rail and road transport market, the concept and meaning of freight forwarding, the position of freight forwarders on the transport market, INCOTERMS clauses).
4. Means of Transport in Transport Logistics (pallets - division, standardization, marking, principles of creating pallet units, pallet communities, one-way pallets; containers - maritime ISO, Innofreight, ACTS; swap bodies related to road vehicles).
5. Characteristics of the Basic Transport-Based Logistics Technologies (formation of handling groups, Just in Time, Just in Sequence, Hub and Spoke, Gateway, Centralized Warehouse Technology, Kanban etc.).
6. Intermodal Transport Systems - transport in ISO containers, Innofreight, ACTS (characteristics of systems, technical basis), transport of road trailers, swap bodies, road unit sets (characteristics of systems, technical basis).
7. City Logistics - definition, objectives and tasks of City logistics, basic terms and system components, system interconnectedness, basic concept of City logistics. Last Mile Delivery technologies.
8. Transport as a System - urban transport system (elements, functions, components), system concept of urban transport, measures for transport organisation in cities / towns, traffic management in cities / towns. Definition of Transport Services in Urban Agglomerations - road transport in cities / towns, transport services and integrated transport systems.
9. Technology and Management of Urban Freight Transport - logistics of urban freight transport, freight transport technologies implemented in cities / towns, City logistics approaches in the context of urban freight transport.
10. City Logistics Approaches - examples of City logistics solutions. Data collection and throughput analysis - traffic surveys.
11. Logistics. Production Logistics. Logistics Chain. Logistics Product. The Position of Logistics and Production Logistics in Company Management System. Production Logistics. Production Process (PP). Relationship between PP and Products.

12. Supply Chains in Organizational Structure of Companies, Processes, Functions of Company Departments. Integrated Material and Information Flows of Supply Chains - system structures and elements. Supply Chain Planning, Implementation of Theory Principles in Supply Systems.
13. Structures of Procurement, Production and Distribution logistics. Material Handling in Supply Chain, Characteristics, Selection Criteria and Sizing of Handling Equipment and Systems.
14. Warehouses and Storage (importance of storage and warehousing, position of warehouses in logistics, functions - basic, supplementary and other functions - production support, combination of products, deconsolidation of products into smaller shipments, consolidation of shipments; classification of warehouses).
15. Handling Equipment in Warehouse Logistics (cyclically operating, periodically operating, continuously operating). Storage Equipment (handling units – their division; crates; storage boxes; pallets – their division, standardization, marking, principles of creating pallet units, pallet communities, one-way pallets; rolltainers). Warehouse Equipment (storage of piece goods without equipment; division of equipment; racks – basic division, construction, use; rack stackers; receiving and dispensing equipment, possibilities of storage automation).
16. Packaging Technology (meaning and functions of packaging; characteristics of products intended for packaging; types of packaging; protective systems; marking on transport packaging - handling marks; stresses on packaging units, packaging tests).
17. Automatic Identification (barcode technology - division of codes, standardization of codes, construction of codes, reading devices; RFID - principle, advantages, disadvantages; EDI and so on).
18. Development Trends in Transport and Logistics. Concepts in Company Logistics Chain (JIT, Kanban, MRP system, digitalization, robotics, automation, AI, IoT etc.). Sophisticated warehousing and storage systems. Sustainability – ecological (“green” or environmentally-friendly) transport and logistics. Nonconventional and alternative means of transport (vehicles), alternative propulsion systems, fuels etc. Re-Engineering in Production Logistics, Optimized Production Technology (OPT) and Lean Production.

## **Recommended Literature**

BARTODZIEJ, C. J. The concept industry 4.0: an empirical analysis of technologies and applications in production logistics. Springer Gabler (Wiesbaden), 2017. 150p. ISBN 978-3-658-16501-7.

BEN-AKIVA, M. E. MEERSMAN, H. and VAN DE VOORDE, E. Freight transport modelling. Bingley: Emerald, 2013. ISBN 978-1-78190-285-1.

DAGANZO, C. F. and OUYANG, Y. Public transportation systems: principles of system design, operations planning and real-time control. New Jersey: World Scientific, 2019. ISBN 978-981-3224-08-7.

CHOPRA, S. Supply Chain Management: Strategy, Planning and Operation. 7th ed. Pearson Education Limited, 2019. 514 p. ISBN 978-0-13-473188-9.

GLEISSNER, H. and FEMERLING, J. C. Logistics: Basics – Exercises – Case Studies. Springer International Publishing Switzerland, 2013. ISBN 978-3-319-01768-6. DOI 10.1007/978-3-319-01769-3.

HENSHER, D. A. and BUTTON, K. J. Handbook of transport modelling. Online. Second ed. Handbooks in transport. Bingley: Emerald, 2008. ISBN 9780857245670.

HUGOS, M. H. Essentials of Supply Chain Management. 3rd Ed. Wiley, 2011. 348 p. ISBN 978-0-470-94218-5.

LABADIE, N., PRINS, C. and PRODHON, C. Metaheuristics for Vehicle Routing Problems (Computer Engineering: Metaheuristics Set, 3). 1st ed. Wiley-ISTE, 2016. 194 p. ISBN 978-1-84821-811-6.

LAMBERT, D. M. Supply Chain Management: Processes, Partnerships, Performance. 2nd ed. Supply Chain Management Institute, 2005. 344 p. ISBN 978-0-9759949-1-7.

NYHUIS, P. and WIENDAHL, H. P. Fundamentals of Production Logistics: Theory, Tools and Applications. Springer Berlin, Heidelberg, 2014. 312 p. ISBN 978-3-642-42412-0. DOI: 10.1007/978-3-540-34211-3.

OZCEYLAN, E. and GUPTA, S. M. Sustainable Production and Logistics: Modeling and Analysis. CRC Press (Taylor and Francis Group), 2021. 418 p. ISBN 9780367431303.

RIGGS, W. Disruptive transport: driverless cars, transport innovation and the sustainable city of tomorrow. Routledge equity, justice and the sustainable city series. London: Routledge, Taylor & Francis Group, 2019. ISBN 978-1-138-61316-4.

SARDER, M. D. Logistics Transportation Systems, 1st Ed., Elsevier, 2020, ISBN 9780128159743.

SOUTHERN, R. N. Transportation and logistics basics, Memphis: Continental Traffic Publishing Company, 1997. ISBN 0-9655014-0-X.

STOPKA, O. Application of Operations Research Methods in City Logistics. 1st. Kielce, Poland: Wydawnictwo Politechniki Świętokrzyskiej, Kielce, Poland, 2020. 203 p. ISBN 978-83-65719-85-0.

TANIGUCHI, E. et al. Urban Transportation and Logistics: Health, Safety, and Security Concerns. 1st. CRC Press, 2013. 280 p. ISBN 978-1-4822-0909-9.

TANIGUCHI, E. and THOMPSON, R.G. City Logistics: Mapping the Future. CRC Press, 2014. 231 p. ISBN 978-1-4822-0889-4.



WANG, Y. and PETTIT, S. J. E-logistics: managing digital supply chains for competitive advantage. 2nd ed.  
London: Kogan Page, 2021. ISBN 978-0-7494-9688-3.