



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Digital Supply Chains [S1DSwB1>CLD]

Course

Field of study

Data Science in Business

Year/Semester

4/7

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

full-time

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

15

Other

0

Tutorials

0

Projects/seminars

0

Number of credit points

3,00

Coordinators

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Lecturers

Prerequisites

The student knows the basics of logistics and supply chain management.

Course objective

The aim of the course is to familiarize students with the idea of digital supply chains and guidelines for the transformation of supply chains aimed at ensuring transparent and intelligent supply chains. Students will learn about the possibilities of digitization and learn about the techniques and tools for managing changes in supply chains in the era of digitization and the fourth industrial revolution.

Course-related learning outcomes

Knowledge:

Characterizes key changes in supply chain management, including the concept of Logistics 4.0 and the digitalization of supply chains [DSB1_W01].

Describes tools and technologies used in digital supply chains, such as blockchain, data analysis, and forecasting systems [DSB1_W03].

Explains basic data management models in digital supply chains and their impact on operational efficiency [DSB1_W04].

Analyzes cybersecurity issues and risks associated with digital transformation in supply chain management [DSB1_W05].

Characterizes economic models and planning and forecasting strategies used in digital supply chains [DSB1_W09].

Skills:

Selects appropriate methods and tools for the digital transformation of supply chains, adapting them to the organization's specifics [DSB1_U02].

Designs and conducts analyses and experiments related to the implementation of digital technologies in supply chain management [DSB1_U03].

Formulates specifications for analytical and project-related problems regarding digital supply chains [DSB1_U05].

Utilizes machine learning techniques and data analysis to optimize processes in digital supply chains [DSB1_U09].

Effectively collaborates in interdisciplinary teams to design and implement digital supply chain solutions [DSB1_U14].

Social competences:

Critically analyzes own knowledge and skills regarding the digitalization of supply chains, striving for development and updating [DSB1_K01].

Engages in initiatives related to the digitalization and innovative solutions in supply chain management [DSB1_K03].

Undertakes business initiatives related to implementing digital technologies in supply chain management [DSB1_K04].

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Lecture test, pass mark: 50% points. Project: Problem-solving tasks Z1, Z2, Z3 - each 15 points. Presentation for 20 points. Final report for 35 points.

Programme content

Digitalization of supply chains. Artificial intelligence in logistics. Challenges and threats of digitalization of supply chains. Security in supply chains. Technologies supporting data analysis and forecasting.

Course topics

Lecture: Changes in Supply Chain Management, Logistics 4.0/ Supply Chain 4.0. Digitalization of Supply Chains. Tools and Technologies in Supply Chain 4.0. Challenges and Threats of Supply Chain Digitalization. Data Management in Digital Supply Chains. The Essence of Blockchain. Cybersecurity in Supply Chains. Planning and Forecasting in Digital Supply Chains. Examples of Practical Applications of Digitalization in Supply Chains.

Project: Analysis of Case Studies in Supply Chain Digitalization. Designing the Transformation of Digital Supply Chains. Assessment of the Digital Maturity of Enterprises

Teaching methods

Lecture: information lecture, discussion.

Project: work in project groups, brainstorming, design thinking, presentation.

Bibliography

Basic:

1. Agrawal P., Narain R., Digital supply chain management: An Overview, In IOP Conference Series: Materials Science and Engineering (Vol. 455, No. 1, 2018, s. 012074), IOP Publishing, 2018.

2. Garay-Rondero C.L., Digital supply chain model in Industry 4.0., Journal of Manufacturing Technology Management, 2020.

3. Weerabahu, WM Samanthi Kumari, et al. "Digital supply chain research trends: a systematic review and a maturity model for adoption." Benchmarking: An International Journal 30.9 (2023): 3040-3066.

Additional:

1. Ellefsen A.P.T., Striving for excellence in AI implementation: AI maturity model framework and preliminary research results, LogForum 15.3, 2019.
2. Frederico G.F., Supply Chain 4.0: concepts, maturity and research agenda, Supply Chain Management: An International Journal, 2019.
3. Stachowiak A., Oleśków-Szłapka J., Framework of the Model of Dissemination and Absorption of Logistics 4.0 Solutions - Causal Loop Dynamics of Relations Between Academia and Business, Smart and Sustainable Supply Chain and Logistics-Trends, Challenges, Methods and Best Practices, Springer, Cham, 2020, s. 323-337.
4. Queiroz M.M., Industry 4.0 and digital supply chain capabilities: A framework for understanding digitalisation challenges and opportunities, Benchmarking: an international journal, 2019.

Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,00
Classes requiring direct contact with the teacher	32	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	43	2,00