

Projekt "Perspektywy Współpraca Synergia Zarządzanie w Tarnowie" współfinansowany jest przez Unię Europejską ze środków Europejskiego Funduszu Społecznego w ramach Programu Operacyjnego Wiedza Edukacja Rozwój. Projekt realizowany w ramach konkursu Narodowego Centrum Badań i Rozwoju z III Osi priorytetowej: Szkolnictwo wyższe dla gospodarki i rozwoju; Działanie 3.5 Kompleksowe programy szkół wyższych. Nr umowy o dofinansowanie projektu: POWR.03.05.00-00-Z087/17-00.

Module SYLLABUS

Organizational unit name	The Polytechnic Institute – Department of Computer Science		
Field of study	Computer science		
Module name	Business process modeling and knowledge engineering		
Module code	POWER.IP.2	Erasmus code	11.3
ECTS	3	Module type	Optional
Year of study	4	Semester	7
Form of classes	Hours total	Form of assessment	
Project classes	30	Graded credit	
Coordinator teacher	mgr inż. Tomasz Potempa		
Academic teacher	mgr inż. Tomasz Potempa		
Language of instruction	English		
Basic courses	No	Open course / course at he another field of study	No
Profile of education	Practical profile	Study level	First-cycle level

Prerequisites and additional requirements				
<ol style="list-style-type: none"> 1. Basic knowledge of discrete mathematics in the field of algebra of sets and relation algebra. 2. Basic knowledge of the propositional logic. 3. Knowledge of operating systems and basics of computer use. 4. Knowledge of the basics of relational databases. 5. Knowledge of programming in object-oriented language. 6. Knowledge of basic terminology in the field of business process modeling and knowledge management. 7. Knowledge of the objectives and principles of business process modeling. 8. Basic knowledge of business process modeling tools. 9. Knowledge of English to a degree that allows communication and studying professional literature. 				
Learning outcomes for module				
No.	Student after module completion has the knowledge/knows how to/is able to Learning outcome code	Learning outcome type	Method of learning outcomes verification	Form of classes Project
1.	The student can model simple and complex business processes.	Skills	project	Y

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2.	The student knows and is able to use selected tools for business process modeling.	Knowledge Skills	project	Y
3.	The student is able to perform the requirements analysis, develop a project implementation schedule and prepare a complete technical documentation of the designed system.	Skills	technical documentation	Y
4.	The student is aware of the role and importance of knowledge in society, economy, companies and organizations.	Social competence	project	Y
Didactic methods				
<p>Class forms: Classes have a form of project under which the uncomplicated business system is modeled and implemented with the use of selected tools (JBoss, IBM, Oracle).</p> <p>Teaching methods: Motivation to consistent and systematic making subsequent stages of the project, brainstorming, project method.</p>				
Rules of assessment				
Preparation and presentation of a self-made project which consists of documentation and implementation. Assessment must comply with the current university regulations.				
Module content (brief)				
<ol style="list-style-type: none"> 1. Analysis of requirements, conceptual design. 2. Implementation of the business processes model. 3. Implementation of selected business processes and rules. 4. Simulation, testing and optimization of business processes. 5. Preparation of a full technical documentation. 				
Module content (comprehensive)				
<ol style="list-style-type: none"> 1. Analysis and description of requirements. Exploration and discovery of evidence-based processes (documentation analysis, observation, automatic exploration), based on interviews and conversations, on the basis of workshops. Preparation of a conceptual design. 2. Design of business processes model using BPMN 2.0 notation. The model should include activities (tasks, subprocesses), events (initial, final, intermediate), process participants (pools, tracks), gates (connecting, dividing), flows (control, messages, associations), artifacts. Modelling diagrams of collaboration, choreography and conversation. 3. Implementation of selected processes using executive engines (e.g. JBoss BPM Suite, jBPM) business processes and business rules using rule system engines (e.g. JBoss Drools). 4. Simulation, testing and optimization of business processes. Verification of syntactic, structural and pragmatic correctness of business process. Qualitative analysis of the business process and its optimization. 5. Preparation of a complete technical documentation of the project using the adopted conventions, including the OMG standards. 				
Recommended literature and teaching resources				
1. Marlon Dumas, Marcello La Rosa, Jan Mendling, Hajo Reijers: Fundamentals of Business Process				

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Management. Springer, 2013. 2. Mathias Weske: Business Process Management. Concepts, Languages, Architecture. Springer, 2012. 3. Wil. M.P. van der Aalst: Process Mining. Discovery, Conformance and Enhancement of Business Process. Springer, 2011. 4. Mariano Nicolas De Maio, Mauricio Salantino, Esteban Aliverti: jBPM Developer Guide, Packt Publishing, 2014. 5. Mauricio Salantino, Mariano Nicolas De Maio, Esteban Aliverti: Mastering JBoss Drools, Packt Publishing, 2016. 6. Simone Fiorini, Arun V Gopalakrishnan: Mastering jBPM6, Packt Publishing, 2015.	
Connection with area of study	engineering sciences
Student workload (ECTS credits balance)	
Student workload form	Student workload [hours]
Participation in project classes	30
Completion of a project	35
Individual consultations and final project presentation	10
Summary student workload	75
Module ECTS credits	
Workload of the direct assistance of the academic teacher	1.6
Workload of the practical classes	3

Annotation:

1 hour = 45 minutes