Detailed course description (SUBJECT CARD)

Course title:	MODELLING OF PRODUCTION AND LOGISTICS SYSTEMS	
Course code:	ROZ_ZIP_S2Ms3_F3_08	
Classification of a course group:		
Course type:	general	
	obligatory	
Field of study:	MANAGEMENT AND PRODUCTION ENGINEERING (ROZ)	
Level of study:	second-cycle	
Profile of study:	general academic	
Mode of study:	full-time programme	
Specialty (specialisation):	PRODUCTION AND LOGISTIC SYSTEMS IN INDUSTRIAL ENTERPRISES	
Year of study:	II	
Semester:	III	
Teaching modes and teaching hours:		
	Lectures - 30	
	Classes - 15	
	Laboratory - 15	

Language/s of instruction:

Number of ECTS credits (according to the study programme): 3

English

* – leave the appropriate option

1. Course objectives: to acquire knowledge allowing to design a selected production and logistics system or subsystems according to established criteria.

2. Relation of the field-related learning outcomes to modes of teaching and methods of verification as well as to assessment of student's learning outcomes:

symbol	assumed learning outcomes a student who completed the course:	teaching modes	verification methods and learning outcomes assessment
Knowledge: a student knows and understands			
ROZ_ZiIP_2A_W10	the theoretical stages of modelling a production and logistics system, that is: needs and problems identification, creative problem solving, tasks definition, shaping, dimensioning, evaluation, controlling, audit and also knows and understands avidities taken in them	Lecture	Final test
ROZ_ZiIP_2A_W14	elements included in the production and logistic system modelling process and their interaction with the modelled system	Lecture Classes	Final test Paper work
Skills: a student can			
ROZ_ZiIP_2A_U06	prepare a paper work in English based on the information obtained, which he interprets, evaluates and draws conclusions based on it	Classes	Paper work
ROZ_ZiIP_2A_U21	select and use appropriate methods and tools enabling the modeling of selected processes carried out in the production and logistics system	Classes Laboratory	Paper work Test
Social competences: a student is prepared to			
ROZ_ZiIP_2A_K07	independently solve problems in the field of modelling elements of the production and logistics system	Laboratory	Test

- 3. The content of study programme ensuring learning outcomes *(according to the study programme)*: The program content is related to the concepts, methods and instruments of modelling of production and logistics system. The program covers entire system modelling process from identifying the need or problem to carry out a post-implementation control of solutions. The students understand the benefits of the designed production and logistics system and know the methods and tools for this purpose.
- 4. Description of methods of determination of ECTS credits:

Type of activity	Number of hours / ECTS credits
Number of course hours regardless of a teaching mode	60/2
Student's workload 1* making a paper work from classes	15/0,5
Student's workload 2* preparation for final test from lecture	5/0,2

Student's workload n 3 [*] preparation for test from laboratory	10/0,3
The other**	-
Total hours:	90
Number of ECTS credits allocated to a course	3

Explanation:

* - student's workload - fill in the types of activities, e.g. preparation for a course, interpretation of results, making a course report, preparation for an exam, studying sources, making a project, presentation and report, doing written assignment, etc.

** - the other e.g. *extra course hours*

- 5. Summary indexes:
 - number of course hours and ECTS credits at the course with a direct participation of academic teachers or other persons running the course and supervising students;
 60/2
 - number of course hours and ECTS credits at the course related to the scientific activity conducted at the Silesian University of Technology in a discipline or in disciplines to which a field of study is assigned in the case of studies with a general academic profile; 90/3
 - number of course hours and ECTS credits at the course developing practical skills- in the case of practical studies;
 - number of course hours conducted by academic teachers employed by the Silesian University of Technology as their primary workplace.
 60/2
- 6. Persons conducting particular modes of courses (name, surname, academic degree or degree in arts, title of professor, business e-mail address):

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- 7. Detailed description of teaching modes:
 - 1) Lectures:

- detailed programme's content:

- 1. Organizational classes requirements and subject scope
- 2. Definitions of basic concepts repetition of material (introduction to classes)
- 3. Model and modeling
- 4. Elements included in production and logistics system design
- 5. System design stages problem/needs, create solution variants
- 6. System design stages logistic task, shaping
- 7. System design dimensioning and system evaluation
- 8. System controlling and audit
- 9. Final test
- teaching methods, including distance learning:

1. Academic lecture with the possibility of students active participation by remote education tools (Remote Education Platform of the Silesian University of Technology, Zoom Platform)

- 2. Multimedia presentation
- 2. Auditorium discussion

2) Classes:

- detailed programme's content:

A paper work on the modelling of the production and logistics system elements for a selected type of enterprise

- 1. Organizational classes requirements and classes scope
- 2. Company characteristics
- 3. Location
- 4. Scope of activity
- 5. Resources analysis
- 6. Spatial structure of logistics system in company
- 7. Spatial structure of the company
- 8. Internal material and information connections
- 9. Logistics network
- 10. Organization of the logistics system
- 11. Production subsystem
- 12 Supply system analysis
- 13. Warehouse subsystem
- 14. Transport subsystem
- 15. Custumer service subsystem
- 16. Conclusions

- teaching methods, including distance learning:

1. Classes with the possibility of students active participation by remote education tools (Remote Education Platform of the Silesian University of Technology, Zoom Platform)

- 2. Teamwork
- 3. Auditorium discussion
- 4. Paper work
- 3) Laboratory:
 - detailed programme's content:
 - Classes carried out with the use of a FlexSim computer program.
 - 1. Organizational classes requirements and classes scope
 - 2. Introduction to program settings and its functions
 - 3. Modeling the production process consisting of 8 elements
 - 4. Creating connections and individual orders for machines
 - 5. Modeling an assembly station
 - 6.Warehous/hospital elements modelling
 - 7. Open questions test

- teaching methods, including distance learning:

1. Classes with the possibility of students active participation by remote education tools (Remote Education Platform of the Silesian University of Technology, Zoom Platform)

- 2. Learning by doing
- form and criteria for semester completion, including retake tests, as well as conditions for admission to the examination:
 - Final assessment is based on a positive evaluation of: final test from lecture, test form laboratory and paper work from classes, it is the arithmetic average of the grades obtained
 - Lecture assessment is based on final test consisting of twenty questions concerning the scope of the lecture, the questions included in the test are single choice
 - Classes assessment is issued on the basis of four components: paper work, involvement, teamwork, presence mark and is the arithmetic average of the grades obtained. Obtaining a positive grade for a paper work is from 22 points (60%) to 37 points, that can be obtained
 - Laboratory assessment is based on computer program test. On the task content basis, one should independently model an element of the production or logistics system and answer ten questions.
 - There is no possibility to improve the positive assessment. The student may take the test three times, no more.
- course organisation and rules of participation in the course, with an indication whether a student's attendance is obligatory

- attendance at classes (practical) and laboratories is obligatory. In the case of classes conducted using the Zoom platform, presence is checked with the cameras turned on

- tests and final test are carried out on the remote education platform and with the cameras on the Zoom platform turned on

- during the classes, the progress of work is checked by randomly one work section selecting, that presents individual progress. On this basis, the remaining sections improve their work in line with the comments

- recording of classes or screenshot is not allowed, students are required to create their own notes from the all classes

- 4) description of other teaching modes:
 - 1.Individual student work

The final grade of the subject is the value of the arithmetic mean of the grades achieved – lecture, classes, laboratory.

8. Method and procedure for making up for

- student's absence from the course,

In the case of absence - independent completion of material.

9. Prerequisites and additional requirements, taking into account the course sequence:

Fundamentals of knowledge in the field of production systems organization, management of a logistics company and project management.

11. Recommended sources and teaching aids:

Basic literature:

1. L. Curry, Guy, (2010), Supplementary literature: Manufacturing Systems Modeling and Analysis. Springer.

2. A.R. Sharma, Vinit K. Modi, (2019), Manufacturing System. Atul Prakashin.

3. A. Langevin, D. Riopel, (2005), Logistics Systems: Design and Optimization. Springer.

4. M. Beawerstock, A. Greenwood, W. Nordgren, (2010), Applied Simulation. Modeling and Analysis using FlexSim.

Supplementary literature:

1. P. Schönsleben (2011), Integral Logistics Management: Operations and Supply Chain Management Within and Across Companies. Auerbach Publications.

2. P. Marksberry (2012), The Modern Theory of the Toyota Production System. Productivity Press.

12. Description of teachers' competences (e.g. publications, professional experience, certificates, trainings etc. related to the programme contents implemented as a part of the course):

K. Wielicka-Gańczarczyk

Publications:

1. Pietroń R., Bielecki M., Wielicka-Gańczarczyk K., (2016), Koncepcje logistyczne w zarządzaniu organizacją. Texter.

2. Wielicka-Gańczarczyk K., (2020), Negative factors affecting the efficiency of restructuration of public hospitals. Sil. Univ. Technol. Sci. Pap., Organ. Manage., no. 144, p. 593-610.

Professional experience:

- research in healthcare system field
- conducting classes in basics of engineering design, modeling of production and logistics systems, technical preparation of production, project management
- conducting courses in English: modeling of production and logistics systems, technical preparation of production, project management
- project manager deputy in project "Silesian University of Technology as a modern European technical university"

Skills and certificates:

- Certyfikat IPMA Level D
- Prince2 Foundation
- Prince2 Practitioner
- International DiSC Manager
- PMI training
- knowledge of the computer program: MsProject, FlexSim, graphic programs

13. Other information: