COURSE DESCRIPTION CARD - SYLLABUS

Course name

Design of industrial plants

Course

Field of study

Logistics

Year/Semester

4/7

Area of study (specialization)

Profile of study

general academic

Level of study

First-cycle studies

Course offered in

Polish

Form of study

full-time

Requirements

elective

Number of hours

Lecture

15

Laboratory classes

Other (e.g. online)

Tutorials

Projects/seminars

30

Number of credit points

4

Lecturers

Responsible for the course/lecturer:

Ph.D., Eng. Ireneusz Gania

Mail to: ireneusz.gania@put.poznan.pl

Phone: 61 665 33 85

Faculty of Engineering Management

ul. J. Rychlewskiego 2, 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

The student starting this subject should have basic knowledge in the field of production and service management, should be able to apply the tools and techniques of designing production units of the first degree of complexity, should also be able to obtain information from the indicated sources and be willing to cooperate within a team.

Course objective

To provide students with basic theoretical and practical knowledge related to the design of production systems as well as basic methods and techniques used in this process.

Course-related learning outcomes

Knowledge

1. Student knows the basic issues of construction, technology and techniques related to logistics in industrial plants design area[P6S_WG_01]

2. Student knows the basic issues of mechanics, construction and operation of machines related to logistics in industrialm plants design area[P6S_WG_02]

Skills

1. Student can see in engineering tasks system and non-technical aspects as well as socio-technical, organizational and economic aspects in industrial plants design area[P6S_UW_04]

2. Student is able to prepare the means of work necessary to work in an industrial environment and knows the safety principles associated with this work, including safety problems in logistics in industrial plants design area[P6S_UW_05]

3. Student can identify and formulate a practical (engineering) project task, characteristic of logistics in industrial plantss design area and supporting economies [P6S_UO_01]

4. Student is able to identify changes in requirements, standards, regulations, technical progress and the reality of the labor market, and based on them determine the needs to supplement knowledge in industrial plants design area and supporting economies[P6S_UU_01]

Social competences

1. Student is aware of the critical assessment and perception of cause-effect relationships in achieving the set goals and ranking the significance of the tasks in Industrial plantss design area[P6S_KK_01]

2. Student is aware of initiating activities related to the formulation and transfer of information and cooperation in society in the field of logistics in industrial plants design area and supporting economies[P6S_KO_02]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Formative assessment: in terms of lectures based on answers to questions about the material discussed in previous lectures. Summative rating: in the scope of lectures written exam in the field of lecture content; each question is scored on a scale of 0 to 1; the exam is passed after obtaining at least 55% of the points; the student can take the exam after passing the project; discussion of exam results.

Project: Formative assessment: in the scope of projects - based on the current progress of project task implementation. Summative rating: in the scope of projects based on the presentation of the implementation of the project task and answers to questions regarding the implementation of the project task and solutions used in the project task.

Programme content

Lecture: Basics of production system design. Enterprise as a system. Determining the design situation (modernization or design of new systems). Product implementation process. Algorithm for designing technical and economic assumptions for the preparation of product manufacture. Design issues:

production system structures, production launch, spatial organization of production processes. Project documentation. General plan, location of the enterprise. System design assessment. New directions and trends in the design of production systems. Robotization. Automation in industrial plants.

Project: Separating complexity level I production units with the use of IT tools Parametric characteristics of separated production units with an index evaluation. Analysis of separated production units, selection of the number of positions, calculation of the number of employees, evaluation of effectiveness. Calculation of the number of non-productive workers of the designed production system. Calculation of the area of the planned industrial plant, with the division into production and auxiliary area. Designing support services and economies (tools, renovation, material and storage, transport, quality control) in terms of the organizational structure, planned tasks, tools and methods used. Development of the organizational structure of the planned industrial plant and production department. Distribution of production units and auxiliary farms in the production hall of the designed plant on a scale of 1: 100.

Teaching methods

Lecture: Informative (conventional) lecture (information transfer in a systematic way) of a monographic nature, in the form of a multimedia presentation.

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. Brzeziński M. (red.), Organizacja i sterowanie produkcją, AW Placet, Warszawa, 2002.

2. Lewandowski J., Skołud B., Plinta D., Organizacja systemów produkcyjnych, PWE, Warszawa 2014.

3. Gawlik J., Plichta J., Świć A., Procesy produkcyjne, PWE, Warszawa 2013.

4. Mazurczak J., Projektowanie struktur systemów produkcyjnych, WPP, Poznań, 2001.

5. Lis S., Organizacja i ekonomika procesów produkcyjnych w przemyśle maszynowym, PWN, Warszawa 1984.

6. Jackowicz R., Lis S, Podstawy projektowania struktur przedsiębiorstw przemysłowych, WPW, Warszawa 1987.

7. Mazurczak, J., Gania, I., Kryteria klasyfikacji warunków organizowania systemów produkcyjnych, Fertsch M., Grzybowska K., Stachowiak A. (red.), Logistyka i zarządzanie produkcją: narzędzia, techniki, metody, modele, systemy, Politechnika Poznańska, Instytut Inżynierii Zarządzania, Poznań, 2008, s. 175-186.

Additional

1. Pająk E., Klimkiewicz M., Kosieradzka A., Zarządzanie produkcją i usługami, PWE, Warszawa 2014.

2. Muhlemann A., Oakland J., Lockyer K, Zarządzanie. Produkcja i usługi, PWN, Warszawa 2001.

3. Pająk E., Zarządzania produkcją, Wydawnictwo Naukowe PWN, Warszawa 2017.

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,0
Classes requiring direct contact with the teacher	47	2,0
Student's own work (literature studies, consultation, preparation for exam, project preparation) [1]	53	2,0

[1] delete or add other activities as appropriate