COURSE GUIDE

Subject name	**IT systems development**
Course of study	**Quality and Production Management**
The form of study	**Full-time**
Level of qualification	**First**
Year	**I**
Semester	**II**
The implementing entity	**Department of Information Management Systems**
The person responsible for preparing	**dr inż. Rafał Niedbał**
Profile	**General academic**
ECTS points	**2**

TYPE OF TEACHING – NUMBER OF HOURS PER SEMESTER

LECTURE	CLASS	LABORATORY	PROJECT	SEMINAR
15		**15**	**-**	**-**

COURSE AIMS
C1. Presenting and discussing terms connected with IT systems in management.
C2. Presenting the principles, methods and techniques of IT systems.
C3. Characteristics of developing IT systems applying the object approach.

ENTRY REQUIREMENTS FOR KNOWLEDGE, SKILLS AND OTHER COMPETENCES
1. Student possesses knowledge in the scope of managing enterprises.
2. Student possesses knowledge in the scope of information technologies.
3. Student knows basic issues in the scope of management information systems.

LEARNING OUTCOMES
EU1. Student can characterize the life cycle of an IT project.
EU2. Student presents and characterizes principles, methods and techniques of developing information systems.
EU3. Student can enumerate and characterise primary notions related to applying an object approach to IT system development.
EU4. Student can prepare a project of an IT system with the use of selected UML diagrams.

COURSE CONTENT

Type of teaching – Lecture	Number of hours
W1. Introduction to developing IT systems. Stages of developing IT systems.	1
W2. Basic principles of software engineering. Activities implemented at the development stage.	1
W3. Methodological approach to developing IT systems - cascade, evolutionary,	1

incremental and spiral.	
W4. Computer aided development of IT systems.	1
W5. Life cycle of an IT project.	1
W6. Structural and object methods of developing IT systems. Creating Function Hierarchy Diagram.	1
W7. Modelling data flow in the process - Diagram of Data Flow. Modelling entity diagrams - Entity Relationship Diagram.	1
W8-W9. UML language and IT systems development. Perspectives of UML language - conceptual. interface, implementation UML diagrams created at the development stage.	2
W10-W11. Developing IT systems in UML language. Diagrams of structure - diagram of class, object diagram.	2
W12-W13. Developing IT systems in UML language. Diagrams of behaviours - use case diagram, activity diagram.	2
W14. Developing user interface of IT system -principles of developing user interface, interaction with user presenting information.	1
W15. User interface development, interface assessment, communicates generated by the system as a reaction to user actions, help system, documentation available in the system.	1

Type of teaching - LABORATORY	Number of hours
L1. Introductory classes - computer room statute, making acquainted with teaching content and conditions of obtaining credit in the subject	1
L2. Making acquainted with using software for creating a graphic representation of developed IT systems in UML language.	1
L3-L4. Creating class diagrams representing the structure of the developed IT system. Identifying and naming classes, set of attributes and sets of operations for particular classes of the developed IT system.	2
L5-L6. Establishing relationships among classes of the developed IT system. Defining the names of associations, defining the roles fulfilled by associated classes, navigation direction of associations, number of associations and type of aggregation	2
L7-L8. Creating use case diagrams presenting the dynamics of the developed system. Identifying actors interacting with the developed system treated in the category of a single process. Creating a context diagram.	2
L9-L10. Identifying use cases. Specifying the series of actions and their variants executed by the developed IT system in an interaction with system actors .	2
L11. Developing association relationships in the use case diagram.- among the actors and use cases.	1
L12-L13. Documenting a selected use case with the use of a template. Characterizing the main scenario and alternative scenarios of use case.	2

L14. Knowledge check - summarizing test.	1
L15. Credit in the subject.	1

TEACHING TOOLS
1. Handbooks and scripts
2. Audio-visual equipment
3. Computer equipment
4. Selected elements of Office package
5. draw.io - diagram software for making UML diagrams
6. E-learning platform

WAYS OF ASSESSMENT (F – FORMATIVE, P – SUMMATIVE)
F1. Evaluation of carried out project tasks
P1. Summarizing test

STUDENT WORKLOAD

Form of activity		Average number of hours for realization of the activity		
		[h]	ECTS	ECTS
Contact hours with the teacher	Lecture	15	0.6	0.6
Contact hours with the teacher	Laboratory	15	0.6	0.8
Preparing to test		5	0.2	
Preparing reports		10	0.4	0.4
Consultation		5	0.2	0.2
TOTAL NUMBER OF HOURS / ECTS CREDITS FOR THE COURSE		**50**	**2**	

BASIC AND SUPPLEMENTARY RESOURCE MATERIALS

Basic resources

1. Bennett S., McRobb S., Farmer R. Object-Oriented Systems Analysis and Design Using UML. 4th Edition, McGraw-Hill Education - Europe, 2010.
2. Dennis A., Wixom B.H., Roth R.M. Systems Analysis and Design. 6th Edition, John Wiley and Sons, 2015.
3. Hamilton K., Miles R. Learning UML 2.0. O'Reilly Media, 2006.

Supplementary resources

1. Borzemski L. Information Systems Architecture and Technology: Designing, Development and Implementation of Information Systems. Wydawnictwo Politechniki Wrocławskiej, Wrocław, 2008.
2. Kucęba R. Changes in Management Processes and IT Technology Development - "Milestones". [in:] Niedziółka D. (eds.) Considerations About the Economy... Warsaw School of Economics Press, 2015, pp. 179-201.
3. Kulej-Dudek E., Niedbał R., Wrzalik A., Dudek D., Kobis P. Wybrane narzędzia informatyczne wspomagające projektowanie inżynierskie. [in:] Nowakowska-Grunt J., Grabowska M. (eds.) Logistyczno-finansowe uwarunkowania zarządzania przedsiębiorstwem. Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej, Częstochowa, 2018, pp. 193-206.
4. McLaughlin B., Pollice G., West D. Head First Object-Oriented Analysis and Design. A Brain Friendly Guide to OOA&D, O'Reilly Media, 2007.
5. Stevens P. Using UML Software Engineering with Objects and Components. Harlow, Addison-Wesley/Pearson Education, 2006.

TEACHERS (NAME, SURNAME, E-MAIL ADDRESS)

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MATRIX OF LEARNING OUTCOMES REALISATION

Learning outcome	Reference of given outcome to outcomes defined for whole program (PRK)	Course aims	Course content	Teaching tools	Ways of assessment
EU1	K_W02, K_W04, K_W05, K_W08, K_U01, K_U02, K_U04, K_U09	C1	W1-W5	1, 2, 3, 4, 6	P1
EU2	K_W02, K_W04, K_W05, K_W08, K_U01, K_U02, K_U03, K_U04, K_U05, K_U09	C2	W3-W11, L1-L15	1, 2, 3, 4, 6	P1
EU3	K_W02, K_W05, K_W08, K_U01, K_U02, K_K05	C3	W6, W8-W13, L3-L11	1, 2, 3, 4, 6	P1
EU4	K_W02, K_W04, K_W05, K_W08, K_U01, K_U02, K_U03, K_U04, K_U05, K_U06, K_U07, K_U08, K_U09, K_U10	C3	W8-W15, L1-L15	1, 2, 3, 4, 5	F1

FORM OF ASSESSMENT - DETAILS

	grade 2	grade 3	grade 4	grade 5
EU1	Student cannot characterize the life cycle of an IT	Student can selectively characterize the life cycle of an IT	Student correctly presents the stages of IT system life cycle and selectively	Student correctly presents the stages of IT system life cycle and presents a characteristic of each of

	project.	project.	describes particular stages.	them.
EU2	Student cannot present and characterize any of principles, methods and techniques of developing information systems.	Student can present and characterize at least one of principles, methods and techniques of developing information systems.	Student can present and characterize at least two of principles, methods and techniques of developing information systems.	Student can present and characterize at least three of principles, methods and techniques of developing information systems.
EU3	Student cannot enumerate or characterise primary notions related to applying an object approach to IT system development.	Student can enumerate and characterise at least three primary notions related to applying an object approach to IT system development.	Student can enumerate and characterise at least five primary notions related to applying an object approach to IT system development.	Student can enumerate and characterise at least seven primary notions related to applying an object approach to IT system development. The student can also characterise the issue of association multiplicity and the dependence of including and extending use cases of an IT system.
EU4	Student cannot prepare a project of an IT system with the use of selected UML diagrams.	Student can selectively prepare a project of an IT system with the use of selected UML diagrams.	Student can prepare a class diagram and use diagram in the project of an IT system. L4 - Cannot document a selected use case of the developed IT system with the use of a template.	Student can prepare a class diagram and use case diagram in the project of an IT system. Can document selected use case of the developed IT system with the use of a template.

ADDITIONAL USEFUL INFORMATION ABOUT THE COURSE
1. Information where presentation of classes, instruction, subjects of seminars can be found, etc. - presented to students during first classes, if required by the formula classes are sent electronically to the e-mail addresses of individual dean groups.
2. Information about the place of classes - Information can be found on the website of the Faculty of Management.
3. Information about the timing of classes (day of the week / time) - Information can be found on the website of the Faculty of Management.
4. Information about the consultation (time + place) - Information can be found on the website of the Faculty of Management.