

# Business process modeling - course description

General information	
Course name	Business process modeling
Course ID	04.2-WM-BizEIP-ModelProcBiznes-Er
Faculty	<a href="#">Faculty of Computer Science, Electrical Engineering and Automatics</a>
Field of study	E-business
Education profile	practical
Level of studies	First-cycle Erasmus programme
Beginning semester	winter term 2021/2022

Course information	
Semester	5
ECTS credits to win	5
Course type	obligatory
Teaching language	english
Author of syllabus	<ul style="list-style-type: none"><li>dr inż. Grzegorz Pająk</li><li>dr inż. Iwona Pająk</li></ul>

Classes forms					
The class form	Hours per semester (full-time)	Hours per week (full-time)	Hours per semester (part-time)	Hours per week (part-time)	Form of assignment
Lecture	30	2	-	-	Credit with grade
Laboratory	30	2	-	-	Credit with grade

## Aim of the course

The main result of this course is to know the methods and tools of business process modelling. Mastering selected tools for modeling business processes. Ability to analyze business processes and model selected processes.

## Prerequisites

Mathematics. The basics of programming.

## Scope

Business process orientation to organizations and systems. Business Process Classification. Business process modeling: goals and objectives. Business process models. Notations for modeling processes: UML, BPMN.

The notation used in Business Process Model & Notation (BPMN). Basic elements of the process diagram: flow objects (events, activities, gateways), sequence flows, data objects, associations, artifacts (groups, text annotations). Basic elements of the collaboration diagram: pools and lanes, message flow.

Extended BPMN modeling elements. Activities: tasks, sub-processes, call activities, loop characteristics. Gateways: exclusive gateway, inclusive gateway, parallel gateway, complex gateway. Events: start events, intermediate events, end events, types of triggers, event-based gateways. Boundary events, exception handling. BPMN metamodel.

Conversation diagrams: pools, message flows, conversation nodes and conversation links. Global conversations. Choreography diagrams: start and end events, choreography activities, sequence flows and messages flows. Sub-choreographies.

Estimation of business process performance: calculating cycle time and cost of a process (average cycle time of an entire process, activity times: execution time, waiting time, resting time, transport time, cycle time efficiency). Capacity analysis: active resources, passive resources, theoretical capacity of the process, bottlenecks, resource utilization. Estimation of waiting time: Queueing theory.

Process-Aware Information Systems (PAIS), Business Process Management Systems (BPMS), Architecture of BPMS: execution engine, process modeling tool, worklist handler, administration and monitoring tools.

## Teaching methods

Lecture - conventional lecture, presentation of a case study.

Laboratory: practical classes, discussions, case studies.

## Learning outcomes and methods of theirs verification

Outcome description	Outcome symbols	Methods of verification	The class form
Ability to complete a project involving the analysis of processes for a selected business entity		<ul style="list-style-type: none"><li>a quiz</li><li>an ongoing monitoring during classes</li></ul>	<ul style="list-style-type: none"><li>Laboratory</li></ul>
Knowledge of the tools and techniques used to model business processes		<ul style="list-style-type: none"><li>a test with score scale</li></ul>	<ul style="list-style-type: none"><li>Lecture</li></ul>

Outcome description	Outcome symbols	Methods of verification	The class form
Ability to use the tools learned in the case study		<ul style="list-style-type: none"> <li>• a quiz</li> <li>• an ongoing monitoring during classes</li> </ul>	<ul style="list-style-type: none"> <li>• Laboratory</li> </ul>
Ability to model the business process in the selected notation		<ul style="list-style-type: none"> <li>• a quiz</li> <li>• an ongoing monitoring during classes</li> </ul>	<ul style="list-style-type: none"> <li>• Laboratory</li> </ul>
Knowledge of business process modeling theory and their importance in business process management		<ul style="list-style-type: none"> <li>• a test with score scale</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> </ul>

## Assignment conditions

**Lecture** - oral or written test administered at the end of the semester

**Laboratory** –the final grade is the average of grades obtained for individual tasks and test

**Calculation of the final grade:** lecture 50% + laboratory 50%

## Recommended reading

1. Business Process Model and Notation. Version 2.0, OMG, <http://schema.omg.org/spec/BPMN/>
2. Dumas M., La Rosa M., Mendling J., Reijers H.A., Fundamentals of Business Process Management, Springer International Publishing Switzerland 2018
3. Kossak F., Illibauer C., Gaist V. *et al.* – *A Rigorous Semantics for BPMN 2.0 Process Diagrams*, Springer International Publishing Switzerland 2014
4. Unified Modelling Language, Version 2.5, OMG, <http://www.omg.org/spec/UML/>

## Further reading

1. Jeske M. – Business Process Management. Concepts, Languages, Architectures, Springer-Verlag, Berlin, 2012
2. Silver B. – BPMN Method & Style, Cody-Cassidy Press, Aptos, USA, 2009
3. White S. A., Miers D. – BPMN Modelling and Reference Guide, Lighthouse Point, Florida, USA, 2008

## Notes

Modified by dr hab. inż. Marek Kowal, prof. UZ (last modification: 12-07-2021 11:41)

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