SYLLABUS

Name: ***System analysis in production engineering (ZIPAOZ>SM2SAiPE19O)***
Name in Polish:
Name in English: ***System analysis in production engineering***

Information on course:

Course offered by department: Faculty of Organization and Management
Course for department: Silesian University of Technology

Default type of course examination report:

EGZ

Language:

English

Course homepage:

https://platforma2.polsl.pl/roz/course/view.php?id=274

Short description:

The aim of the course is the acquisition of the ordered knowledge in the field of methodology and applications of system analysis in production engineering. The course also aims at the development of system thinking and acquiring knowledge on process approach in manufacturing and service enterprises.
The course also covers issues related to the methodology and practical skills related to the basics of modeling, analysis, and description of systems and processes using selected standard notations.

Description:

Lecture
1. Systemic problem solving in production engineering.
2. Systems thinking. Systems thinking strategies and mental models
3. The essence and assumptions of systems analysis. Methodology and applications of systems analysis.
4. Process orientation of the organization, process approach, classification of processes.
5. Basics of systems and processes modeling.
6. Basics of business process modeling using BPMN – process diagrams, collaboration diagrams, conversation diagrams, choreography diagrams.
7 Basics of Unified Modeling Language.

Laboratory classes
1. Identification of the private/public process and its characteristics on the example of a selected production or service enterprise (identification of process participants/performers, activities, interactions and decisions made).
2. Modelling the private/public process based on BPMN.
3. Proposal to improve a selected process implemented in a production or service enterprise.
3. Application of a decision tree and decision table in solving selected problems of production engineering.
4. Development of UML diagrams (business use case diagram, use case diagram, class diagram).

Number of hours of classes with the direct participation of academic teachers or other persons teaching courses
Contact hours
Lecture: 15h
Project: 15h

Student's own work
Preparation for the final exam: 15h
Preparation for laboratory classes and preparation of laboratory reports: 12h
Preparation of final report: 3h

Total workload: 60
Number of ECTS credits: 2
including
Number of ECTS credits covered by the study program to be earned as part of the courses taught with the direct participation of academic teachers or other persons teaching courses and students: 1

Bibliography:

Bowman K., Systems Analysis. A Beginner’s Guide. Palgrave-Macmillan, New York 2004
Dennis A., Wixom H.B., Roth R.M., Systems analysis and design. John Wiley & Sons, Inc., Hoboken, NJ 2012.
Ryszko A., Environmental systems analysis – the diversity of tools and the multi-faceted research field. Proceedings of the 37th International Business Information Management Association (IBIMA), Cordoba, Spain 30-31 May 2021, 10310-10325.
Business Process Model and Notation (BPMN). Version 2.0.2. Object Management Group, December 2013.
Unified Modeling Language (UML®). Version: 2.5.1. Object Management Group, December 2017.

Learning outcomes:

Knowledge
Student knows and understands:
K2A_W04 ordered and theoretically-grounded key methods of analysis, description and modelling of the conditions and flow of processes in the enterprise and their improvement, as well as analysis and description of systems.

Skills
Student is able to:
K2A_U02 perform tasks as well as formulate and solve problems using new knowledge abour description and analysis of systems and processes.
K2A_U03 when identifying and formulating specifications for engineering tasks and solving them, use analytical methods for the description and
modeling systems and processes recognizing their technical and non-technical aspects.

K2A_U10 use structured and theoretically-grounded knowledge to analyse and model systems and processes in the enterprise.

Social competences
Student is ready for:
K2A_K05 responsible performance of professional roles, taking account of changing social needs, including developing professional achievements, maintaining the ethos of the profession, observing and developing the principles of professional ethics, as well as promoting compliance with these principles.

Assessment methods and assessment criteria:

Lecture
Passing the lecture is based on a positive grade achieved in the written exam (choice test).
It is possible to get additional points for the activity during the lecture.
The condition for positive evaluation is receiving more than 50% obtainable points.
It is possible to improve the written test twice, however, it is done orally.

Laboratory classes
To pass the laboratory classes, it is required to send correctly prepared laboratory reports, assessed over 50% of obtainable points.
Reports from laboratory classes are assessed in terms of formal and content-related aspects.
Reports prepared incorrectly may be corrected twice.

The final grade for the subject takes into account 50% of the lecture grade and 50% of the laboratory class grade. The final grade is the arithmetic mean value of the grades for the lecture and laboratory classes.

Element of course groups in various terms:

Course group description	First term	Last term
missing group description in English (ZIPAOZ>SM2-19-O)	2020/2021-L	

Course credits in various terms:

Management and Production Engineering, full-time master degree studies 3 sem. (ZIPAOZ-SM3)

Type of credits	Number	First term	Last term
European Credit Transfer System (ECTS)	2	2020/2021-L	