



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Organization of Production and Logistics in Automotive Industry [S1IZarz1E>OPiLwPS]

Course

Field of study

Engineering Management

Year/Semester

3/6

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

English

Form of study

full-time

Requirements

elective

Number of hours

Lecture

15

Laboratory classes

0

Other

0

Tutorials

15

Projects/seminars

0

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

The student starting this subject should have a knowledge of the fundamentals of production organization and logistics. He/she should also be able to obtain information from specified sources and be willing to cooperate as part of a team.

Course objective

To teach students the principles of organization of production and logistics in the automotive industry. Students learn also practical solutions used in this area.

Course-related learning outcomes

Knowledge:

The student identifies key components of a car and the technologies used in their production [P6S_WG_15].

The student describes the car design processes, including assembly systems and organization of the assembly line [P6S_WG_16].

The student characterizes the organization of supply to companies in the automotive industry, including JiT (Just in Time) and JiS (Just in Sequence) systems [P6S_WG_17].

Skills:

The student analyzes the process of planning and controlling production in a car manufacturing plant, using analytical and simulation methods [P6S_UW_10].

The student identifies and analyzes systemic aspects of the car production process, including management of disruptions and supply [P6S_UW_11].

The student conducts a preliminary economic analysis in the context of production planning and supply chain management in the automotive industry [P6S_UW_12].

The student critically evaluates technological processes of car production, considering modern solutions related to the implementation of the Industry 4.0 concept [P6S_UW_13].

Social competences:

The student explains the importance and impact of a systemic approach to the organization of production and logistics in the automotive industry, taking into account technical, economic, marketing, legal, and organizational aspects [P6S_KO_02].

The student consciously approaches issues related to the impact of the automotive industry on the environment, including the management of used cars and their components [P6S_KR_01].

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Final test during the last class. The test consists of open and closed questions with different scores. The maximum number of points to be obtained during the test is 50 points. Tests (quizzes) and /or tasks related to topics presented during lectures, with different scores. The tests consist of open and closed questions. The maximum number of points to be obtained in class tests and/or tasks during class is 50 points. The passing threshold is 51% points.

Tutorials: Problem tasks carried out on the given exercises in accordance with the topic of lectures and activity in the classroom. Tasks are scored differently. The passing threshold is 51% points.

Programme content

Lecture: Discussion of the principles of production planning and control, the organization of supply in the automotive industry, and issues concerning the management of end-of-life vehicles

Exercises: Solving problem issues related to production planning and control, supply organization in the automotive industry and end-of-life vehicle management.

Course topics

Lecture: The automotive industry in Poland and in the world. History of automotive industry development and current trends. A car as an industrial product (components, applied production technologies). Car design processes. Car production process (assembly systems, organization of the assembly line) and organization of the car manufacturing plant. The process of planning and controlling production in a car manufacturing plant. Organization of deliveries to an automotive industry enterprise (JIT, JIS). Organization of the recycling of used cars and their components. Application of circular economy trends in the automotive industry. Modern solutions in the automotive industry related to the implementation of the Industry 4.0 concept.

Tutorials: Identification of activities, material flows, internal transport means in the vehicles' production. Monitoring parameters. Production planning. Disturbance management. Supply management. Waste identification in the vehicle life cycle. Analysis of vehicle's recovery options

Teaching methods

Lecture: conventional specialist lecture (with a multimedia presentation), problem lecture, case study method, work with a book.

Tutorials: brainstorming, case study method, tutorial method

Bibliography

Basic:

1. Nieuwenhuis, P., & Wells, P. (Eds.). The global automotive industry. John Wiley & Sons, 2015.
2. Tang, He. Automotive vehicle assembly processes and operations management. SAE International,

2017.

3. Golinska P. (Ed.), Environmental issues in automotive industry, Springer Science & Business Media, 2013.

Additional:

1. Hall R.W., Zero Inventories, Dow Jones Irving, Homewood, Illinois, 1983

2. Monden Y., Toyota Production System, Industrial Engineering and Management Press, Norcross, USA, 1983.

3. Golinska-Dawson P., Kübler F. (Red.), Sustainability in Remanufacturing Operations, Springer, 2017.

4. Kosacka M., Werner-Lewandowska K., Perspektywy rozwoju sieci recyklingu Pojazdów Wycofanych z Eksploatacji (PWE) w Polsce, Gospodarka Materialowa i Logistyka, 2017.

5. Kosacka-Olejniki M., How manage waste from End-of-Life Vehicles?-method proposal. IFAC-PapersOnLine, 52(13), 2018, s. 1733-1737.

6. Pałucha K., Proces realizacji zamówień klienta w przemyśle samochodowym. Zeszyty Naukowe. Organizacja i Zarządzanie/Politechnika Śląska, 2018, s. 153-162.

7. Janczewski J., Wybrane problemy logistyki zwrotnej w branży usług motoryzacyjnych, ZlwGiB, 1(14), 2012, s. 131-142.

8. Batchelor, R. (1994). Henry Ford, mass production, modernism, and design (Vol. 1). Manchester University Press.

9. Meyr H. (2009) Supply chain planning in the German automotive industry. In: Meyr H., Günther HO. (eds) Supply Chain Planning. Springer, Berlin, Heidelberg.

10. Collins, R., Bechler, K., & Pires, S. (1997). Outsourcing in the automotive industry: from JIT to modular consortia. European management journal, 15(5), 498-508.

11. Juhász, J., & Bányai, T. (2018, May). What industry 4.0 means for just-in-sequence supply in automotive industry?. In Vehicle and Automotive Engineering (pp. 226-240). Springer, Cham.

12. Kulkarni, A. A., Dhanush, P., Chetan, B. S., Gowda, T., & Shrivastava, P. K. (2019). Recent Development of Automation in Vehicle Manufacturing Industries. International Journal of Innovative Technology and Exploring Engineering, 8(6S4), 410-413.

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	20	1,00