



# GUIDELINES

## FOR CURRICULUM DEVELOPMENT AND QUALITY ASSURANCE OF JOINT MASTER PROGRAMMES

QUALITY ASSURANCE SUPPORT TEAM

**Euro**league

F O R L I F E S C I E N C E S



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2007**

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## Preface

Dear colleagues,

I am pleased to provide you the first “Guidelines for Curriculum Development and Quality Assurance of Joint Master Programmes” of ELLS. Building on broad consultations and on our own experiences within the Euroleague for Life Sciences, these Guidelines offer a practicable tool to help teachers to develop and assure the quality of joint Master programmes.



The increasing importance of joint programmes for the creation of a European higher education system has repeatedly been stated in the Bologna process, especially from the Prague conference onwards. Since its foundation in 2002, the Euroleague for Life Sciences has aimed at the development of joint teaching programmes whereas special attention has been laid on joint Master programmes. I am glad to say that we have developed two joint Master programmes until now. The MSc. “Safety in the Food Chain” started in 2006 and the MSc. “European Master of Environmental Sciences” will start in autumn 2007.

As the Euroleague for Life Sciences comprises itself as a quality network of currently seven universities, the need for a joint quality assurance became obvious. I appreciate that the Quality Assurance support team of ELLS responded to this need with a development project which was financed by an internal ELLS fund.

The Guidelines are addressed to all academics involved in the design and quality assurance of joint Master programmes covering the following aspects: Need for a programme, degree profile, degree programme, structure and mobility, learning, teaching and assessment methods, admission, Master thesis and degree, management, resources and quality assurance.

These guidelines serve as a checklist for the development of joint Master programmes covering the most recent developments in educational standards and help to implement the Bologna doctrine. They also help to evaluate a degree programme and pave the way to accreditation.

In the attachment practical tools like a glossary, lists of competencies and a thesis evaluation report can be found.

The Board of ELLS hopes that these guidelines are a useful tool for teachers and that they also help to prepare the students best for the demands of the European labour market.

I would like to compliment the Quality Assurance support team on the excellent work and to appreciate their continuous high commitment in the spirit of ELLS. I regard this manual as exemplary for all tasks of the Euroleague for Life Sciences.

Yours sincerely,

A handwritten signature in black ink, which appears to read "Hans-Peter Liebig". The signature is written in a cursive style.

Prof. Dr. Hans-Peter Liebig  
Head of the ELLS Board

Hohenheim, September 2007

## 1 Background and concept

These are the findings of a project funded by the ELLS Fund for 2006 that was carried out by the Quality Assurance support group of the Euroleague of Life Sciences.

These guidelines should help the members of a Subject Area (programme developers, programme co-ordinators) to design, set up and implement new *joint Master programmes* within the ELLS network. As the Euroleague defines itself as a quality network, special emphasis will be laid on the provision of joint Masters<sup>1</sup> on a very high level. For the evaluation and quality assurance of joint Master programmes the QA support group provides quality criteria that can be found in Part 2.

The QA group considered the findings of major European projects in curriculum development and quality assurance, especially the “Guidelines for Quality Enhancement in European joint Master Programmes (EMNEM)”<sup>2</sup>, developed by the European University Association EUA, the TUNING<sup>3</sup> approach and the outcomes of the recently published “Trends V” report of the EUA<sup>4</sup>. The ELLS QA group did not only consider these important European projects but also accreditation criteria from German and Dutch agencies and findings from leading European universities in the provision of joint programmes.

These guidelines do not only consider the most recent developments in educational standards, they also help to further introduce the Bologna approach and quality criteria both at university as well as at network level.

The ELLS QA group greatly appreciates the International Relation Officers’ “Manual for Planning and Implementing Joint MSc. Programmes”<sup>5</sup> which highlights general, administrative, academic, legal and financial aspects crucial for the provision of joint Master programmes.

Terms, which are highlighted *in italics*, are explained in the **glossary** in the appendix of this document.

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<sup>1</sup> By a joint Master we understand a programme that is jointly developed and delivered leading either to the award of a joint, double or a multiple degree.

<sup>2</sup> See: [www.eua.be/eua/jsp/en/upload/EMNEM\\_report.1147364824803.pdf](http://www.eua.be/eua/jsp/en/upload/EMNEM_report.1147364824803.pdf)

<sup>3</sup> See: <http://tuning.unideusto.org/tuningeu>

<sup>4</sup> Trends V: Universities shaping the European Higher Education Area, An EUA Report, see also [http://www.eua.be/fileadmin/user\\_upload/files/Publications/Final\\_Trends\\_Report\\_May\\_10.pdf](http://www.eua.be/fileadmin/user_upload/files/Publications/Final_Trends_Report_May_10.pdf)

<sup>5</sup> See: [http://www.Euro\\_League-study.org/supportteams/IRO/index.html](http://www.Euro_League-study.org/supportteams/IRO/index.html)

## **2 Guidelines for curriculum development**

The QA-group has elaborated a number of criteria for designing study programmes and summarized these criteria in a short checklist. Many of the key-questions were taken from the project TUNING, but were adapted to fulfil the needs of an ELLS joint Masters.

A curriculum description of a new ELLS joint Master programme should cover the following topics:

- 1) Need
- 2) Degree profile
- 3) Degree programme, structure and mobility
- 4) Learning, teaching and assessment methods
- 5) Admission
- 6) Master thesis and degree
- 7) Management and resources
- 8) Quality assurance and evaluation

### **2.1 *Need and link with institutional mission***

- I. It is crucial to demonstrate the need for a programme; therefore a broad consultation including the academic community, professionals, employers and other stakeholders has to be carried out.
- II. The benefit of having a jointly delivered Master programme needs to be proven. This includes the reason for the choice of the participating universities and the expertise that they bring.  
Joint ELLS programmes should normally be developed and carried out by at least three member universities.  
The partner universities contribute to different parts of the programme.
- III. The study programme must be linked with the institutional mission.

## 2.2 Degree profile

- I. The *degree profile* defines the overall aim, the objectives, the *curriculum*, the prerequisite knowledge and the target groups of the programme.<sup>6</sup>
- II. The objectives have to be formulated in form of *learning outcomes* that correspond with the acquired knowledge and skills.<sup>7</sup> (See also glossary).
- III. The *learning outcomes* are described in terms of subject-specific *competencies* and generic *competencies* and relate to the concept of the *Dublin descriptors*<sup>8</sup> and to the *TUNING* approach<sup>7</sup>.
- IV. The *curriculum* defines the academic content that will result in the achievement of the learning outcomes.
- V. The *learning outcomes* consider the needs of the labour market considering the aspirations of the students and the employability of its graduates.

## 2.3 Degree programme, structure and mobility

- I. The Master programme normally lasts for 2 years and comprises 120 *ECTS*.
- II. The degree programme has to be structured in such a way that students' mobility is guaranteed so that they can complete the programme within the given timeframe.
- III. The *curriculum* is structured in such a way that coherence is assured within the total programme so that continuous progression is made in respect to the *learning outcomes*.
- IV. All courses are held in English. Additionally, courses may also be offered in another language of instruction to foster second language acquisition.

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<sup>6</sup> ENQA: TEEP 2.- Trans-national European Evaluation Project  
<http://www.enqa.eu/projectitem.lasso?id=34837&cont=pastprojDetail>

EUA: Quality Assurance in joint Master Programmes: European Masters New Evaluation Methodology (EMNEM) <http://www.eua.be/index.php?id=110>

<sup>7</sup> TUNING - Tuning Educational Structures in Europe <http://tuning.unideusto.org/tuningeu>  
-> Tuning methodology -> learning outcomes and competencies  
see also document  
[http://tuning.unideusto.org/tuningeu/images/stories/archivos/TUNING%20METHODOLOGY%20P  
ARA%20LA%20WEB.pdf](http://tuning.unideusto.org/tuningeu/images/stories/archivos/TUNING%20METHODOLOGY%20P<br/>ARA%20LA%20WEB.pdf)

<sup>8</sup> Dublin Descriptors  
<http://www.jointquality.nl/content/descriptors/CompletesetDublinDescriptors.doc>

## **2.4 Learning, teaching and assessment methods**

- I. Appropriate learning, teaching and *assessment methods* must be identified in order to achieve the *learning outcomes*.
- II. The used teaching and learning methods are varied and innovative.
- III. There should be an appropriate mix of *teacher centred and student centred learning approaches*.  
The focus on learning processes must be assured.
- IV. The *workload* should be appropriate and well balanced throughout the whole programme<sup>7</sup>.
- V. The used *assessment* methods are explicit, valid and reliable.
- VI. The *assessment* methods should be designed to evaluate the extent to which students can demonstrate achievement of the *learning outcomes*.
- VII. Assessment criteria are transparent. If the assessment is done according to national examination rules and grading systems, the grades are then translated into the *ECTS grading scheme*.

## **2.5 Admission**

- I. For the admission to the joint Master the candidates have to meet the pre-requisite skills that have to be laid down in the *degree profile*.
  - a. An admission commission (or other appropriate body) with representatives from all participating universities assesses whether a student meets the entry requirements taking into consideration the grades obtained during the BSc, the *curriculum* followed, the *learning outcomes* achieved and his/her motivation.
  - b. If the student's mother tongue is not English, language skills have to be proven according to TOEFL<sup>9</sup> (paper-based 550, computer-based 230) or to IELTS<sup>10</sup> (6.0). An equivalent language certificate from the ELLS universities can also be accepted.
- II. Information on the application process is easily publicly available; this includes administrative, legal, academic and financial issues. See also "Manual for Planning and Implementing Joint MSc Programmes".<sup>5</sup>
- III. The selection process of the candidates is transparent.

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<sup>9</sup> Test of English as a Foreign Language: [www.ets.org/toefl](http://www.ets.org/toefl)

<sup>10</sup> International English Language Testing System, see: <http://www.ielts.org/>

## 2.6 Master thesis and degree

- I. The Master thesis meets the basis requirements of ELLS joint Masters` theses.
  - a. The Master thesis normally covers 30 ECTS.
  - b. The supervisor should meet the requirements of the university at which the thesis is undertaken.  
He/she has to fill in the "Supervisor´s Report" (See also Supervisor´s Report )
  - c. A thesis proposal and a preliminary report of the thesis are presented in a seminar.
  - d. The thesis is written in English.
  - e. The written thesis is an independent work which has to cover the following aspects
    - i. Relevant, clearly formulated and testable problem definition
    - ii. Theoretical framework and research methodology
    - iii. Description of the research project
    - iv. Analysis and interpretation of the results, conclusions
    - v. Responsible and transparent use of relevant references
  - f. An internal and an external examiner independent of the supervisor examine the thesis. <sup>11</sup>
  - g. The candidate must defend his/her thesis in a public defence.  
The evaluation of the thesis and of the thesis defence is carried out on basis of the "Thesis Evaluation Form" and the "Thesis Defence Evaluation Form".
- II. The student participating in a double degree programme will be awarded a diploma by each of the participating universities.  
For a *joint degree* programme, the student will be awarded a diploma signed by all participating universities.
- III. A *diploma supplement* in English is issued together with the diploma.

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<sup>11</sup> If the study laws determine that the supervisor is also an examiner then the supervisor and an internal and external examiner examine the thesis.

If the study laws determine that the supervisor is also an examiner then the supervisor and an internal and external examiner examine the thesis.

## **2.7 Management and resources**

- I. The administrative structure of the joint programme, the roles and responsibilities of the participating partners are clearly defined. The structure must be flexible and enable changes.
- II. The necessary resources for delivery must be available. These include academic and non-academic staff, facilities for teaching and specific resources for the joint Master programme.
- III. The financial aspects of the joint studies should be clearly described, e.g. allocation of financial resources among the partners, cost of mobility for students, teachers and external examiners.
- IV. Communication must be efficient and enable the exchange of all relevant information.
- V. Sufficient information on tuition fees, waiving of tuition fees and grants at each of the participating universities is available for the students.

## **2.8 Quality assurance**

- I. For the initial curriculum development the ELLS “Guidelines for Curriculum Development and Quality Assurance of Joint Master Programmes” have to be followed and the quality criteria have to be met. (See also chapter 3) If applicable, the “Thesis Evaluation Form” and the “Thesis Defence Evaluation Form<sup>12</sup>” have to be used.
- II. For the delivery of the degree programme a *quality management cycle* should be developed. This cycle shall cover the following steps:
  1. Design
  2. Implement (approval, resourcing)
  3. Deliver
  4. Evaluate
  5. Improve the design, implementation and delivery processes. (See chapter 3.8)

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<sup>12</sup> See attachment

III. After one cycle the Master programme has to be evaluated internally.

Therefore, the following aspects have to be considered:

- a. Participation of students, teachers and staff in the process of quality assurance (continuous feedback and feedforward loops).
- b. Assure the implementation of proposed measures.
- c. Information about the results of evaluations (e.g. through extended summaries) within the participating university and within the ELLS network.

IV. After three cycles the Master programme has to be evaluated externally. The evaluation process should meet the requirements of the *accreditation* process.

### **3 Quality assurance of joint Master programmes:**

#### **Definition of criteria for the assessment of a joint Master programme**

The following chapter introduces a number of quality related questions that should help to assess essential elements of a joint Master degree programme, e.g. the degree profile, the learning outcomes or the thesis. The focus thereby is on self-assessment in order to enhance the quality of the degree programme according to the quality management cycle.

The criteria address Subject Area co-ordinators, programme co-ordinators and Quality Assurance experts who are involved in the quality assurance of a joint Master programme. The following list of criteria refers to the above “Guidelines for Curriculum Development” whereby quality related questions have been formulated for each item. The idea is to use them like a checklist that might need to be adapted in order to suit a specific degree programme. The formulated criteria can be used as a basis for a self-evaluation report and can also be a preparatory work for an accreditation process.

## Quality definitions

The following quality definitions taken from the European University Association<sup>13</sup> lay the basis for the below criteria.

*Quality as compliance with standards:* Defined quality criteria/benchmarks have to be met.

*Quality as fitness of purpose:* Determines whether the aims of the programme are appropriate or not.<sup>14</sup>

*Quality as fitness for purpose:* In education, fitness for purpose is usually based on the ability of a study programme to fulfil its aims.<sup>15</sup>

*Quality as customer satisfaction:* Customer satisfaction contributes to quality improvement, e.g. through continuous student feedback loops.

*Quality as continuous enhancement:* Quality cycles have to be set up which require follow up measures and which feed back into planning.

## Principles

In reference to the above definitions the following guiding principles should be followed:

- Transparency and openness
- Evaluation as a learning and development opportunity, as well as a reflection process for all concerned
- Participation of students in quality assurance procedures

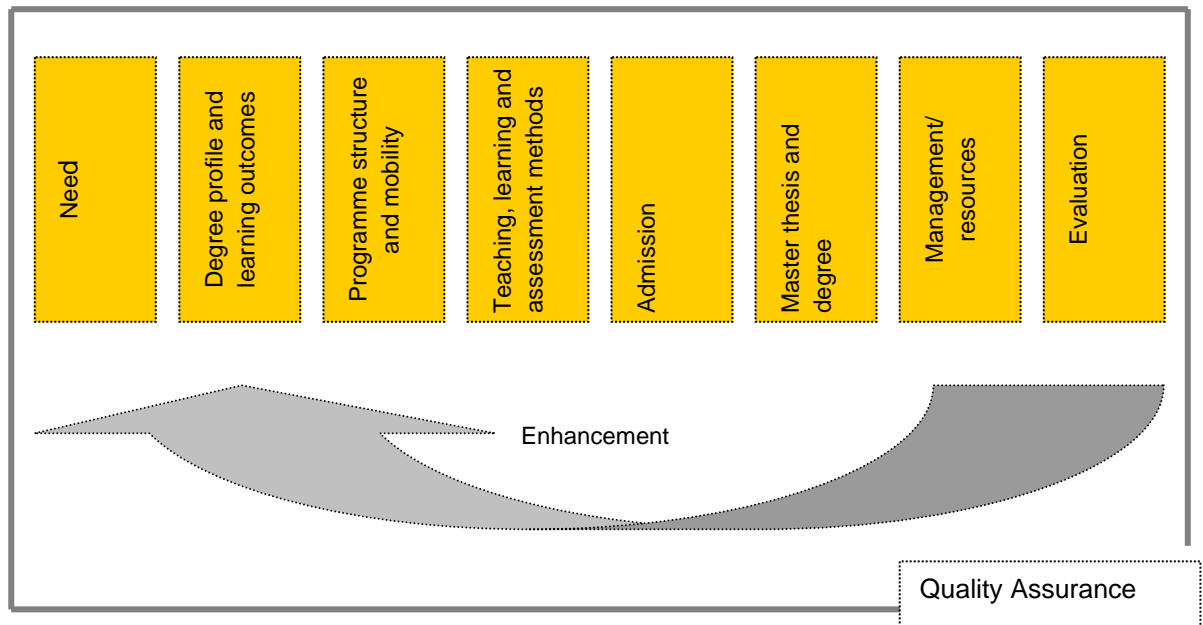
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<sup>13</sup> EUA, Guidelines Quality Culture Project, Round II, p. 9., See also [http://www.eua.be/fileadmin/user\\_upload/files/EUA1\\_documents/QCII%20Report%2030.03.05.1115967574238.pdf](http://www.eua.be/fileadmin/user_upload/files/EUA1_documents/QCII%20Report%2030.03.05.1115967574238.pdf)

<sup>14</sup> Compare with: Quality enhancement at programme level: The Tuning approach <http://www.tuning.unideusto.org/tuningeu/index.php?option=content&task=view&id=176>

<sup>15</sup> Compare with Harvey and Green (1993): <http://www.qualityresearchinternational.com/glossary/fitnessforpurpose.htm>

The underlying concept<sup>2</sup> is based on various steps which can be summarised as follows:



### 3.1 *Need and link with institutional mission*

- I. Has the need for the new degree programme been demonstrated fully and clearly?  
 Was there a consultation with stakeholders (academic community, professionals, employers)?  
 Was the approach used for the consultation adequate?  
 Did the stakeholders identify the need for the degree programme?  
 Were the groups that had been selected for the consultation the relevant ones for the degree programme considered?
- II. What is the benefit for offering this study programme as a joint degree?  
 Why have the participating universities been chosen?  
 Why is it not reasonable to carry out the programme without these international partners?  
 Which are the contributions of the involved universities to the joint Master?
- III. How is the link between the new study programme and the institutional mission assured?  
 Which are the links with other degree programmes and research fields at the home university?

### **3.2 Degree profile**

- I. Have the overall aim, objectives, curriculum, prerequisite knowledge and target groups been identified?  
Are these definitions comprehensive and clear?  
Does the degree profile satisfy established or new professional and/or social demands?  
What are the objectives of the joint Master regarding academic values, democratic citizenship, social responsibility and the personal development of the students?
- II. Have clear and adequate learning outcomes been identified at the level of the programme as a whole and at the level of each of its components?  
Do the learning outcomes result in the profile identified?
- III. Are the learning outcomes formulated in terms of subject-specific and generic competencies?  
What specific competencies, abilities, skills and knowledge are to be gained by the students?  
Are the learning outcomes expressed in such a way that they can actually be verified? (See also chapter 3.4)
- IV. Does the curriculum meet the learning outcomes?  
Is the curriculum academically challenging for staff and students?  
Are the learning outcomes to be obtained appropriate for this specific degree programme?  
  
Are learning outcomes described in terms of
  - a. Acquiring knowledge, understanding, skills and abilities
  - b. Applying knowledge, understanding, skills and abilities in practice
  - c. Making informed judgements and choices
  - d. Communicating knowledge and understanding
  - e. Capacities to continue learning
- V. Are the learning outcomes well related to a specific professional or social context, to the labour market and the aspirations of the students?  
How is it assured that the degree profile leads to an appropriate employment of graduates?

### **3.3 Degree programme, structure and mobility**

- I. Have ECTS credits been allocated to the programme and to all courses?  
What mechanisms are used to check the correlation between workload and credit allocation?  
How are the students involved in this process?  
Is there an ECTS course catalogue?  
If so, how is it structured?
- II. Is the degree programme structured in such a way that it allows students' mobility?
- III. How is progression guaranteed in the development of the learning outcomes?  
How is it assured that all participants of the programme have equivalent learning opportunities, irrespective whether they are in a mobility phase or not?
- IV. Are all courses held in English?  
Are additional courses offered in another language of instruction?

### **3.4 Learning, teaching and assessment methods**

- I. What types of learning, teaching and assessment methods are used to ensure that students obtain the learning outcomes?
- II. How is it assured that the teaching and learning methods are varied and innovative?  
In which way are the teaching and learning methods suited to achieve the learning outcomes?
- III. Does the mix of teacher and student centred learning approaches correspond with the learning outcomes?  
How is the focus on learning processes assured?
- IV. How is an appropriate and a well-balanced student workload guaranteed during each learning period?
- V. How is it assured that assessments are explicit, valid and reliable?
- VI. How do the assessments enable students to demonstrate that they have achieved the learning outcomes?
- VII. Does the joint Master have set examination rules?  
Do all partners carry out assessments in a consistent manner?  
Which grading schemes are used?  
Are they translated into ECTS grading?  
How is consistency of grading ensured across the partner institutions, e.g. through external examiners?

### **3.5 Admission**

- I. Are the prerequisite skills for the joint Master described in the degree profile?  
Who are the members of the admission commission of all participating universities?

How is an objective assessment of the admission criteria (grades, curriculum, learning outcomes of BSc, language skills and motivation for MSc) assured?  
What is the ratio between applications and admissions (*admission yield*)?

- II. Is all information on the application process easily publicly available?  
In which manner is all relevant information made publicly available?
- III. How is it assured that the admission criteria are transparent?  
Is the admission procedure the same at all participating institutions?

### **3.6 Master thesis and degree**

- I. Thesis: How is the fulfilment of formal criteria for the Master thesis assured?
  - i. Number of ECTS (normally 30)
  - ii. English language level
  - iii. Relevant, clearly formulated and testable problem definition
  - iv. Theoretical framework and research methodology
  - v. Description of the research project
  - vi. Analysis and interpretation of the results, conclusions
  - vii. Effective and responsible use of the references

How is it assured that the student presents the thesis proposal and the preliminary reports of his/her work and that he/she receives feedback on it?  
How is the involvement of an internal and an external examiner assured?  
How is comparability and transparency of the evaluation of the thesis and of the thesis defence assured at the different partner universities?

- II. Does the diploma certificate clearly indicate that the awarded degree is a multiple or a joint degree?  
How do the participating partners deal with specific legal constraints regarding the establishment of a joint degree?  
How do they ensure that the joint Master degree will be recognised – academically, legally and professionally?
- III. Is a diploma supplement issued?  
Optional: Is a transcript of records issued in addition?

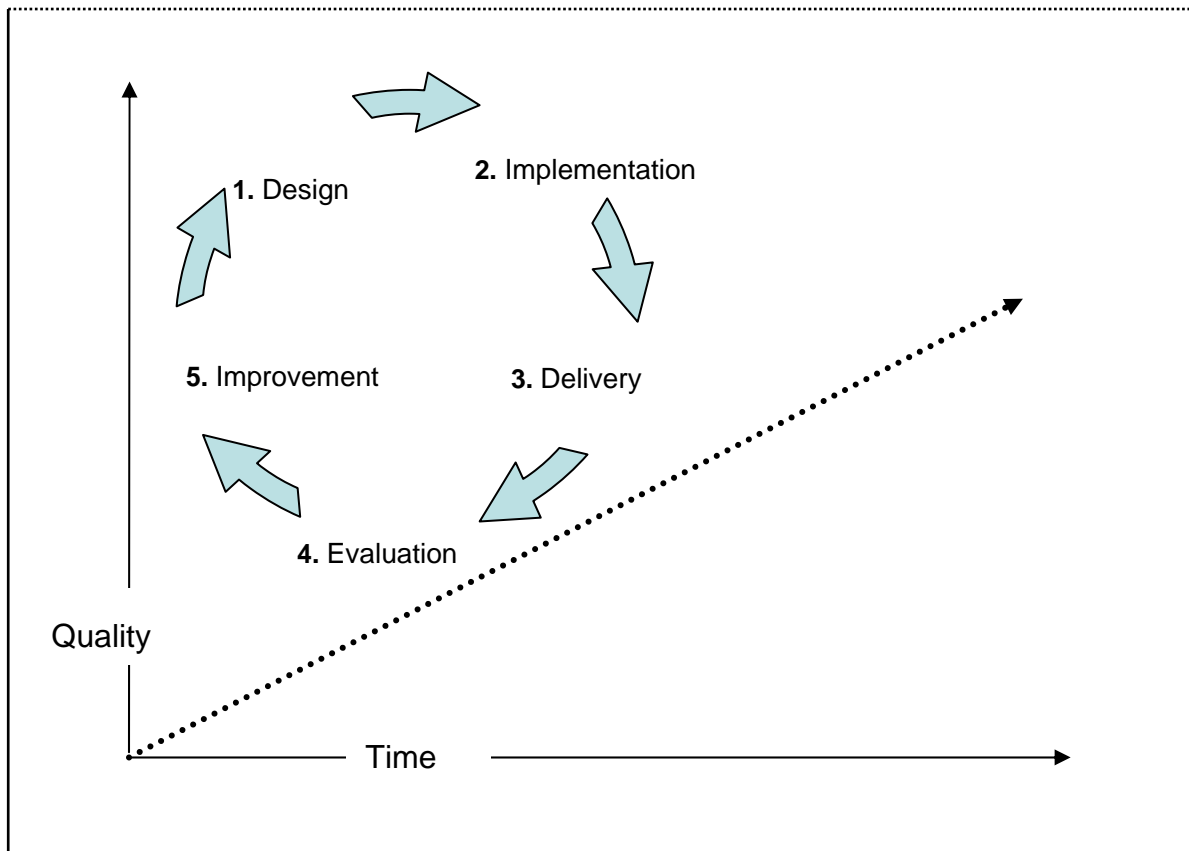
### **3.7 Management and resources**

- I. How is it assured that the roles and responsibilities within the network are clearly defined?  
Are these structures appropriate for achieving the objectives of the joint Master?  
How do the partners ensure their capacity for change in order to support the objectives of the programme? (See also chapter 3.8).
- II. Are sufficient financial resources available to meet the objectives of the joint Master?  
How is it assured that sufficient administrative, technical and other staff is available: At network level and at each participating university.  
Are sufficient facilities available to meet the objectives of the joint Master: e.g. class rooms, equipment and workplaces (e.g. laboratories, IT)?  
In which ways are additional specific resources for the joint Master provided e.g. mobility for students, teachers and external examiners?
- III. How is it assured that the funding of the joint Master is transparent: At network level and at each individual university?
- IV. In which manner is an efficient communication assured?
- V. How is sufficient information on tuition fees, waiving of tuition fees and on grants assured?

### **3.8 Quality assurance and evaluation**

- I. Have the “Guidelines for Curriculum Development and Quality Assurance of Joint Master Programmes” been followed in all stages of curriculum development?  
In how far have they been implemented?  
Have the quality criteria been met?

- II. Has a quality management cycle been set up to assure the quality at all stages of programme delivery?  
How is its implementation in the joint degree programme assured?



Quality Management Cycle of a degree programme

The above Quality management cycle is a continuing feedback and improvement process which - when fully developed - represents the internal quality assurance or management process.

Therefore, some of the leading items below shall be considered:

- Design: curriculum development
- Implementation: approval of the study programme at all participating universities
- Delivery: provision of a degree programme
- Evaluation: continuous periodical assessment of the strengths and weaknesses of the study programme (See also page 12 and 20)
- Improvement: a continuous process of further adapting and developing a programme based on the lessons learnt during the evaluation

- III. Was an internal evaluation of the joint Master realised after one cycle?
  - a. In what manner is the input of students, teachers and staff in the quality assurance processes assured? How does the university ensure a participatory feedback of all groups involved and a systematic follow-up?
  - b. How is the implementation of the proposed measures and objectives assured?  
To what extend does the programme use the results of its evaluations in order to improve?
  - c. By what means are results of evaluations made known?
- IV. How is an external evaluation of the joint Master realised after three cycles?  
*Are accreditation* processes necessary to offer the Joint Master?

## 4 Attachments

### 4.1 Glossary

#### **Admission yield**

The application/admission ratio. An admission yield of 10:1 shows that the number of applicants for a place at university is ten times higher than the number of available places within the programme.

#### **Accreditation<sup>16</sup>**

A process whereby a degree programme (programme accreditation) or an institution (institutional accreditation) is recognized by an external body as meeting certain predetermined standards or benchmarks.

#### **Assessment<sup>17</sup>**

The total range of methods used to evaluate the learner's achievement in a course, unit or module. Typically, these methods include written work, oral exams, laboratory work, practical exercises, projects, performances or portfolios.

The evaluations may be used to enable the learners to evaluate their own progress or by the institution to judge whether the learner has achieved the learning outcomes of the course, unit or module.

Assessments have to be carried out in an explicit (precisely and clearly expressed), valid (produces or relates to the intended results or goal), reliable (giving the same result on successive trials), specific and transparent way.

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<sup>16</sup> According to the NVAO [www.nvao.net](http://www.nvao.net)

<sup>17</sup> See [http://tuning.unideusto.org/tuningeu/images/stories/archivos/GLOSSARY\\_OF\\_TERMS\\_revised\\_version\\_November\\_2006.pdf](http://tuning.unideusto.org/tuningeu/images/stories/archivos/GLOSSARY_OF_TERMS_revised_version_November_2006.pdf)

### **Competencies:**<sup>18</sup>

Competencies represent a combination of knowledge, understanding, skills and abilities, which should be obtained by the students during their study period and should be verifiable at the end of the programme.

Competencies can be divided into two types:

- ⇒ **Subject specific competencies:** Subject-related theoretical, practical and experimental knowledge
- ⇒ **Generic competencies:** Subject-independent competencies such as the capacity to learn, decision making capacity, project design and management skills, etc. which are common to all or most degrees.  
In a changing society where demands tend to be in constant reformulation, these generic competencies and skills become of great importance.

### **Course catalogue**

A catalogue listing the courses of a study programme.

### **Curriculum**

A curriculum is the set of courses, its structure and its contents offered by a university

### **Degree profile**<sup>19</sup>

The degree profile defines the overall aim, the objectives, the curriculum, the prerequisite knowledge and the target groups of the programme.

### **Diploma supplement**<sup>20</sup>

The Diploma Supplement is an annex to the official degree designed to provide a description of the nature, level, context, content and status of the studies that were pursued and successfully completed by the holder of the degree.

It is based on the model developed by the European Commission, Council of Europe and UNESCO/CEPES. It improves international transparency and the academic/professional recognition of qualifications.

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<sup>18</sup> See TUNING <http://tuning.unideusto.org/tuningeu/images/stories/GLOSSARY.pdf>

<sup>19</sup> Compare also with [http://tuning.unideusto.org/tuningeu/images/stories/archivos/GLOSSARY\\_OF\\_TERMS\\_revised\\_version\\_November\\_2006.pdf](http://tuning.unideusto.org/tuningeu/images/stories/archivos/GLOSSARY_OF_TERMS_revised_version_November_2006.pdf)

<sup>20</sup> See TUNING <http://tuning.unideusto.org/tuningeu/images/stories/GLOSSARY.pdf> and [http://ec.europa.eu/education/policies/rec\\_qual/recognition/diploma\\_en.html](http://ec.europa.eu/education/policies/rec_qual/recognition/diploma_en.html)

### **Dublin descriptors<sup>21</sup>**

The Dublin descriptors define the expected competencies of students after completing a Bachelor-, Master- or PhD programme. See also learning outcomes.

These five competencies are:

1. Knowledge and understanding
2. Applying knowledge and understanding
3. Making judgements
4. Communication
5. Learning skills.

### **Enhancement**

A process of continuous improvement.

### **ECTS (European Credit Transfer and Accumulation System)<sup>22</sup>**

The European Credit Transfer and Accumulation System (ECTS) is a student-centred system based on the student workload required to achieve the objectives of a programme of study. These objectives should be specified in terms of learning outcomes and competencies to be acquired.

ECTS is based on the principle that 60 credits measure the workload of a fulltime student during one academic year. The student workload of a full-time study programme in Europe in most cases amounts to around 1500-1800 hours per year and, in those cases, one credit stands for around 25 to 30 working hours.

ECTS is a system for increasing the transparency of educational systems and facilitating the mobility of students across Europe through credit accumulation and transfer. Credit transfer is guaranteed by explicit agreements signed by the home institution, the host institution and the mobile student.

### **ECTS Grading<sup>23</sup>**

Grading systems are embedded in the various national educational systems. They differ significantly from each other and are not transparent from outside. Within the Bologna process the ECTS tries to improve the situation by introducing a rating system in addition to the national grading system. This should not replace the national system but complement it and is seen as an element to make the national system transparent and comparable so that it can be better understood by outsiders and also facilitate recognition and credit and grade transfer of learners and graduates.

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<sup>21</sup> See <http://www.jointquality.nl>

<sup>22</sup> See <http://tuning.unideusto.org/tuningeu/images/stories/GLOSSARY.pdf>

<sup>23</sup> See Bologna Glossar <http://bologna.owwz.de>

The ECTS grading scale ranks the students on a statistical basis. Therefore, statistical data on student performance is a prerequisite for applying the ECTS grading system. Grades are assigned among students with a pass grade as follows<sup>24</sup>

- A best 10%
- B next 25%
- C next 30%
- D next 25%
- E next 10%

A distinction is made between the grades FX and F that are used for unsuccessful students. FX means: “fail- some more work required to pass” and F means: “fail – considerable further work required”.

The inclusion of failure rates in the Transcript of Records is optional.

### **External examiner**

An examiner appointed from outside the university where the examination or the Thesis is conducted and who participates in the assessment of the examinations or the Thesis.

The external examiner can be either from another university, a public institution or a company.

### **Evaluation**

Evaluation is the systematic description, analysis and assessment of projects, programmes, processes, organisational units or persons. Evaluation can refer to the context of a degree-programme (preconditions, general framework), the structure as well as to the process or the results.

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<sup>24</sup> See [http://ec.europa.eu/education/programmes/socrates/ects/index\\_en.html](http://ec.europa.eu/education/programmes/socrates/ects/index_en.html)

### **Joint degree<sup>25</sup> -**

Currently, there is no common definition of joint degrees, but a number of important characteristics, which are listed below.

- The programme is developed by a subject area and approved by the ELLS board
- Students from each participating institution physically take part in the study programme at other institutions, but not necessarily at all cooperating institutions
- The period a student spends at one participating institution constitutes a substantial part of the programme
- Periods of study and examinations passed at the partner institutions are recognized fully and automatically
- The subject areas work out the curriculum joint and cooperate on admission and examination
- After completing the full programme, students either obtain the national degree of each participating institution or a degree (usually an unofficial “certificate” or “diploma”) awarded jointly by the partner institutions

### **Learning outcomes<sup>26</sup>**

Definition of what students are expected to know, understand and be able to demonstrate after completion of learning. They are formulated by the academic staff and can either refer to a single course, module or study programme. See also Dublin Descriptors.

### **Quality Management Cycle**

A Quality Management Cycle is a model for a continuing feedback and improvement process. It is also referred to as PDCA, Deming or Shewhart cycle and consists of a logical sequence of four repetitive steps:

- PLAN: Design or revise a process
- DO: Implement the plan and measure its performance
- CHECK: Assess the measurements and report the results to decision makers
- ACT: Decide on changes needed to improve the process

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<sup>25</sup> Committee on the Convention of the Recognition of qualifications concerning Higher Education, , Recommendation on the recognition of joint degrees, June 2004

<sup>26</sup> See <http://tuning.unideusto.org/tuningeu/images/stories/GLOSSARY.pdf>

### **Supervisor<sup>27</sup>**

Member of academic staff of the university who guides the thesis work of a Master candidate and provides advice and assistance on the elaboration of a thesis.

### **Student and teacher centred learning approach<sup>28</sup>**

Student-centred learning means that the focus is on students learning rather than teachers teaching.

Typical questions asked in planning for a student-centred lesson could be the following:

- What is it I want them to learn (be able to do)?
- Why do I want them to learn it?
- What do they already know?
- How will I (and they) know they've learned it?
- What difficulties will they have?
- How do I help them overcome these difficulties?

If a lesson can be evaluated only by examining what the teacher is doing, it is probably a teacher-centred lesson. Typical questions asked in planning for a teacher-centred lesson could be the following:

- What do I need to teach?
- How do I explain it?
- How do I make it interesting?

### **Transcript of records<sup>29</sup>**

The ECTS Transcript of Records is used to document the performance of a student over a certain period of time by listing the course units or modules taken, the credits gained, the local grades awarded and preferably the corresponding ECTS grades. It reflects both the quantity of work and the quality of achievement. The ECTS Transcript of Records is used for mobile students at two separate universities.

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<sup>27</sup> See

[http://tuning.unideusto.org/tuningeu/images/stories/archivos/GLOSSARY\\_OF\\_TERMS\\_revised\\_version\\_November\\_2006.pdf](http://tuning.unideusto.org/tuningeu/images/stories/archivos/GLOSSARY_OF_TERMS_revised_version_November_2006.pdf)

<sup>28</sup> See Glossary of Science Education Terms [www.esu.edu/master/glossary.html](http://www.esu.edu/master/glossary.html)

<sup>29</sup> See Bologna Glossar <http://bologna.owwz.de>

## **TUNING<sup>30</sup>**

Tuning Educational Structures in Europe is a project that links the political objectives of the Bologna process to the higher education sector. It is developed by and meant for higher education institutions. It does not focus on educational systems, but on educational structures and content of studies.

In the framework of the TUNING project a methodology has been designed to understand curricula and to make them comparable. Thereby five lines of approach have been distinguished:

1. Generic (general academic) competencies,
2. Subject-specific competencies,
3. The role of ECTS as an accumulation system,
4. Approaches to learning, teaching, and assessment and
5. The role of quality enhancement in the educational process.

## **Workload<sup>31</sup>**

Workload is a learner-oriented "quantitative measure of [all] learning activities that may feasibly be required for the achievement of the learning outcomes". Workload comprises the estimated time which is needed for any type of learning: lectures, seminars, practical work, private study, information retrieval, research, group work, independent studies, examinations, etc. The concept of workload is also the basis for allocating credits within the ECTS.

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<sup>30</sup> See TUNING Educational Structures in Europe <http://tuning.unideusto.org>

<sup>31</sup> See Bologna Glossar <http://bologna.owwz.de>

## 4.2 'Dublin' Descriptors<sup>32</sup>

### Terminology

1. The word 'professional' is used in the descriptors in its broadest sense, relating to those attributes relevant to undertaking work or a vocation and that involves the application of some aspects of advanced learning. It is not used with regard to those specific requirements relating to regulated professions. The latter may be identified with the profile / specification.
2. The word 'competence' is used in the descriptors in its broadest sense, allowing for gradation of abilities or skills. It is not used in the narrower sense identified solely on the basis of a 'yes/no' assessment.
3. The word 'research' is used to cover a wide variety of activities, with the context often related to a field of study; the term is used here to represent a careful study or investigation based on a systematic understanding and critical awareness of knowledge. The word is used in an inclusive way to accommodate the range of activities that support original and innovative work in the whole range of academic, professional and technological fields, including the humanities, and traditional, performing, and other creative arts. It is not used in any limited or restricted sense, or relating solely to a traditional 'scientific method'.

#### 4.2.1 Short Cycle

Qualifications that signify completion of the higher education short cycle (within the first cycle) are awarded to students who

- have demonstrated knowledge and understanding in a field of study that builds upon general secondary education and is typically at a level supported by advanced textbooks; such knowledge provides an underpinning for a field of work or vocation, personal development, and further studies to complete the first cycle;
- can apply their knowledge and understanding in occupational contexts;
- have the ability to identify and use data to formulate responses to well-defined concrete and abstract problems;
- can communicate about their understanding, skills and activities, with peers, supervisors and clients;
- have the learning skills to undertake further studies with some autonomy.

#### 4.2.2 First Cycle

Qualifications that signify completion of the first cycle are awarded to students who<sup>33</sup>

- have demonstrated knowledge and understanding in a field of study that builds upon and their general secondary education, and is typically at a level that, whilst supported by advanced textbooks, includes some aspects that will be informed by knowledge of the forefront of their field of study;

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<sup>32</sup> See [www.jointquality.nl](http://www.jointquality.nl)

<sup>33</sup> Alternative title as proposed by the Joint Quality Initiative Meeting, in Dublin, on 23 March 2004

- can apply their knowledge and understanding in a manner that indicates a professional approach to their work or vocation, and have competencies typically demonstrated through devising and sustaining arguments and solving problems within their field of study;
- have the ability to gather and interpret relevant data (usually within their field of study) to inform judgements that include reflection on relevant social, scientific or ethical issues;
- can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences;
- have developed those learning skills that are necessary for them to continue to undertake further study with a high degree of autonomy.

#### **4.2.3 Second Cycle**

Qualifications that signify completion of the second cycle are awarded to students who:

- have demonstrated knowledge and understanding that is founded upon and extends and/or enhances that typically associated with Bachelor's level, and that provides a basis or opportunity for originality in developing and/or applying ideas, often within a research context;
- can apply their knowledge and understanding, and problem solving abilities in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study;
- have the ability to integrate knowledge and handle complexity, and formulate judgements with incomplete or limited information, but that include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgements;
- can communicate their conclusions, and the knowledge and rationale underpinning these, to specialist and non-specialist audiences clearly and unambiguously;
- have the learning skills to allow them to continue to study in a manner that may be largely self-directed or autonomous.

#### **4.2.4 Third Cycle**

Qualifications that signify completion of the third cycle are awarded to students who:

- have demonstrated a systematic understanding of a field of study and mastery of the skills and methods of research associated with that field;
- have demonstrated the ability to conceive, design, implement and adapt a substantial process of research with scholarly integrity;
- have made a contribution through original research that extends the frontier of knowledge by developing a substantial body of work, some of which merits national or international refereed publication;
- are capable of critical analysis, evaluation and synthesis of new and complex ideas;
- can communicate with their peers, the larger scholarly community and with society in general about their areas of expertise;
- can be expected to be able to promote, within academic and professional contexts, technological, social or cultural advancement in a knowledge based society.

### 4.2.5 Differentiating between cycles

<b>Cycle</b>	<b>Knowledge and understanding:</b>
1 (Bachelor)	[Is] supported by advanced text books [with] some aspects informed by knowledge at the forefront of their field of study.
2 (Master)	provides a basis or opportunity for originality in developing or applying ideas often in a research* context.
3 (Doctorate)	[includes] a systematic understanding of their field of study and mastery of the methods of research* associated with that field.

	<b>Applying knowledge and understanding:</b>
1 (Bachelor)	[through] devising and sustaining arguments
2 (Master)	[through] problem solving abilities [applied] in new or unfamiliar environments within broader (or multidisciplinary) contexts.
3 (Doctorate)	[is demonstrated by the] ability to conceive, design, implement and adapt a substantial process of research* with scholarly integrity.  [is in the context of] a contribution that extends the frontier of knowledge by developing a substantial body of work some of which merits national or international refereed publication.

	<b>Making judgements:</b>
1 (Bachelor)	[involves] gathering and interpreting relevant data.
2 (Master)	[demonstrates] the ability to integrate knowledge and handle complexity, and formulate judgements with incomplete data.
3 (Doctorate)	[requires being] capable of critical analysis, evaluation and synthesis of new and complex ideas.

	<b>Communication:</b>
1 (Bachelor)	[of] information, ideas, problems and solutions.
2 (Master)	[of] their conclusions and the underpinning knowledge and rationale (restricted scope) to specialist and non-specialist audiences (monologue).
3 (Doctorate)	with their peers, the larger scholarly community and with society in general (dialogue) about their areas of expertise (broad scope).

	<b>Learning skills:</b>
1 (Bachelor)	have developed those skills needed to study further with a high level of autonomy.
2 (Master)	study in a manner that may be largely self-directed or autonomous.
3 (Doctorate)	expected to be able to promote, within academic and professional contexts, technological, social or cultural advancement.

### 4.3 *Generic competencies*<sup>34</sup>

Generic competencies or transferable skills are subject independent competencies which are common to all degrees. Tuning<sup>35</sup> distinguishes three types of generic competencies:

- **Instrumental competencies:** cognitive abilities, methodological abilities, technological abilities and linguistic abilities;
- **Interpersonal competencies:** individual abilities like social skills (social interaction and co-operation);
- **Systemic competencies:** abilities and skills concerning whole systems (combination of understanding, sensibility and knowledge; prior acquisition of instrumental and interpersonal competencies required).

A selection of generic competencies can be found in the table below.

Skill/Competence
Ability to work in an interdisciplinary team
Appreciation of diversity and multiculturalism
Basic knowledge of the field of study
Basic knowledge of the profession
Capacity for analysis and synthesis
Capacity for applying knowledge in practice
Capacity for generating new ideas (creativity)
Capacity to adapt to new situations
Capacity to learn
Critical and self-critical abilities
Decision-making
Elementary computing skills (word processing, database, other utilities)
Ethical commitment
Interpersonal skills
Knowledge of a second language
Oral and written communication in your native language
Research skills

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<sup>34</sup> See

<http://www.tuning.unideusto.org/tuningeu/index.php?option=content&task=view&id=183&Itemid=210>

<sup>35</sup> Compare with Competencies. Tuning Educational Structures in Europe

<http://www.tuning.unideusto.org/tuningeu/index.php?option=content&task=view&id=173&Itemid=209>

#### 4.4 Learning outcomes and competencies Example from the Earth Sciences<sup>36</sup>

<b>First Cycle</b>	
<b>Key Subject Specific competencies</b>	<b>Key Generic Competencies</b>
<p>Show a broad knowledge and understanding of essential features, processes and history and materials of the system earth</p> <p>Recognize the applications and responsibilities of earth sciences and its role in society</p> <p>Show adequate knowledge of other disciplines relevant to earth sciences</p> <p>Independently analyze earth materials in the field and laboratory and to describe, analyse, document and report the results</p> <p>Be able to reason in large-scale spatial and, or temporal frameworks</p> <p>The application of simple quantitative methods to earth systems</p>	<p>Work both independently and in team</p> <p>Basic general knowledge</p> <p>Grounding in basic knowledge of the profession</p> <p>Oral and written communication in your native language</p> <p>Knowledge of a second language</p> <p>Elementary computing skills</p> <p>Information management skills</p> <p>Awareness of safety</p> <p>Ability to communicate earth sciences issues with the wider society</p>
<b>Second Cycle</b>	
<b>Key Subject Specific competencies</b>	<b>Key Generic Competencies</b>
<p>To demonstrate a comprehensive knowledge in at least one specialised area of earth science</p> <p>Be able to define, determine and implement a strategy for solving an earth science problem</p> <p>To be able to understand the interactions of earth processes and test the results of these</p> <p>To produce a substantial report of thesis (including an executive summary)</p>	<p>Research skills</p> <p>Capacity for analyses and syntheses</p> <p>Problem solving</p> <p>Information management skills (ability to retrieve and analyse information from different sources)</p>

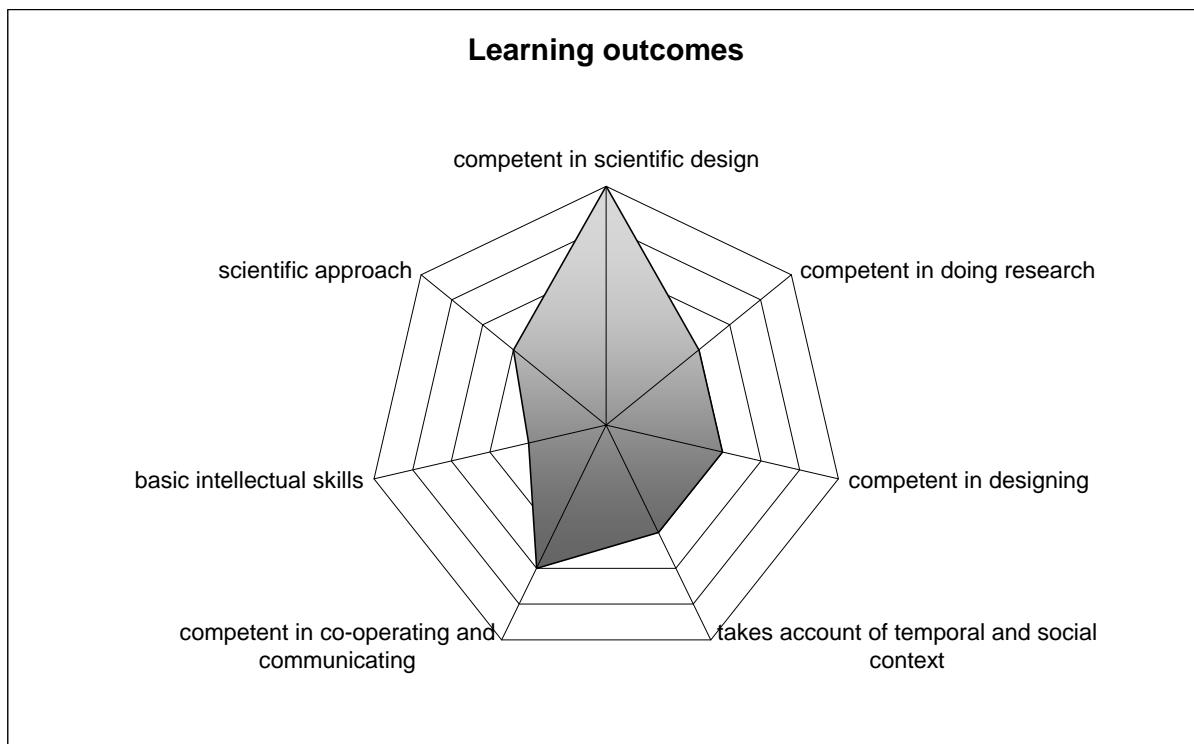
<sup>36</sup> Developed by the subject area Earth Science within the project TUNING

<http://tuning.unideusto.org/tuningeu/index.php?option=content&task=view&id=105&Itemid=132>

#### 4.5 Example graphical illustration

Graphical illustration of learning outcomes according to the Criteria for Academic Bachelor's and Master's Curricula<sup>37</sup> of the Joint Quality Initiative.

For generating the graphic illustration, the total number of ECTS is allocated to the different competencies.



<sup>37</sup> See [www.jointquality.org](http://www.jointquality.org). – specific descriptors

#### 4.6 Template Diploma supplement<sup>38</sup>

<b>1. Information identifying the holder of the qualification</b>	
1.1 / 1.2	Family name / first name:
1.3	Date, place, country of birth:
1.4	Student number or code:
<b>2. Information identifying the qualification</b>	
2.1	Name of qualification (full, abbreviated):
	Name of title (full, abbreviated):
2.2	Main field(s) of study for the qualification:
2.3	Name of institution awarding qualification: Status (type /control)
2.4	Name of institution administering studies: Status (type / control):
2.5	Language(s) of instruction/examination:
<b>3. Information on the level of the qualification</b>	
3.1	Level of qualification:
3.2	Official length of programme:
3.3	Access requirement(s):
<b>4. Information of the contents and results gained</b>	
4.1	Mode of study:
4.2	4Programme requirements:
4.3	Programme details:
4.4	Grading scheme, grade distribution guidancr
4.5	Overall classification of the qualification
<b>5. Information on the function of the qualification</b>	
	5.1 Access to further study:
	5.2 Professional status:
<b>6. Additional information</b>	
	6.1 Additional information:
	6.2 Additional information sources:
<b>7. Certification of the supplement</b>	
	This Diploma Supplement refers to the following original Documents:
<b>8. Information on the national higher education system<sup>39</sup>:</b>	
8.1	Types of institutions an institutional control
8.2	Types of programmes and degrees awarded
8.3	Approval/accreditation of programmes and degrees
8.4	Organization studies
8.4.1	Integrated "long" (one-tier-) programmes: (diploma degrees, Magister Artium, Staatsprüfung)
8.4..2	First/Second Degree Programs (Two-tier): (Bakkalauereus/Bachelor - Magister /Master degrees)
8.5	Specialized graduate studies
8.6	Doctorate
8.8	Grading scheme
8.9	Access to higher education
8.10	National sources of information

<sup>38</sup> See [http://ec.europa.eu/education/policies/rec\\_qual/recognition/diploma\\_en.html](http://ec.europa.eu/education/policies/rec_qual/recognition/diploma_en.html)

<sup>39</sup> Information on the different education systems is available on the ENIC/NARIC Homepage, see [www.enic-naric.net](http://www.enic-naric.net)

### 4.7 Supervisor's Report

Name: \_\_\_\_\_ Title of Thesis: \_\_\_\_\_

University \_\_\_\_\_

Starting Date: \_\_\_\_\_ Finishing Date: \_\_\_\_\_ Number of pages \_\_\_\_\_

<b>Evaluation Criteria</b>	<b>Comments</b>	<b>Grade points/ Grades</b>
<b>Personal and professional development</b>		
<b>Capability to work independently</b>		
<b>Capability for project management</b>		
<b>Creativity of problem solving</b>		
<b>Unforeseen obstacles</b>		
<b>Cooperation with supervisor</b>		
<b>Participation at seminars and meetings</b>		
<b>Special circumstances</b>		
<b>Further comments</b>		

Date, Name and signature of supervisor

\_\_\_\_\_

**4.8 Thesis Evaluation Form**

Name: \_\_\_\_\_ Title of Thesis: \_\_\_\_\_

University \_\_\_\_\_

Starting Date: \_\_\_\_\_ Finishing Date: \_\_\_\_\_ Number of pages \_\_\_\_\_

<b>Evaluation Criteria</b>	<b>Comments</b>	<b>Grade points/ Grades</b>
<b>Problem definition</b> <ul style="list-style-type: none"> <li>▪ relevant</li> <li>▪ clearly phrased</li> <li>▪ testable</li> </ul>		
<b>Research design</b> <ul style="list-style-type: none"> <li>▪ theoretical framework</li> <li>▪ research methods</li> </ul>		
<b>Execution</b> <ul style="list-style-type: none"> <li>▪ scholarly level</li> <li>▪ level of innovation</li> </ul>		
<b>Research results</b> <ul style="list-style-type: none"> <li>▪ description</li> <li>▪ analysis</li> </ul>		
<b>Analysis, interpretation, conclusions</b> <ul style="list-style-type: none"> <li>▪ clear</li> <li>▪ defensible</li> </ul>		
<b>Justification of the sources and literature used</b>		
<b>Clearly phrased reporting</b>		
<b>Structure of the thesis</b>		
<b>Further comments</b>		
Grade <sup>2</sup>		

Date, Name and signature of the examiner

<sup>1</sup> Criteria developed by the University of Utrecht [www.uu.nl](http://www.uu.nl) and modified by the Euroleague

<sup>2</sup> Grades according to national grading systems or adoption of the ECTS-System

**4.9 Thesis Defence Evaluation Form**

Name: \_\_\_\_\_ Title of Thesis: \_\_\_\_\_

University \_\_\_\_\_ Date of Defence \_\_\_\_\_

<b>Evaluation Criteria</b>	<b>Comments</b>	<b>Grade points/ Grades</b>
<b>Defence of the content</b> <ul style="list-style-type: none"> <li>▪ Ability to explain his/her work</li> <li>▪ Knowledge of his/her subject area and related fields</li> </ul>		
<b>Flexibility of the student to:</b> <ul style="list-style-type: none"> <li>▪ answer questions</li> <li>▪ make a point in discussion</li> <li>▪ transfer his/her results</li> </ul>		
<b>Presentation skills</b> <ul style="list-style-type: none"> <li>▪ Ability to outline a topic</li> <li>▪ Language skills</li> <li>▪ Use of media</li> </ul>		
<b>Further comments</b>		
<b>Grade<sup>2</sup></b>		

Date, Name and signature of the examiner

\_\_\_\_\_

<sup>1</sup> Criteria developed by the University of Utrecht [www.uu.nl](http://www.uu.nl) and modified by the Euroleague<sup>2</sup> Grades according to national grading systems or adoption of the ECTS-System

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<sup>40</sup> The cited internet-sites were all checked in August 2007.





**Euro** *league*

F O R L I F E S C I E N C E S