COURSE DESCRIPTION CARD - SYLLABUS

Course name
Intralogistics [N1Log2>INTR]

Course

Field of study
Logistics

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
part-time

Requirements
elective

Number of hours

Lecture
8

Laboratory classes
0

Other
0

Tutorials
0

Projects/seminars
8

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

The student starting this course should have basic knowledge of the flow of materials and information in the enterprise. Student should also have knowledge of technology and logistics infrastructure. The student should have knowledge of process design issues.

Course objective

The goal of the course is to familiarize students with the techniques and technologies used in the field of intralogistics. The student will be familiarized with the intralogistics organization methods in the enterprise. Knowledge to enable the correct design and organization of the intralogistics area with the use of for example simulation software will be tranferred. Problem solving skills related to the organization of material flow in the enterprise will be developed.

Course-related learning outcomes

Knowledge:
1. Student knows the basic issues of construction, technology and techniques related to logistics and intralogistics area[P6S_WG_01]
2. Student knows the basic management issues specific to intralogistics [P6S_WG_08]

3. Student knows the best practices in intralogistics and its specific issues [P6S_WK_06]
4. Student knows the basic methods, techniques, tools and materials used in preparation for scientific research and solving simple engineering tasks in the field of designing intralogistic systems [P6S_WK_07]

Skills:
1. Student can search on the basis of the literature on the subject and other sources and in an orderly way present information on the problem within intralogistics and specific issues of intralogistics, including designing [P6S_UW_01]
2. Student is able to apply appropriate experimental and measurement techniques, including computer simulation, to solve the problem within intralogistics [P6S_UW_03]
3. Student can see system and non-technical aspects in engineering tasks, as well as socio-technical, organizational and economic [P6S_UW_04]
4. Student is able to design, using appropriate methods and techniques, an object, system or process that meets the requirements of intralogistics [P6S_UW_07]

Social competences:
1. Student is aware of the importance of knowledge in the area of intralogistics in solving cognitive and practical problems [P6S_KK_02]
2. Student is aware of cooperation and group work on solving problems within the scope of intralogistics [P6S_KR_02]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Formative assessment: activity during classes. Summative assessment: written colloquium, checking the knowledge obtained during the lecture, passing the threshold of 50% of the points.
Project: Formative assessment: assessment of skills based on the partial report. Summative assessment: report evaluation, passing the threshold of 50% of the points.

Programme content

intralogistics term
intralogistics in industry - cases
designing selected intralogistics processes
milk-runs

Course topics

Lecture: The term of intralogistics. Traditional and modern approach to the flow of materials and information in the enterprise. Material flow based on logistic trains - MilkRun. A flow design approach using an AGV/AMR systems. Simulation methods and solutions of digital twins in the design of intralogistics systems.
Project: Students design the intralogistics system defined by the lecturer.

Teaching methods

Lecture: informative lecture (conventional) (transfer of information in a systematic way), may be of course (propedeutic) or monographic (specialist) character.
Project: project method (individual or team implementation of a large, multi-stage cognitive or practical task, the effect of which is the creation of a work).

Bibliography

Basic:
1. Pawlewski P., Kosacka-Olejnik M., Werner-Lewandowska K., Digital Twin Lean Intralogistics: Research Implications, Appl. Sci. 11/2021, s. 1495.
2. Pawlewski P., „METHODOLOGY FOR LAYOUT AND INTRALOGISTICS REDESIGN USING SIMULATION,
2018 Winter Simulation Conference (WSC), Gothenburg, Sweden, 2018, s. 3193-3204.
3. Intralogistics. Available online: wynright.com/intralogistics.

Additional:
1. Kluska K., Pawlewski P., The use of simulation in the design of Milk-Run intralogistics systems, IFAC-PapersOnLine, Volume 51, Issue 11, 2018, s. 1428-1433.
2. Kluska K., Hoffa-Dabrowska P., Zwolankiewicz A., Simulation Modeling of Milk-Run Internal Logistics System - Case Study, In International Conference on Practical Applications of Agents and Multi-Agent Systems, Springer, Cham, 2019, s. 15-26.
3. Kosacka-Olejnik M., Kostrzewski M., Marczewska, M., Mrówczyńska B., Pawlewski P., How Digital Twin Concept Supports Internal Transport Systems?-Literature Review, Energies, 14(16), 2021, s. 4919.
4. Kartnig G., Grosel B., Zrnic N., Past, state-of-the-art and future of intralogistics in relation to megatrends, FME Trans, 40/2014, s. 193-200.

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	16	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	34	1,00