

**COMPUTER SCIENCE AND MANAGEMENT / DEPARTMENT OF OPERATIONS RESEARCH****SUBJECT CARD**

**Name in Polish:** Podstawy modelowania i analiza SIZ  
**Name in English:** Basics of MIS analysis and modeling  
**Main field of study (if applicable):** Management  
**Specialization (if applicable):** Business Management  
**Level and form of studies:** 1st level, full-time  
**Kind of subject:** optional  
**Subject code:** IEZ1232  
**Group of courses:** NO

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)	15		30		
Number of hours of total student workload (CNPS)	30		60		
Form of crediting	<del>Examination/</del> crediting with grade*	<del>Examination/</del> crediting with grade*	<del>Examination/</del> crediting with grade*	<del>Examination/</del> crediting with grade*	<del>Examination/</del> crediting with grade*
For group of courses mark (X) final course					
Number of ECTS points	1		2		
including number of ECTS points for practical (P) classes					
including number of ECTS points for direct teacher-student contact (BK) classes	0,5		1		

\*delete as applicable

**PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**

1. Generally familiar with the concept and application of information technology in management. Knows most commonly used office software tools and their application in management.
2. Knows the basics of building simple software tools to solve management problems.
3. Can build simple software tools to solve management problems.

**SUBJECT OBJECTIVES**

C1 To obtain knowledge about problems, methods and tools for modeling and analysis of management information systems together with identifying information requirements for such systems.

C2 To acquire capability to analyze and build models of management information systems together with identifying information requirements for such systems.

C3 To acquire social competences specific for modeling and analysis of management information systems together with identifying information requirements for such systems.

### SUBJECT EDUCATIONAL EFFECTS

Relating to knowledge, the students:

PEK\_W01 - Know selected methods of identification and analysis of organization information systems

PEK\_W02 - Know the selected methods, notations and tools for modeling organization information systems and business processes

Relating to skills, the students:

PEK\_U01 - Can identify and analyze the needs of users of organization information systems

PEK\_U02 - Knows how to create selected models of organization information systems with the help of selected notation and software and how to build business process models using selected notations and software tools

Relating to social competences, the students:

PEK\_K01 – Know how to independently develop their skills and knowledge, work in cooperation and in teams, demonstrate willingness to identify, analyze and solve problems in the field of modeling and analysis of management information systems.

PEK\_K02 – Can search for and choose professional methods to solve problems, take responsibility for their choices, communicate, persuade and defend their views related to the modeling and analysis of management information systems.

### PROGRAMME CONTENT

Form of classes - lecture		Number of hours
Lec 1	Introduction to business identification, analysis and modeling - basic concepts, structural and object-oriented approaches, links to databases and data processing.	2
Lec 2	Planning and conducting interviews and surveys and a document analysis and decision-making processes..	2
Lec 3	Subsystems of information systems. The analysis of information requirements.	2
Lec 4	Modeling of IS – business motivation. Defining goals, problems, critical factors (success factors) and key performance factors. Notations and tools for modeling context and business process areas - context models, the hierarchy of functions (processes), elementary function, functional dependencies (DFD), models and use cases.	2
Lec 5	Conceptual modeling of information scope in IS (knowledge: data and relationships); methods and structural tools (ERD). Object modeling of information scope in IS (class diagram).	2
Lec 6	The genesis of problems and the purpose of business process modeling. Types of business process models. Processes and instances. Notations. Core elements of BPMN: activities, events, control flow. Branching process: the goal. Events. The participants of the process: activities agents (roles).	2

Lec 7	Transactions. Subprocesses. Interaction between processes. Grouping activities. Data objects. Design patterns in business process modeling.	2
Lec 8	Written test.	1
	Total hours	15
<b>Form of classes - class</b>		<b>Number of hours</b>
	Total hours	

<b>Form of classes - laboratory</b>		<b>Number of hours</b>
Lab 1	Description of the organization being the IS environment	2
Lab 2	Organization information system	2
Lab 3	Preparing an interview/a survey/a panel session	2
Lab 4	Domain subsystems - description. Processes in the subsystem	2
Lab 5	Analysis of selected quantitative documents (source document - record, resulting document - report). Evaluation of the report from analysis.	2
Lab 6	Preparation of goals model, problems, critical factors and key performance indicators and context models for a sample IS	2
Lab 7	Preparation of business process areas model, hierarchy of functions decomposition into elementary functions, simple function dependencies model (FDD), selected use case model for a sample IS	2
Lab 8	Preparation of conceptual data model and relationships in a sample ERD diagram	2
Lab 9	Preparation of a sample class diagram for IS	2
Lab 10	Preparation of a sample data flow diagram (DFD) for the sample IS together with a object-function matrix Practical test.	2
Lab 11	Software tools for process modeling: features, interface, project construction, diagrams preparation	1
Lab 12	Preparation of simple process models: sequences, basic branches, loops	2
Lab 13	Preparation of simple process models: events, subprocesses, roles	2
Lab 14	Preparation of advanced process models based on their description in natural language. Practical test	3
Lab 15	Test	2
	Total hours	30

Form of classes - project		Number of hours
	Total hours	
Form of classes - seminar		Number of hours
	Total hours	
TEACHING TOOLS USED		
N1. Lecture N2. Multimedia presentation N3. Laboratory instruction N4. Instruction during classes N5. Group discussion during classes N6. Online educational group discussion N7. Workstation with graphical operation system MS Windows and MS Access N8. Preparation of analysis report N9. Practical test N10. Written test		

#### EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

Evaluation (F – forming (during semester), P – concluding (at semester end))	Educational effect number	Way of evaluating educational effect achievement
F1	PEK_W01	Evaluation of analysis report
F2	PEK_U02	Practical test
F3	PEK_U03	Practical test
P	PEK_W01 PEK_W02	Written test
P = 1, F=2		

#### PRIMARY AND SECONDARY LITERATURE

##### **PRIMARY LITERATURE:**

- [1] Barker R., *CASE\*Method - Modelowanie związków encji*, , PWN, Warszawa 1996.
- [2] Barker R., Longman C., *CASE\*Method - Modelowanie funkcji i procesów*, WNT, Warszawa 1996.
- [3] Dąbrowski W., Stasiak A., Wolski M., *Modelowanie systemów informatycznych w języku UML 2.1 w praktyce*, PWN, MIKOM, Warszawa 2007.
- [4] Drejewicz S., *Zrozumieć BPMN*. Helion, Wrocław 2012
- [5] Kijewska A., *Systemu informatyczne w zarządzaniu*, Wydawnictwo Politechniki Śląskiej, Gliwice, 2005.

##### **SECONDARY LITERATURE:**

- [1] Beynon-Davies P., *Inżynieria systemów informacyjnych*, WN-T, Warszawa 1999.

[3] Muller R.J., *Bazy danych język UML w modelowaniu danych*, MIKOM, Warszawa 1999.

[2] Wrycza S., *Analiza i projektowanie systemów informatycznych zarządzania. Metodyki, techniki, narzędzia*. PWN, Warszawa 1999..

[4] Wrycza S., *Informatyka ekonomiczna. Podręcznik akademicki*, PWE, Warszawa 2010.

**SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)**

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