University of Gdańsk

Subject card

Subject name and code	Business Processes Digitalization , PG_00178525		
Field of study	Finance and Accounting		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2028/2029
Education level	Bachelor's studies	Subject group	Obligatory subject group in the field of study Subject group related to scientific research in the field of study
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	6	ECTS credits	5.0
Learning profile	academic	Assessment form	credit
Conducting unit	Department of Business Informatics -> Faculty of Management -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Natalia Michałek	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	45.0	0.0	0.0	60

E-learning hours included: 0.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	60	4.0	61.0	125

Subject objectives

The aim of the subject is to develop the ability to analyse, design and simulate business processes using modern IT tools. The subject emphasises the practical aspects of modelling processes, parameterising models and simulating them in various scenarios (as-is, what-if, to-be). In particular:

- the selection of appropriate IT tools for specific business process modelling and simulation applications,
- use of standard modelling notations such as BPMN or UML,
- building multidimensional process models taking into account data, algorithms and user interactions,
- parameterising models for realistic simulations and analyses,
- interpreting simulation results and designing alternative business scenarios,
- developing a critical and creative approach to optimisation and digitalisation of business processes.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[FiRL3_W05] To an advanced degree, the student knows and understands the tools and techniques for obtaining, compiling, and analyzing the data necessary to assess the financial situation of various entities in management, quality sciences, economics, and finance.	The student knows and understands the methods of assessing the financial health of entities and the tools and techniques of data analysis, including IT tools to support financial analysis.	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report
[FiRL3_U12] The student can utilize IT tools to enhance finance and accounting tasks.	The student is proficient in the use of IT tools for data analysis, forecasting and reporting of financial results, as well as the digitalisation of business processes.	[SU6] demonstration of practical skills
[FiRL3_W06] To an advanced degree, the student knows and understands the objectives, essence, nature and interrelationships of financial processes, ways of recording them, and the principles of rational decision-making and implementation of changes in this area.	The student has knowledge of how to identify and characterise the key financial processes in a company, how to describe the way they are recorded in the system and in IT tools, and knows how to assess the impact of these processes on management decisions.	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report

Subject contents

1. Introduction to the digitalisation of business processes
   - The role and importance of digitalisation in modern organisations
   - Overview of tools supporting process analysis and management
2. IT tools for process modelling and simulation
   - Rationale for the selection of tools and their functionality
   - Practical application: ADONIS, Enterprise Architect, BPMN.io
   - Comparison of capabilities of selected tools
3. Notations used in process design
   - Business Process Model and Notation (BPMN)
   - BPMS notations
   - UML language in a process context
4. Multi-dimensional business process modelling
   - Integration of data and events in the model structure
   - Consideration of external factors and user interaction
   - Structural specification of IT and data artefacts
5. Parameterisation of process models
   - Determination of time, cost and logistical parameters
   - Parallel threads, jamming, resource constraints
   - Use of variables, agents and probability distributions
   - Preparation of models to run simulations
6. Simulation of business processes
   - Estimation of process execution time and costs
   - Path, load and resource efficiency analysis
   - Comparison of stationary and non-stationary analysis
7. Analysis and optimisation of business processes
   - Scenarios: as-is, what-if, to-be
   - Construction of predefined and proprietary analysis queries
   - Identification and elimination of errors in the models
   - Good practices for the construction of optimised models

Prerequisites and co-requisites

Basic knowledge of management concepts and IT tools to support the management of business organisations.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Credit project	51.0%	50.0%
Written or spoken test	51.0%	50.0%

Recommended reading

Basic literature	1. Authors' teaching materials (lecture and laboratory) of the lecturers 2. Gawin B., Marcinkowski B.; Business process simulation. BPMS and BPMN standards in practice; Onepress [latest edition]. 3. Gawin B., Information Systems in Workflow Process Management; Wydawnictwo Naukowe PWN, Warszawa [latest edition].
Supplementary literature	Drejewicz S., Understanding BPMN. Business process modelling. Wydanie 2 rozszerzone; Onepress [latest edition]
eResources addresses	

Example issues/ example questions/ tasks being completed	1. Model task: Design in BPMN a model of the order handling process of an e-commerce company, taking into account exceptional conditions. 2. Simulation: Simulate the warehousing process using the ADONIS tool. Identify critical locations. 3. What-if analysis: Modify the process parameters in the selected model and conduct a 'what-if' scenario analysis. 4. Group project: Develop a multi-dimensional process model for a financial institution taking into account data, resources and the legal environment. 5. Analysis report: Prepare a report comparing two process simulation tools (e.g. ADONIS vs Enterprise Architect) in terms of functionality and application.
Work placement	Not applicable

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