



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



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Work Package 2 (WP2) Handbook

DEVELOPMENT: DEGREE PROFILE & CURRICULUM DEVELOPMENT

Establishing Modern Master-level Studies in Information Systems

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Version 1.0



Lead Organisation:

University of Muenster (P3),

Simon Kuznets Kharkiv National University of Economics (P10)

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Responsible Author	KhNUE (P10)	Email	Oleksii.Besedovskyi@hneu.net			
		Phone	+380501403585			
Responsible Author	WWU (P3)					
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WP2 team contacts

KhNUE	Oleksii BESEDOVSKYI	oleksii.besedovskyi@hneu.net
WWU		
NTUU KPI	Tetiana KOVALIUK	tetyana.kovalyuk@gmail.com
LPNU	Ihor OLEKSIV	ol.ih33@gmail.com
VNTU	Volodymyr DUBOVOY	v.m.dubovoy@gmail.com
KSU	Vitaliy KOBETS	kobetz@ukr.net
NTU KhPI	Olga CHEREDNICHENKO	olha.cherednichenko@gmail.com
UDG		
UNIM		



WP2 description

2.1 Description of competences and learning outcomes for Master Programme in Information Systems (MPIS). The MPIS will developed according to Bologna Process requirements & Tuning Methodology.

2.2 Updating MPIS Degree Profile

2.3 Analysis and description of the modern approaches to teaching, learning and assessment. Meetings in EU for learning modern approaches to teaching and assessment. Development of the description of learning and teaching strategies, pedagogical philosophy, assessment methods, learning approaches.

Organization of meetings with all stakeholders for Degree Profile & Curriculum revision mechanism development. Partner Country's Ministries of Education will be involved in these activities. Agreement about stakeholders' interaction in the revision process

2.1 Description of competences and learning outcomes for Master Programme in Information Systems (MPIS).

The description of DP, list of competences & learning outcomes was developed in the WP1 based on the analysis of stakeholders' requirements & current IT-education, current and future trends in IT-industry.

Ukrainian business people survey for MASTIS.

Jean-Hugues Chauchat (Univ. Lyon2)

March, 17th 2017

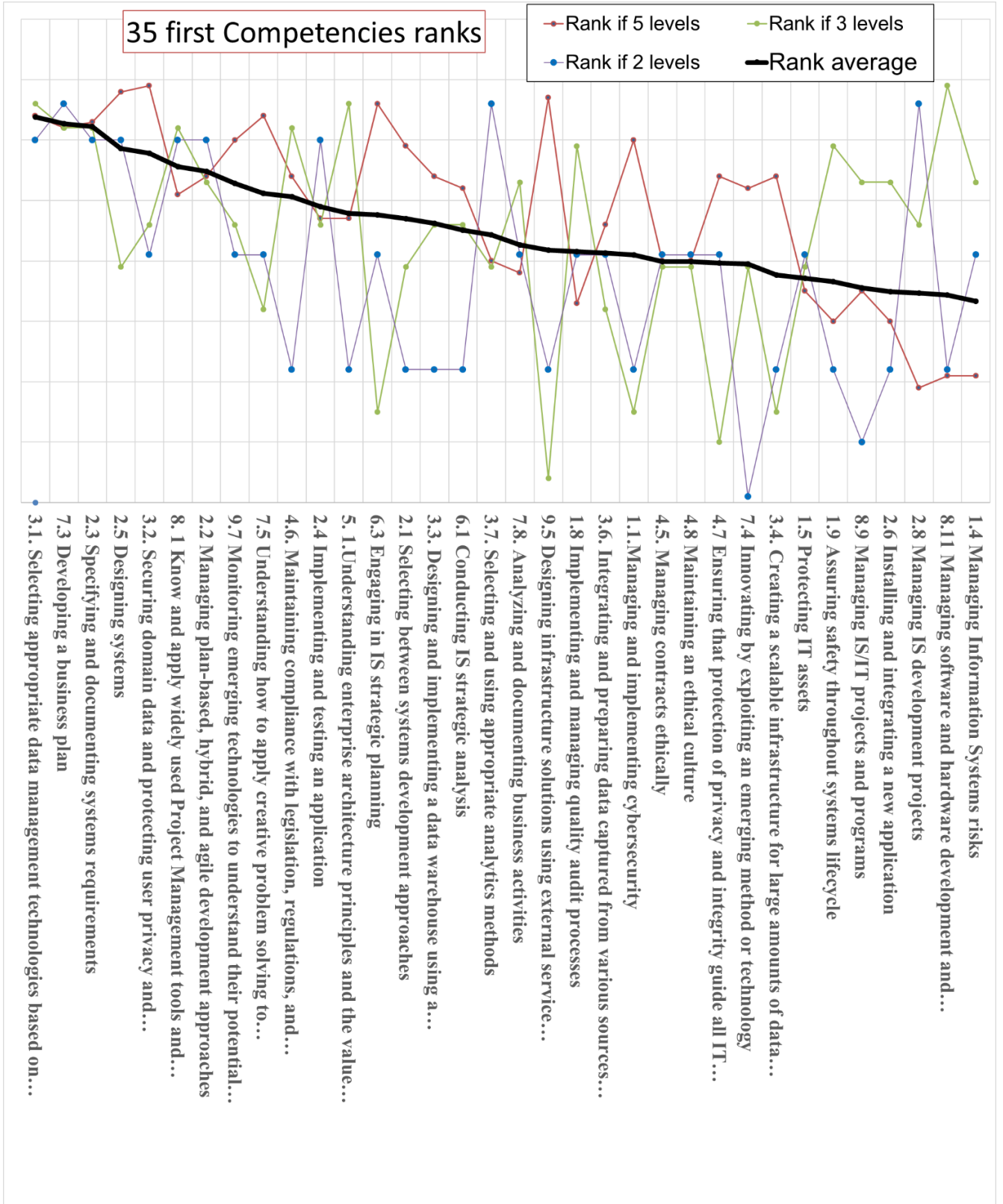
Questionnaire

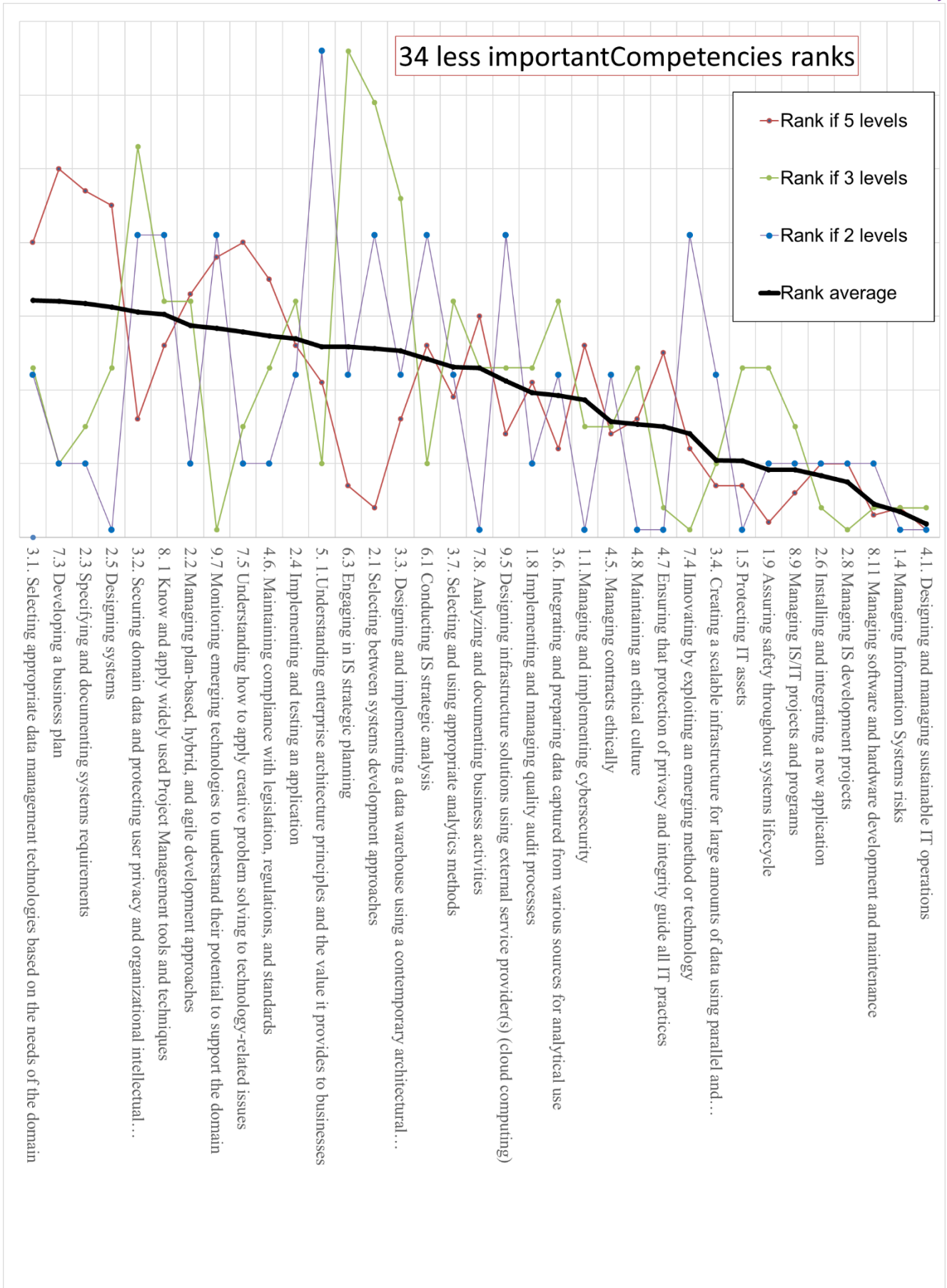
A list of competencies was consist with 9 subject areas and 69 items and based on "Revising the MSIS Curriculum: Specifying Graduate Competencies Second Public Deliverable of the ACM/AIS MSIS 2016 Task Force", March 21, 2016.

Those items have been shown to people working in 40 computer companies. Each person had to evaluate the importance of each competency to be acquired by the students during their studies in a Master in Information System.

Graphics for competencies ranking

Figure 1. Graphics for competencies ranking





Another way to look at the business survey results is to calculate the competency category (**Subject areas**) rank average:

Figure 2. Subject areas of the competences

Competency categories Rank Average (from 69 = Most important, to 1 = Less important)	
44,4	2. Systems Development and Deployment
40,1	3. Data, Information and Content Management
36,5	7. Innovation, Organizational Change and Entrepreneurship
34,6	6. IS Strategy and Governance
30,5	5. Enterprise Architecture
30,1	1 Business Continuity and Information Assurance
26,7	4. Ethics, Impacts and Sustainability
26,0	9. IT Infrastructure
19,0	8. IS Management and Operations

On the meeting of KhNUE and Kharkiv National Polytechnic University we decided to include competences only from the Figure 1 and to put into the list 3 most important competences from the 1st two Subject areas (Figure 2): 2. Systems Development and Deployment & 3. Data, Information and Content Management, 2 competences from the next 4 Subject areas: 7, 6, 5, 1, and 1 competences from the Subject areas: 4, 9, 8.

Final list of MIS Programme competences in order of decreasing importance for the joint opinion of representatives of companies you can see below.

Figure 3. MIS Programme competences

2. Systems Development and Deployment		
2.2 Managing plan-based, hybrid, and agile development approaches		
2.3 Specifying and documenting systems requirements		
2.8 Managing IS development projects		
3. Data, Information and Content Management		
3.1. Selecting appropriate data management technologies based on the needs of the domain		
3.6. Integrating and preparing data captured from various sources for analytical use		
3.7. Selecting and using appropriate analytics methods		
7. Innovation, Organizational Change and Entrepreneurship		
7.3 Developing a business plan		
7.5 Understanding how to apply creative problem solving to technology-related issues		
6. IS Strategy and Governance		
6.3 Engaging in IS strategic planning		
6.4 Planning and implementing IS governance		

5. Enterprise Architecture		
5. 1.Understanding enterprise architecture principles and the value it provides to businesses		
5.3. Communicating and deploying an EA		
1. Business Continuity and Information Assurance		
1.8 Implementing and managing quality audit processes		
1.4 Managing Information Systems risks		
4. Ethics, Impacts and Sustainability		
4.8 Maintaining an ethical culture		
9. IT Infrastructure		
9.7 Monitoring emerging technologies to understand their potential to support the domain		
8. IS management and Operations		
8. 1 Know and apply widely used Project Management tools and techniques		

The next step is to create **Learning Outcomes** and to **propose the list of courses**.

Table no.1. Descriptors defining Master level in the European Qualifications Framework (EQF)

Level 7***	Highly specialised knowledge, some of which is at the forefront of knowledge in a field of work or study, as the basis for original thinking and/or research Critical awareness of knowledge issues in a field and at the interface between different fields	Specialised problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields	Manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches; take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams
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NB!

Across the EHEA, the terms 'learning outcomes' and 'competence' are used with different shades of meaning and in somewhat different frames of reference.

Competence means 'the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development. In the context of the European Qualifications Framework, competence is described in terms of responsibility and autonomy' (Recommendation 2008/C 111/01). Competences can be generic or subject-specific. Fostering competences is the object of a process of learning and of an educational programme.

Learning outcomes express the level of competence attained by the student and verified by assessment. They are 'statements of what a learner knows, understands and is able to do on completion of a learning process' (Ibid.). They are formulated by academic staff, involving students and other stakeholders. In order to facilitate assessment, these statements need to be verifiable.

2.1.1. Why are learning outcomes important?

Modern education is no longer the privilege of minority groups nor a personal development process with no relevance to the wider social environment. Modern education must have a clear social role - to train broad strata of the population in order to efficiently and competently carry out various tasks required for the society functioning in different areas, in accordance with their area of expertise.

The university in its modern form can achieve its social role, provided that the results of the educational process can be transferred to and evaluated by other educational institutions, as well as by students, but also by the experts-graduates who acquired degrees in these institutions.

This is why clearly, transparently and precisely defined learning outcomes are important:

- From the perspective of teachers who design the curriculum, learning outcomes - *clear statements of what students should know, understand and be able to after completion of a learning process*, provide the basis for a course planning, teaching materials and teaching methods. Learning outcomes to be achieved dictate assessment methods, which must refer clearly to each learning outcome.
- From the perspective of students, clearly defined learning outcomes help students choose and master the curriculum. Well-defined learning outcomes presented to students at the beginning of teaching process, specify clearly what students are expected to know or do.

Learning outcomes are essential because¹:

- They define the type and depth of learning expected by learners to achieve;
- They provide an objective benchmark for formative and summative as well as assessment of prior learning;
- They communicate expectations clearly to learners;
- They communicate learner skills to prospective employers in a clear and transparent way - by reading learning outcomes, an employer should be able to identify what knowledge, skills, and attitudes a qualified person will be able to offer them;
- They help define coherent units of learning that can be further subdivided or modularized,
- Learning (rather than teaching) becomes central when the focus is on what the learner should be able to achieve (the emphasis moves from inputs to results);
- It is easier to examine the achievements if the expected results of learning are stated in a concrete manner;
- They help to guide and organise the learner and help them to see the anticipated effects of their learning.

Learning outcomes are not: goals, aims, content, learning activities!

Basic rules for writing learning outcomes:

1. Written learning outcomes will determine teaching methods, techniques and strategies of learning and teaching, as well as forms of assessment of students' achievements.
2. Outcomes should be written clearly so as to be understood by all interested parties (students, teachers, associates, employers, and external evaluators).
3. The number of learning outcomes should not be too high.
4. The overall language used to describe learning outcomes should be simplified. It is better to use short sentences.
5. It is important to include three domains (cognitive, affective and psychomotor) into outcomes.

TASK 2.1

Each PC partner must fill the learning outcomes based on proposed competences in the sheet below. If you decide that some competence is not important, write N/A please. Other suggestions you can write in additional rows on the bottom of the sheet.

2.2 Updating MPIS Degree Profile

In a student-centred context, it is very important for the learning process to be transparent. Students must know clearly beforehand what each degree programme entails and what results they can expect from it.

Graduates need to be able to show to others what competences they have gained during the learning experience.

The Degree Profile should be very concise and it needs to be very clear, which means that each word counts, and should be carefully considered. The degree profile is made up of seven entries including a general entry and the following sub-entries:

- Purpose
- Characteristics
- Employability & further education
- Education style
- Programme competences
- List of Programme Learning Outcomes

TASK 2.3

Each PC partner must fill the Degree profile.

Template for Degree profile description

DEGREE PROFILE OF	
<p>The official name of the programme offered by the institution in the ‘original’ language. If the name is not in English, please provide in addition an English translation (where available) Please provide (in bold): The full name of the qualification in the original language as it is phrased in the original qualification. If the qualification is a dual award, this should be stated. Indicate if the award confers any nationally accepted title on the holder and what this title is. Indicate if the title is protected by law. If the name is not in English, please provide in addition an English translation (where available)</p>	

INSTITUTION	Please fill in the official name of the awarding institution
COUNTRY	Please fill in the country that provides the accreditation of the degree awarding institution
YEAR OF REFERENCE	Please refer to the year(s) for which the programme received accreditation , or any other reference date indicating when the information provided within the degree programme was designed
LEVEL	Please indicate the level of the qualification in terms of NQF (where available)/EQF and Bologna (EHEA)

A	PURPOSE
	Please provide (in 2 sentences) a general statement of the degree programme, covering a synthetic view of the overall purpose of the programme

B CHARACTERISTICS	
1	DISCIPLINE (S) Please indicate the main subject and/or specific subject areas of the degree programme If the programme is multi- or interdisciplinary: please add relative weight of major components if applicable (e.g. politics, law and economics (60:20:20))
2	FOCUS Please indicate here the specialist and/or general focus of the degree programme (if applicable)
3	ORIENTATION Please provide a summary of the orientation of the degree programme <i>For example whether the degree is primarily: research oriented, practical/professional orientated, applied, related to designated employment</i>
4	DISTINCTIVE FEATURES Please provide here any additional features that distinguish this degree programme from other degree programmes <i>For example: if the programme includes a compulsory international component, if a specific working environment is required or if a course is taught in second language</i>

C EMPLOYABILITY & FURTHER EDUCATION	
1	EMPLOYABILITY Please summarise (in maximum 3 lines) the employment opportunities relating to the competences obtained in the degree programme and its specialisations. <i>These for example refer to occupations and/or job level</i> NB: Indicate the relevant national/European legal framework if applicable
2	FURTHER EDUCATION Please indicate (in maximum 3 lines) access to further studies within and outside the main subject areas identified above, relating to the competences obtained in the programme and its specialisations

D EDUCATION STYLE	
1	LEARNING & TEACHING APPROACHES Please indicate (in maximum 3 lines) the main learning and teaching strategies and methods, relevant to the programme outcomes. <i>Examples are: self directed study, problem based learning, research based learning, learning through laboratory practice, reflective learning, work placements, group work, individual study and autonomous learning</i>
2	ASSESSMENT METHODS Please indicate (in maximum 3 lines) the main assessment strategies and methods , relevant to the programme outcomes as well as learning and teaching approaches. <i>Examples are: oral and written examinations, practice, critical incident analyses, case studies, essays, presentations, reports, continuing assessments, examinations and project work, self reflection</i>

E PROGRAMME COMPETENCES	
Please include the main competences developed by programme completion. These are categorised as generic or subject specific competences (please see section page X for further explanation). The total number of programme competences (generic and subject specific) should not exceed 15. In the case of regulated professions, it may be appropriate to make a reference to any professional/ legal requirements where the full list of programme competences is found, but here focus on the key domains/competences only. Titles are: <ul style="list-style-type: none"> ▪ E1 Generic; and, ▪ E2 Subject Specific 	
1	GENERIC Please list here the generic programme competences <i>Tuning methodology top generic competences:</i> <ul style="list-style-type: none"> • <i>ability for abstract thinking;</i> • <i>analysis and synthesis;</i>

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		<ul style="list-style-type: none"> • <i>ability to apply knowledge in practical situations;</i> • <i>subject area knowledge and understanding,</i> • <i>understanding of the profession;</i> • <i>ability to identify, pose and solve problems</i>
2	SUBJECT SPECIFIC	Please list here the Subject specific programme competences

F	COMPLETE LIST OF PROGRAMME LEARNING OUTCOMES
	Please list here the learning outcomes of the programme (suggested maximum 15). Programme Learning outcomes are statements of what students know, understand and are able to demonstrate after successful completion of the programme,

ECTS

We have to take into account current Ukrainian rules:

Master	90 ECTS	
Master Thesis	30 ECTS	
25% - elective courses	22,5 ECTS	
Core courses	37,5 ECTS	

It is planned within MASTIS project:

1) to organize brain-storm and workshop for constructing MPIS Degree Profile based on market & society requirements in context of IS and harmonize it with learning outcomes developed by Partners;

Result: MPIS Degree Profile.

Each university adapts the curriculum to the region and the HEI features.

Result: Curriculum.

2) Develop Degree Profile and Curriculum Revision Mechanism (month 29-32; P10, P13).

Approaches to revision Degree Profile and curricula will be analysed.

The mechanism of HEI, companies, graduates and students cooperation for Degree Profile and curriculum revision will be developed.

This mechanism should include rules for experts group creation & interaction for monitoring of professional requirements changing.

Result: Degree Profile and Curriculum revision manual.

Modernize Teaching Approaches (month 9-11; all PC).

This Package provides information on learning and teaching strategies, pedagogical philosophy, assessment methods, learning approaches.

MASTIS training methodology is based on Tuning requirements and multidisciplinary project teamwork supported by e-learning tools. Training process is orientated to students' self-development. Courses are expected to be designed on bases of learning outcomes. Training are combining lectures, practical exercises or experiments, case works, simulations, modelling field trips, project work, internship, thesis research.

Decision about e-learning and video components will be made.

Teaching strategies and methods will include modern approaches like:

- student centred,
- teacher guided,
- self directed study,
- problem based learning,
- task based learning,
- research based learning,
- learning through laboratory practice,
- reflective learning,
- work placements,
- group work,
- individual study and
- autonomous learning.

Teachers handbook will be created in the format of instructions for teachers Degree Profile complete set of MASTIS training package including curricula, course units, course books as well as availability of copies and e-copies of each course book at every PC University can serve as indicators of progress.

Result: Teachers Handbook.