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Establishing Modern Master-level Studies in Information Systems
561592-EPP-1-2015-1- FR-EPPKA2-CBHE-JP

WP2
Curriculum development
Enterprise Architecture Management

Tabl. 1

List of Competences

Competences Area	Competences
Systems Development and Deployment	1. Managing plan-based, hybrid, and agile development approaches
	2. Specifying and documenting systems requirements
	3. Managing IS development projects
Data, Information and Content Management	4. Selecting appropriate data management technologies based on the needs of the domain
	5. Integrating and preparing data captured from various sources for analytical use
	6. Selecting and using appropriate analytics methods
Innovation, Organizational Change and Entrepreneurship	7. Developing a business plan
	8. Understanding how to apply creative problem solving to technology-related issues
IS Strategy and Governance	9. Engaging in IS strategic planning
	10. Planning and implementing IS governance
Enterprise Architecture	11. Understanding enterprise architecture principles and the value it provides to business
	12. Communicating and deploying an EA
Business Continuity and Information Assurance	13. Implementing and managing quality audit processes
	14. Managing Information Systems risks
IS Management and Operations	15. Managing IS/IT projects and programs
IT Infrastructure	16. Monitoring emerging technologies to understand their potential to support the domain

Tabl. 2

List of Programme learning Outcomes

№	Professional Learning Outcomes	P
1.	to understand essential concepts, facts, principles, and theories of information system	P1
2.	to understand the diversity and state-of-the-art in area of information system	P2
3.	to be able to analyse, model, and evaluate organization's business processes from the perspective of information systems development	P3
4.	to be able to apply various methods of information systems analysis	P4
5.	to understand problems of users of information systems, to be able to identify, analyse and specify user requirements	P5
6.	to be able to manage information systems development projects and identify, analyse, evaluate, and solve the arising management problems	P6
7.	to be able to identify, analyse, and understand unorthodox problems of information systems development	P7
8.	to be able to apply various methods of information systems design	P8
9.	to be able to apply methods of knowledge, metadata analysis and information safety engineering	P9
10.	to be able to identify, find and evaluate information relevant to information systems by using data bases and other sources of information	P10
11.	to be able to apply various computerized tools for model driven information systems analysis and design	P11
12.	to be able to choose and apply various technologies of information systems' development	P12
13.	to be able to apply various tools for management of information systems projects	P13
14.	to be able to develop innovative decisions for IT business creation and support	P14
Personal and Social Learning Outcomes		
15.	to be able to think systematically when analysing different situations, solving problems and tasks	PS1
16.	to be able to apply the acquired knowledge creatively	PS2
17.	to be able to work individually with minimum guidance, manage one's work and time	PS3
18.	to be able to work efficiently in a group, manage the team, and act collectively	PS4
19.	to be able to understand the impact of information systems solutions on the society and environment and their economic aspects	PS5

Course Descriptors

Course title:	Enterprise Architecture Management
Course unit code	EAM
Course Program:	MPIS
University delivering the course:	KSU
Type of course unit	Core course
Level of course unit	Masters level
Number of ECTS credits allocated	5 Credits (150 hours of student work)
Teaching Methods	lectures, lab works, case study, presentations, problem based learning, individual tasks

Module Structure:

No	Type	Course	CP (h)	In class (h)	Independent study (h)
CC3	Course	Enterprise Architecture Management	150	50	100

Assessment methods, criteria and regime:

Number and Type; Connection to Course	Part of final grade in %
Class participation (at least 3 case studies and their presentations)	30
Lab works (at least 4 lab works)	30
Project (team work)	40

Tabl.3

Correlation matrix of Competences and Programme learning Outcomes

Competencies/ Learning Outcomes	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	PS1	PS2	PS3	PS4	PS5
1. Managing plan-based, hybrid, and agile development approaches	X	X						X		X	x	x	x	x	x	x	x	x	x
2. Specifying and documenting systems requirements	X	x			x					X					x	x	x	x	x
3. Managing IS development projects					x			X		X	x	x	x		x	x	x	x	x
4. Selecting appropriate data management technologies based on the needs of the domain	X	x							x	X	x	x			x	x	x	x	x
5. Integrating and preparing data captured from various sources for analytical use	X	x							x	X	x	x			x	x	x	x	x
6. Selecting and using appropriate analytics methods	X	x	x				x		x	X	x				x	x	x	x	x
7. Developing a business plan	X	x					x			X	x			x	x	x	x	x	x
8. Understanding how to apply creative problem solving to technology-related issues	X	x					x			X	x			x	x	x	x	x	x

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Competencies/ Learning Outcomes	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	PS1	PS2	PS3	PS4	PS5
9. Engaging in IS strategic planning	X	x	x			x				X	x			x	x	x	x	x	x
10. Planning and implementing IS governance	X	x				x				X	x		x	x	x	x	x	x	x
11. Understanding enterprise architecture principles and the value it provides to business	X		x	x						X					x	x	x	x	x
12. Communicating and deploying an EA	X		x							X	x				x	x	x	x	x
13. Implementing and managing quality audit processes	X		x	x			x		x	X					x	x	x	x	x
14. Managing Information Systems risks	X		x	x		x	x		x	X	x				x	x	x	x	x
15. Managing IS/IT projects and programs	X				x	x				X	x	x	x		x	x	x	x	x
16. Monitoring emerging technologies to understand their potential to support the domain	X			x			x			X					x	x	x	x	x

Tabl.4

Correlation matrix of Programme Learning Outcomes and Courses

Programme Learning Outcomes	Courses							
	IS Development and Deployment	MIS and Data Warehousing	Enterprise Architecture Management	Management of IS Projects	Enterprise Architecture Management	IS Strategy	IT Infrastructure	Innovations and Entrepreneurship
1	2	3	4	5	6	7	8	9
to understand essential concepts, facts, principles, and theories of information system			X	X				
to understand the diversity and state-of-the-art in area of information system								
to be able to analyse, model, and evaluate organization's business processes from the perspective of information systems development			X	X				
to be able to apply various methods of information systems analysis			X					

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1	2	3	4	5	6	7	8	9
to understand problems of users of information systems, to be able to identify, analyse and specify user requirements				x				
to be able to manage information systems development projects and identify, analyse, evaluate, and solve the arising management problems				x				
to be able to identify, analyse, and understand unorthodox problems of information systems development								
to be able to apply various methods of information systems design				x				
to be able to apply methods of knowledge, metadata analysis and information safety engineering								

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1	2	3	4	5	6	7	8	9
to be able to identify, find and evaluate information relevant to information systems by using data bases and other sources of information			X	x				
to be able to apply various computerized tools for model driven information systems analysis and design			X	x				
to be able to choose and apply various technologies of information systems' development								
to be able to apply various tools for management of information systems projects				x				
to be able to develop innovative decisions for IT business creation and support								

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1	2	3	4	5	6	7	8	9
to be able to think systematically when analysing different situations, solving problems and tasks			X	x				
to be able to apply the acquired knowledge creatively			X	x				
to be able to work individually with minimum guidance, manage one's work and time			X	x				
to be able to work efficiently in a group, manage the team, and act collectively			X	x				
to be able to understand the impact of information systems solutions on the society and environment and their economic aspects			X	x				

List of Course Learning Outcome(Enterprise Architecture Management (EAM) (KSU)

Code of Learning Outcomes	Course Learning Outcomes
EAM1	to understand and model of EAM opportunities for business and IS strategy alignment
EAM2	to understanding of enterprise architecture management frameworks and its standards
EAM3	to be able to enhance organization's competitiveness by use of EAM
EAM4	to be able to form purpose and tasks of IS and IT strategy alignment
EAM5	to be able to effectively use architecture methodologies and tools
EAM6	to be able to argue, justify and present their decision and plans
EAM7	to be able to make decision and take responsibility for them

Tabl.6

**Correlation matrix of Programme Learning Outcomes and Enterprise Architecture Management (EAM)
Course Learning Outcomes (KSU)**

Programme Learning Outcomes	Course Learning Outcomes	Code
1	2	3
to understand essential concepts, facts, principles, and theories of information system	to understanding of enterprise architecture management frameworks and its standards	EAM2
to be able to analyse, model, and evaluate organization's business processes from the perspective of information systems development	to understand and model of EAM opportunities for business and IS strategy alignment	EAM1
to be able to apply various methods of information systems analysis	to be able to form purpose and tasks of IS and IT strategy alignment	EAM4
to be able to identify, find and evaluate information relevant to information systems by using data bases and other sources of information	to be able to enhance organization's competitiveness by use of EAM	EAM3
to be able to apply various computerized tools for model driven information systems analysis and design	to be able to effectively use architecture methodologies and tools	EAM5
1	2	3
to be able to think systematically when analysing different situations, solving problems and tasks	to be able to argue, justify and present their decision and plans	EAM6
to be able to apply the acquired knowledge creatively	to be able to argue, justify and present their decision and plans	EAM6
	to be able to make decision and take responsibility for them	EAM7
to be able to work individually with minimum guidance, manage one's work and time	to be able to make decision and take responsibility for them	EAM7
to be able to work efficiently in a group, manage the team, and act	to be able to make decision and take responsibility for them	EAM7

collectively	to be able to argue, justify and present their decision and plans	EAM6
to be able to understand the impact of information systems solutions on the society and environment and their economic aspects	to be able to argue, justify and present their decision and plans	EAM6

Tabl.7

Enterprise architecture management Learning Outcomes (KSU)

Themes	Theoretical component	Practical component	Learning Objectives	Learning Outcomes	
				Professional	Personal & Social
MODULE 1. Process, structure and organization of enterprise architecture management					
1	2	3	4	5	6
Topic 1. Management IS	1.1.Description of IS. 1.2.Requirements to IS. 1.3.Management IS Modeling.	Lab work 'Requirements to IS in SME'	to learn the description and requirements of IS, Management IS Modeling.	EAM2 _to understanding of enterprise architecture management frameworks and its standards	EAM6, EAM7
Topic 2. Architecture management IS	2.1.Description of architecture management IS. 2.2.Requirements to architecture management IS. 2.3.Architecture management IS	Lab work 'Requirements to Enterprise Architecture Levels of IS'	to learn the description and requirements of architecture management and modelling of IS.	EAM1 _to understand and model of EAM opportunities for business and IS strategy alignment	EAM6, EAM7

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	Modeling.				
Topic 3. Objectives and principles of EAM	3.1. The need of EAM 3.2. Enterprise architecture models 3.3. Objectives and methodology	Lab work problem based learning 'Business strategy of enterprise (mission, vision, goals)'	to learn objectives and principles	EAM4 _to be able to form purpose and tasks of IS and IT strategy alignment	EAM6, EAM7
Topic 4. An EAM stakeholders and architecture impact	4.1 Key blocks of successful EAM 4.2 The architecture impact 4.3 Estimation of investment efficiency in IT sphere	case studies lab work 'Incentive compatible mechanism of stakeholders' interests to EAM project'	to learn purpose and tasks of stakeholders and impact on enterprise architecture	EAM4 _to be able to form purpose and tasks of IS and IT strategy alignment	EAM6, EAM7
Topic 5. EAM governance and organization	6.1 Challenges and assessment of existing EAM activities and assets 6.2. The EA governance model 6.3. EAM organization models	case studies 'Successful and failed cases of different IS implementation'	to learn models of business strategy	EAM1 _to understand and model of EAM opportunities for business and IS strategy alignment	EAM6, EAM7
MODULE 2. Strategic application of enterprise architecture management					
1	2	3	4	5	6
Topic 6.	6.1 Approaching	Project work	To learn strategic	EAM3 _to be able to enhance organization's	EAM6,

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Embedding EAM into strategic planning	EAM from a strategic perspective 6.2 Leveraging EAM for strategic planning	'Development strategy and its indicators in EAM'	planning for EAM	competitiveness by use of EAM	EAM7
Topic 7. Embedding EAM into the project life cycle	7.1 The relevance of embedding EAM in the project life cycle 7.2. Preparing EA-compliant project execution 7.3 Solution design and implementation	Lab work 'Critical path of project for different type of enterprise architecture'	To learn EAM for project life cycle	EAM3 _to be able to enhance organization's competitiveness by use of EAM	EAM6, EAM7
Topic 8. Embedding EAM into operation and monitoring	8.1 Managing operational changes 8.2 Monitoring the EA 8.3 Using EA documentation	Lab work 'Monitoring of EAM using Gantt chart'	To learn EAM for operation and monitoring	EAM3 _to be able to enhance organization's competitiveness by use of EAM	EAM6, EAM7
Topic 9. EA frameworks, modeling and tools	9.1 Frameworks, modeling, and tools 9.2 EA tools: How to find adequate software support	Lab works 'Business process modelling for different levels	To learn architecture frameworks and tools	EAM5 _to be able to effectively use architecture methodologies and tools	EAM6, EAM7

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		of enterprise architecture'			
Topic 10. People, adoption and future of EAM	10.1 The relevance of the human dimension of EAM 10.2 Introduction of new application of EAM 10.3. The future of the EAM discipline	Case study 'IA and machine learning in EAM'	To learn relevance and adoption of human dimension for enterprise architecture	EAM1 _to understand and model of EAM opportunities for business and IS strategy alignment	EAM6, EAM7

Tabl.8

Characteristics of Learning Outcomes for Enterprise architecture management (KSU)

Course Learning Outcomes	Code of Learning Outcomes	Knowledge	Skills	Communication	Autonomy and responsibility
1	2	3	4	5	6
to understand and model of EAM opportunities for business and IS strategy alignment	EAM1	Determine basic principles and objectives of enterprise architecture management	Analyse principles, methods and concepts of enterprise architecture management	<i>Explain, argue, justify, demonstrate,</i>	<i>Make decisions, response</i>
to understanding of enterprise architecture management	EAM2	Define description and requirements of IS,	Develop requirements for enterprise architecture		

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frameworks and its standards		Management IS Modeling.	management according to standards		
to be able to enhance organization's competitiveness by use of EAM	EAM3	Formulate methods of strategic planning, project life cycle	Research organization's competitiveness using requirements and specifications in strategic planning		
to be able to form purpose and tasks of IS and IT strategy alignment	EAM4	Determine of purpose and tasks of stakeholders and impact on enterprise architecture	Develop model of architecture impact on stakeholders		
to be able to effectively use architecture methodologies and tools	EAM5	Compare architecture methodologies for enterprises	Use architecture frameworks and tools for enterprise architecture		

List of Recommended Enterprise Architecture Modeling Tools

1	Archi Free ArchiMate Modelling Tool	Archi fulfils the needs of most Enterprise Architects and associated stakeholders, and has been designed to elegantly provide the main features required for ArchiMate 2.1 modelling and is used globally by banks, insurance companies, industry, EA consultants, training organisations, universities, and students.
2	The Essential Project	EAS, sponsors of The Essential Project, are pleased to announce the availability of a new range of Essential Support Packs. These packs offer dedicated, premier support for the Essential Toolset in great value bundles. The support packs provide email, telephone and web support for the initial installation and configuration of the Essential platform, as well as technical platform support.
3	Archi: ArchiMate Modelling	Archi is a free, open source, cross-platform tool and editor to create ArchiMate models. ArchiMate is an open and independent Enterprise Architecture modelling language that supports the description, analysis and visualization of architecture within and across business domains. ArchiMate is one of the open standards

		hosted by The Open Group.
4	EAM Tool Download	The development of iteraplan is community-driven with two major releases a year. Current focus is the integration with other management functions such as Business Process Management and Project Portfolio Management. iteraplan is developed by the iteraplan development team in continuous consultation with customers and the community.
5	ADOit Community	Full Access Architect Account - Document, analyse and manage your architecture - Collaborate with the EA team Full set of ADOit Pro features - Visual analysis, web modelling, advanced search, management dashboards The ADO it:Community Edition is a free version of ADO it - the professional enterprise architecture tool by the BOC Group.
6	Eclipse Process Framework Project	There are two goals of the Process Framework Project: To provide an extensible framework and exemplary tools for software process engineering - method and process authoring, library management, configuring and publishing a process.
7	Modelio Open Source Community	Full Access Architect Account - Document, analyse and manage your architecture - Collaborate with the EA team Full set of ADOit Pro features - Visual analysis, web modelling, advanced search, management dashboards The ADO it:Community Edition is a free version of ADO it - the professional enterprise architecture tool by the BOC Group.

Open access software tools

1. <https://www.qpr.com/products/qpr-enterprise-architect>
2. <http://www.sparxsystems.com>
3. <http://www.logicstudio.net/enterprise-architect-uml>

Recommended Literature

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