COURSE DESCRIPTION CARD - SYLLABUS

Course name
Inventory management [N1Log2>ZZ]

Course

Field of study
Logistics

Year/Semester
1/2

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
part-time

Requirements
compulsory

Number of hours

Lecture
18

Laboratory classes
0

Other
0

Tutorials
10

Projects/seminars
0

Number of credit points

4,00

Coordinators

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Lecturers

Prerequisites

The student knows the basic logistical issues such as functional separation of logistics, nature customer service, the nature of transport and storage logistics. Student is able to calculate a simple task with the content. He can use statistical formulas such as the mean and statistical deviation.

Course objective

The course aims are to familiarize students with the most important problems of inventory management in terms of independent demand and training in operational decision-making skills for reordering stock.

Course-related learning outcomes

Knowledge:
1. Student has a basic knowledge of inventory management [P6S_WG_05] [P6S_WK_06]
2. Student is able to identify and formulate the basic relationship between inventory and, storage, transport and other functional areas of logistics [P6S_WK_04]
3. The student knows the methods of stock renewal and their impact on the supply chains management [P6S_WK_05]

Skills:
1. Student can design a process to analyze the efficiency of inventory management [P6S_UW_06][P6S_UK_02]
2. Student is able to define the problem of renewal of stocks in terms of demand independent [P6S_UW_01][P6S_UW_03][P6S_UO_01]
3. Students can use a spreadsheet with a simple algorithm to design a reordering of stocks [P6S_UK_01][P6S_UU_01]

Social competences:
1. Student shows a willingness to cooperate and assist in the design group [P6S_KR_02]
2. The student is responsible for the identification and resolution of the dilemmas associated with inventory management [P6S_KR_01]
3. Student is determined to think in an entrepreneurial way of inventory management [P6S_KO_02]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Based on an examination - a written paper or an oral examination on the topics discussed in the lecture and additional points from a mid-term paper during the lecture.
The exam is passed, after giving the correct answers to most questions.
Tutorials: on the basis of the quality of the project and answers to questions about the project.

Programme content

The essence and importance of warehouse inventories in logistics processes. Classification methods and inventory structure. Cost aspects of inventory management. Inventory management models to cover dependent and independent demand. Inventory management of product groups. Demand forecasting as an element of inventory management.

Course topics

Lecture: The subject covers the following issues: inventory functions and strategies in logistics systems (including the VMI implementation process), assortment classification in inventory management (including ABC/XYZ classification), inventory structure (turntable, hedging, excessive) methods of analysis and counteracting inventory aging), basic elements of inventory management to cover dependent and independent demand (including planning logic push/pull flow, definition of lead time, product life cycle vs inventory level), costs of collection, maintenance and lack of inventory, demand analysis (including methods of improving the demand management process), demand forecasting in the field of inventory management (the process of developing forecasts and forecasting methods - including: time series analysis and forecasting methods, moving average, weighted moving average, simple exponential smoothing, Holt's method, Winters' method, Box-Jenkins method, causal forecasting methods, non-recursive methods, linear regression, deseasonalization), definitions of the level of customer service (level of service in the process of demand management), shaping the hedging stock, inventory recovery systems (including optimization methods inventory level optimization), turnover inventory optimization (delivery volume optimization), inventory management of assortment groups (including CPFR Collaborative; Planning; Forecasting; Replenishment), inventory metrics (KPIs in inventory management).
Exercises: Case study and the use of a spreadsheet to build classic models of inventory renewal, determining the level of hedging stock and assessing the inventory structure, practical exercises in the field of building the ABC/XYZ/123 classification.

Teaching methods

Lectures: conversational lecture, information lecture.
Tutorials: computer simulation method, project method.

Bibliography

Basic:
1. Cyplik P., Hadaś Ł., Zarządzanie zapasami w łańcuchu dostaw, Wydawnictwo Politechniki Poznańskiej, Poznań, 2012.
2. Krzyżaniak S., Podstawy zarządzania zapasami w przykładach, ILiM, Poznań, 2008.

3. Sarjusz-Wolski Z., Sterowanie zapasami w przedsiębiorstwie, PWE, Warszawa, 2000.
4. Cyplik P., AN APPLICATION OF SPARE SUPPLIES MANAGEMENT FOR WAREHOUSE SUPPLIES OPTIMIZATION USING CLASSICAL METHODS - CASE STUDY, Logforum 1.3 (2005): 4.
5. Cyplik P., Hadaś Ł., Domański R., Implementation of the theory of constraints in the area of stock management within the supply chain - a case study, LogForum, Vol. 5, Issue 3, No 6,2009, https://www.logforum.net/pdf/5_3_6_09.pdf

Additional:
1. Grzybowska K., Ragin-Skorecka K., Siemieniak K., Cyplik P., Adamczak M., Jankowski-Guzy J., Toboła-Walaszczyk A., Advanced using of spreadsheet to analyze logistics data - theoretical introduction, Wyższa Szkoła Logistyki, Poznań, 2025.
2. Krzyżaniak S., Cyplik P., Zapasy i magazynowanie, Tom I Zapasy, Podręcznik do kształcenia w zawodzie technik logistyk, ILiM, Poznań, 2007.
3. Domański R., Adamczak M., Analysis of the influence of the lot sizing on the efficiency of material flow in the supply chain, LogForum 13 (3) 2017, https://www.logforum.net/pdf/13_3_8_17.pdf

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,00
Classes requiring direct contact with the teacher	30	1,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	70	2,50