EQANIE
European Quality Assurance Network for Informatics Education

The new EQANIE Programme Outcomes and the role of Learning Outcomes in the EQANIE Accreditation Process

2 May 2016

Prof. Dr. Olaf Zukunft, HAW Hamburg

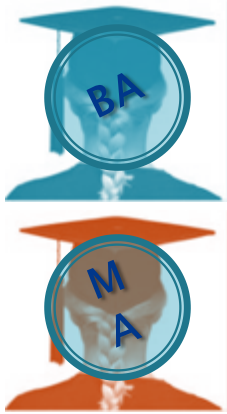
EQANIE
European Quality Assurance Network for Informatics Education

Euro-Inf Quality Label: Framework Standards

This talk

Jana's talk

Field-specific



Outcome statements

allow for:
- specific profile
- individual approach
- new ideas

Generic

5 areas of assessment

- Needs, objectives
- Educational process
- Resources
- Assessment
- Management

Euro-Inf: The Framework

EQANIE
European Quality Assurance Network for Informatics Education

- Designing the degree programmes is the task of every university/faculty
- Euro-Inf does not require a specific curriculum
- We do not even provide a list of modules/courses

- Instead, we have a high level of abstraction for describing programmes
- Instead, we used learning outcome based description
- Instead, we encourage universities to be innovative
- The basis for accreditation is our framework, so lets look at it and the learning outcomes

Talk Outline

EQANIE
European Quality Assurance Network for Informatics Education

- Learning Outcomes: What (and why)
- The Euro-Inf Learning Outcomes
- How to read the Euro-Inf framework
- How to map between Euro-Inf Outcomes and the programmes of your university
- Summary: Everything on one final slide

Learning Outcomes

EQANIE
European Quality Assurance Network for Informatics Education

1. Describe, what a student should have achieved at the end of his/her studies. They are expressed in terms of
   - knowledge
   - skills
   - competences
2. Are normally defined at two levels:
   - programme level - Programme Learning Outcomes (PLOs)
   - course (module) level - Intended Learning Outcomes (ILOs)
3. Provide a structured mechanism for describing degree programmes for the benefit of:
   - students
   - academic staff
   - employers
   - accreditors

Learning Outcomes: How are they written in Euro-Inf

Learning outcomes should be expressed using competence words

Learning Outcomes: How are they written in Euro-Inf

Learning outcomes should be expressed using competence words

- EURO-INF snipplet

> Graduates should be able to
> specify and complete informatics tasks that are complex, incompletely defined or unfamiliar

Learning Outcomes: How are they written in Euro-Inf

EQANIE
European Quality Assurance Network for Informatics Education

Learning outcomes should be expressed using competence words

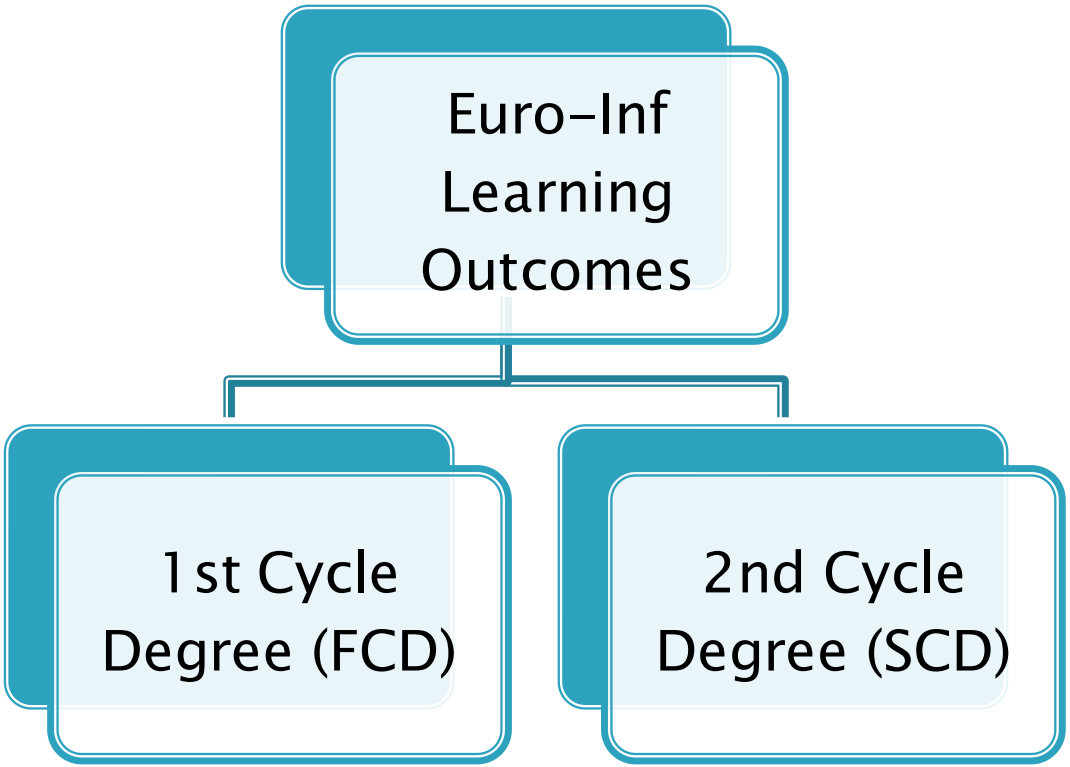
- EURO-INF snipplet

> Graduates should be able to
> specify and complete informatics tasks that are complex, incompletely defined or unfamiliar

- Examples of further words you will find in EURO-INF are:
  - state (e.g. facts)
  - describe (e.g. systems)
  - discuss (e.g. facts, systems, techniques)
  - explain (e.g. concepts)
  - compare/contrast
  - derive (e.g. equations, formulae)
  - design (e.g. systems, programs)
  - solve (e.g. problems, equations)
  - use (e.g. tools, techniques)

The Euro-Inf Learning Outcomes

EQANIE
European Quality Assurance Network for Informatics Education



- Outcomes for FCD and SCD share the same structure
- Outcomes for FCD and SCD differentiate w.r.t. level

Six categories of Euro-Inf Programme Outcomes

EQANIE
European Quality Assurance Network for Informatics Education

- Euro-Inf expected Learning Outcomes fall into 6 categories:
  1. Underlying Conceptual Basis for Informatics
  2. Analysis
  3. Design and Implementation
  4. Economic, Legal, Social, Ethical and Environmental context
  5. Informatics Practice
  6. Other Professional Competences

Six categories of Euro-Inf Programme Outcomes

1. Underlying Conceptual Basis for Informatics capabilities that are essential to satisfying the other programme outcomes, independently from the specific informatics specialisation and application context
2. Analysis
3. Design and Implementation
4. Economic, Legal, Social, Ethical and Environmental context
5. Informatics Practice
6. Other Professional Competences

Six categories of Euro-Inf Programme Outcomes

1. Underlying Conceptual Basis for Informatics
2. Analysis
   … involves the application of informatics concepts and tools to the analysis of both problems and their solutions
3. Design and Implementation
4. Economic, Legal, Social, Ethical and Environmental context
5. Informatics Practice
6. Other Professional Competences

Six categories of Euro-Inf Programme Outcomes

1. Underlying Conceptual Basis for Informatics
2. Analysis
3. Design and Implementation
   involve the creation and development of an economically viable product, process or system to meet a defined need
4. Economic, Legal, Social, Ethical and Environmental context
5. Informatics Practice
6. Other Professional Competences

Six categories of Euro-Inf Programme Outcomes

EQANIE
European Quality Assurance Network for Informatics Education

1. Underlying Conceptual Basis for Informatics
2. Analysis
3. Design and Implementation
4. Economic, Legal, Social, Ethical and Environmental context skills that graduates need to manage their activities and to be aware of the various legal and ethical constraints under which they are expected to operate, including an understanding of the need for a high level of professional and ethical conduct in relation to activities in informatics and a knowledge of professional codes of conduct
5. Informatics Practice
6. Other Professional Competences

Six categories of Euro-Inf Programme Outcomes

EQANIE
European Quality Assurance Network for Informatics Education

1. Underlying Conceptual Basis for Informatics
2. Analysis
3. Design and Implementation
4. Economic, Legal, Social, Ethical and Environmental context
5. Informatics Practice
   identifies the practical capabilities that graduates should have demonstrated through the application of informatics skills in a variety of situations. They should have demonstrated that they have an understanding of the contexts in which informatics knowledge can be applied (e.g. development and application of hardware and software, operation and management of informatics systems, etc).
6. Other Professional Competences

Six categories of Euro-Inf Programme Outcomes

1. Underlying Conceptual Basis for Informatics
2. Analysis
3. Design and Implementation
4. Economic, Legal, Social, Ethical and Environmental context
5. Informatics Practice
6. Other Professional Competences
   Social or soft competences are crucial to communicate information, ideas, problems and solutions.
   the category also includes personal organisational skills, team working and life-long learning

First Cycle Degree: Example of one category

EQANIE
European Quality Assurance Network for Informatics Education

Underlying Conceptual Basis for Informatics

Graduates of a First Cycle degree should be able to:

- describe and explain the essential facts, concepts, theories and mathematical methods relevant to computing, computing equipment, computer communication and informatics applications as appropriate to their programme of study
- outline the characteristics of relevant state-of-the-art hardware and software and their practical application
- outline relevant historical and current developments in informatics and show insight into possible future trends and developments
- apply and integrate knowledge and understanding of other informatics disciplines in support of study in their own specialist area(s)
- demonstrate awareness of the need for deep domain knowledge when creating informatics applications in other subject areas

First Cycle Degree: Example of one category

Underlying Conceptual Basis for Informatics

Graduates of a First Cycle degree should be able to:

- describe and explain the essential facts, concepts, theories and mathematical methods relevant to computing, computing equipment, computer communication and informati pplications as appropriate to their programme of study
- outline the characteristics of e and software and their practi
- outline relevant historical an atics and show insight into possib s
- apply and integrate knowled informatics disciplines in supp ist area(s)
- demonstrate awareness of the need for deep domain knowledge when creating informatics applications in other subject areas

Mathematics, Theory, and stuff like that

First Cycle Degree: Example of one category

Underlying Conceptual Basis for Informatics

Graduates of a First Cycle degree should be able to:

- describe and explain the essential facts, concepts, theories and mathematical methods relevant to computing, computing equipment, computer communication and informatics applications as appropriate to their programme of study
- outline the characteristics of relevant state-of-the-art hardware and software and their practical app tion
- outline relevant historical and current de nts in informatics and show insight into possible future
- apply and integrate knowledge and u informatics disciplines in support of s area(s)
- demonstrate awareness of the nee when creating informatics appli

Whatever informatics programme you offer

First Cycle Degree: Example of one category

Underlying Conceptual Basis for Informatics

Graduates of a First Cycle degree should be able to:

- describe and explain the essential facts, concepts, theories and mathematical methods relevant to computing, computing equipment, computer communication and informatics applications as appropriate to their programme of study
- outline the characteristics of relevant state-of-the-art hardware and software and their practical application
- outline relevant historical and current developments in informatics and show insight into possible future trends
- apply and integrate knowledge and understanding of other informatics disciplines in support of study in their main area(s)
- demonstrate awareness of the need for a systematic approach when creating informatics applications

Basic knowledge: Hard- and Software & Application

First Cycle Degree: Example of one category

Underlying Conceptual Basis for In

Graduates of a First Cycle degree shoul

- describe and explain the essential fa
  mathematical methods relevant to c
  equipment, computer communicatio
  as appropriate to their programme of
- outline the characteristics of relevan -of-the-art hardware and software and their practical application
- outline relevant historical and current developments in informatics and show insight into possible future trends and developments
- apply and integrate knowledge and understanding of other informatics disciplines in support of study in their own specialist area(s)
- demonstrate awareness of the need for deep domain knowledge when creating informatics applications in other subject areas

Where does informatic
we come from?
Where do we go to?

First Cycle Degree: Example of one category

EQANIE
European Quality Assurance Network for Informatics Education

Underlying Conceptual Basis for Infor

Graduates of a First Cycle degree should b

- describe and explain the essential facts
  mathematical methods relevant to com
  equipment, computer communication a
  as appropriate to their programme of study
- outline the characteristics of relevant sta ie-art hardware and software and their practical appli
- outline relevant historical and cu t developments in informatics and show insight into possibl uture trends and developments
- apply and integrate knowledge and understanding of other informatics disciplines in support of study in their own specialist area(s)
- demonstrate awareness of the need for deep domain knowledge when creating informatics applications in other subject areas

see beyond one's own nose

First Cycle Degree: Example of one category

EQANIE
European Quality Assurance Network for Informatics Education

Underlying Conceptual Basis for Info

Graduates of a First Cycle degree should b

- describe and explain the essential facts
  mathematical methods relevant to com
  equipment, computer communication a
  as appropriate to their programme of study
- outline the characteristics of relevant stat -art hardware and software and their practical applic
- outline relevant historical and curre velopments in informatics and show insight into possible f e trends and developments
- apply and integrate knowledg and understanding of other informatics disciplines in s pport of study in their own specialist area(s)
- demonstrate awareness of the need for deep domain knowledge when creating informatics applications in other subject areas

There are people who are not nerds and you need (at least) to talk to them …

Second Cycle Degree: Example of (same) category

EQANIE
European Quality Assurance Network for Informatics Education

Underlying Conceptual Basis for Informatics

Graduates of a Second Cycle degree should be able to:

- demonstrate either deepened knowledge of a chosen specialisation or broadened knowledge of informatics in general
- explain in depth relevant concepts and scientific principles appropriate to their programme of study, some of which may be from outside informatics
- demonstrate awareness of topics at the forefront of their specialisation and evaluate their significance

Second Cycle Degree: Example of (same) category

Underlying Conceptual Basis for Informatics

Graduates of a Second Cycle degree should be able to:

- demonstrate either deepened knowledge of a chosen specialisation or broadened knowledge of informatics in general
- explain in depth relevant concepts and scientific principles appropriate to their programme of study, some of which may be from outside informatics
- demonstrate awareness of topics at the forefront of their specialisation and evaluate their significance

Second Cycle Degree: Example of (same) category

Underlying Conceptual Basis for Informatics

Graduates of a Second Cycle degree should be able to:

- demonstrate either deepened knowledge of a chosen specialisation or broadened knowledge of informatics in general
- explain in depth relevant concepts and scientific principles appropriate to their programme of study, some of which may be from outside informatics
- demonstrate awareness of topics at the forefront of their specialisation and evaluate their significance

Two kind of Master degree programmes: Deeper or broader

Second Cycle Degree: Example of (same) category

Underlying Conceptual Basis for Informatics

Graduates of a Second Cycle degree should be able to:

- demonstrate either deepened knowledge of a chosen specialisation or broadened knowledge of informatics in general
- explain in depth relevant concepts and scientific principles appropriate to their programme of study, some of which may be from outside informatics
- demonstrate awareness of topics at the forefront of their specialisation and evaluate their significance

For the Master programme:
Do a little bit more…

Second Cycle Degree: Example of (same) category

EQANIE
European Quality Assurance Network for Informatics Education

Underlying Conceptual Basis for Informatics

Graduates of a Second Cycle degree should be able to:

- demonstrate either deepened knowledge of a chosen specialisation or broadened knowledge of informatics in general
- explain in depth relevant concepts and scientific principles appropriate to their programme of study, some of which may be from outside informatics
- demonstrate awareness of topics at the forefront of their specialisation and evaluate their significance

Let the students take a look at some kind of research

Six categories of Euro-Inf Programme Outcomes

- Programme outcomes vary in extent and intensity between Bachelor (FCD) and Master (SCD) level degrees.
- Institutions are expected to show how the learning outcomes of their degree(s) fulfil Euro-Inf requirements by completing a "Euro-Inf mapping matrix" for all programme level learning outcomes of Euro-Inf

Mapping ILO to PLO
(aka mapping "Modules" to "Euro-Inf")

	Module A	Module B	Module C	Module D	Module E	……..
PLO 1	X		X			
PLO 2					X	
PLO 3		X		X		
PLO 4	X					
PLO 5		X				
…..						

- You will find a template for this table on the Euro-Inf web page containing the Euro-Inf PLO

Summary

The learning outcomes for Euro-Inf are

- flexible
- easy to understand
- to be mapped on your degree programme(s)

For more information,

- download and read the framework, and
- look at the helpful templates at

http://www.eqanie.eu/

(click "QualityLabel->Framework")

Contact: zukunft@acm.org