POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Management of transport and logistics processes [S1Trans1>ZPTL]

Course

Field of study
Transport

Year/Semester
3/5

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture	Laboratory classes	Other
15	15	0

Tutorials	Projects/seminars	
0	0	

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

KNOWLEDGE: The student has an organised, theoretically founded general knowledge in the field of technology, transport systems and various means of transport. SKILLS: The student is able to properly use information and communication techniques, applicable at various stages of the implementation of transport projects. SOCIAL COMPETENCES: The student understands that knowledge and skills very quickly become obsolete in technology.

Course objective

The aim is to familiarize students with the basics of process modeling and simulation. It is also preparation for process management with the use of advanced database tools (process modeling and simulation).

Course-related learning outcomes

Knowledge:
Has knowledge of important directions of development and the most important technical achievements and other related scientific disciplines, in particular transport engineering.
Knows the basic techniques, methods and tools used in the process of solving decision problems in the field of transport, mainly of its engineering nature.

Skills:
Is able to formulate and solve tasks in the field of transport, use appropriately selected methods, including analytical, simulation or experimental methods.
Has the ability to formulate tasks in the field of transport engineering and their implementation using at least one of the popular tools.
Is able to organize, cooperate and work in a group, assuming different roles in it, and is able to properly define priorities for the implementation of a task set by himself or others.

Social competences:
Is able to think and act in an entrepreneurial way, incl. finding commercial applications for the created system, taking into account not only business benefits, but also social benefits from the conducted activity.
Is aware of the social role of a graduate of a technical university, in particular, understands the need to formulate and convey to the society in an appropriate form information and opinions about engineering activities, technological achievements, as well as the achievements and traditions of the profession of a transport engineer.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
Written test summarising the lectures on the subject. Multiple-choice test at the end of the semester. Within the laboratory - the average of partial grades in the test.

Programme content

1. Business Process Management (BPM) cycle.
2. Classification of business processes in transportation.
3. Process-oriented vs. functional approach in a transportation company.
4. Process flow and structure of processes; key business process notations (EPC and BPMN).
5. ARIS Architect & Designer as a process management IT system.
6. Business process simulation.

Course topics

1. Introduction: The process as a research subject; review of the concept of process definition, other key concepts related to the object (customer, added value, process-oriented vs. function-oriented enterprise, the bottleneck phenomenon), the concept of the business process management (BPM) cycle,
key process notations, IT support of BPM cycle, discussion of the main thematic issues of the subject against the background of the BPM cycle.
2. Process modeling (basics of EPC notation) - stage 1 BPM: Methodical basics of formal process notation - EPC notation, ARIS House concept, key principles of modeling according to EPC notation, connection of process and organisational structure, hierarchy and structure of processes; VACD model, construction of basic models of processes in transport and logistics.
3. Process modeling (application of the ARIS tool) - step 1 BPM: Functional basics of a database tool supporting the BPM management cycle; ARIS Architect & Designer, techniques for modeling processes in the ARIS tool based on EPC notation, creating process reports (including the scope of employees" responsibilities, the scope of process support with IT tools functionalities, organisational barriers, etc.), database management in ARIS.
4. Process configuration - stage 2 BPM: Defining the key functional parameters of the process (processing time of activities, minimum staffing, permissible process costs, etc.), simulation verification of parameterisation correctness (feasibility), simulation basics; creating a simulation model based on the process model (EPC notation), the concept of a process folder, key dynamic characteristics of the process (process efficiency, queue length, dynamic vs. static waiting time), simulation process control, evaluation of simulation results - statistics detailed and aggregated.
5. Process improvement (basics of process simulation) - stage 4 BPM: Variant analysis of changes in the process, construction and simulation testing of process improvement scenarios, conducting process simulations.
6. Process improvement (introduction of changes and change management) - stage 4 BPM: Defining the

scope of necessary changes in the current configuration of the process, implementation of simulation results.
7. Knowledge summary: Test to check the level of acquired knowledge and skills.

Teaching methods

1. Lecture on methodological background..
2. Workshop methods.
3. The case studies.
4. Laboratories - process models, simulation experiments.

Bibliography

Basic
1. Davis R., Brabänder E., ARIS Design Platform. Getting started with BPM, Springer, 2010
2. Gabryelczyk R., ARIS w modelowaniu procesów biznesu, Difin, 2010
3. Sawicki P., Wielokryterialna optymalizacja procesów w transporcie, ITE, Radom, 2013
4. Sawicki P., Zarządzanie procesami, Politechnika Poznańska, Poznań, 2024 (e-script on Kursy)
5. Scheer A.-W., ARIS - Business Process Modeling, Springer, 2000
Supplementary
1. Kowalska-Napora E., Projektowanie procesów logistycznych, Wydawnictwo Economicus, Szczecin, 2012
2. Nowosielski S. (red), Procesy i projekty logistyczne, Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu, Wrocław, 2008
3. Weske M., Business Process Management. Concepts, Languages, Architectures, Springer, 2012
4. Melao N., Pidd M., A conceptual framework for under-standing business process and business process modeling, Information System Journal, 2000, vol. 10, no. 2, s. 105-129

Breakdown of average student's workload

	Hours	ECTS
Total workload	55	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)	25	1,00