Describing Learning Outcomes in Flemish Higher Education Institutions

1. A Qualification Framework for Higher Education in Flanders: background

- Dublin Descriptors (2004)
- European Qualifications framework (2008)
- In Flanders: the decree of 29.04. 2009 ("Flemish Act on the Qualification Structure") → Flemish qualification framework for H.E.
- → a set of learning outcomes for each programme
  - Levels 6 and 7 (bachelor and master) of the Qualification Structure
  - Generic level descriptors: knowledge, skills, context, autonomy, responsibility

Dublin descriptors

Fields of Competences

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

2. Procedure

- Decree 30-04-2009: Universities/University colleges that propose a similar programme → develop a set of 12-15 learning outcomes
- Each set of learning outcomes → has be linked to generic level descriptors (level 6 or 7)

Procedure

- Task force (VLIR/VLHORA): representatives of the programmes
- Writing down and discussing a proposal
  - Common effort
  - Consensus
  - A common methodology
  - Based on international sources
  - Conformity with specific regulations

Procedure

- Panel of stakeholders:
  - Check with students;
  - With employers;
  - With experts in the discipline;
  - International benchmark.

Procedure

- Proposal is submitted to the steering committee;
- If approved, sent to the accreditation agency for external validation;
- After validation, registered in the National Qualification Framework;
- Start of revision procedure
  - At least before new quality assurance site visits.

3. Characteristics of domain specific learning outcomes:

- 1. *Global*: at the level of the discipline;
- 2. *Generic*: but specific aspects remain possible;
- 3. Related to the Flemish Qualification Structure;
- 4. *Prototipical*: focus on the charachteristics of a discipline;
- 5. *Distinctive;*
- 6. *Sustainable;*
- 7. A basis for international comparison.

Characteristics of domain specific learning outcomes:

- provides space for profiling by each institution
  - additional learning outcomes
  - own approach to learning and teaching
  - organisation of course modules
  - design of course modules
- A framework not a straitjacket

4. Goals

- Transparency
- Similarities and differences between programmes
- Base for international recognition
- Base for recognition of prior learning at programme level
- Communication (students - employers)
- Used for site visit panels.

Describing Learning Outcomes at Faculty level.
Casus: Faculty of Engineering

1. Why introducing a generic competence model for Engineering programmes?

- Many engineering disciplines (civil, chemical, mechanical, electrical, computer, …)
- Part of the bachelor programme in common (3 semesters)
- Many visitations (leading to accreditation)
- Difference ‘Academic Engineer’ – ‘Industrial Engineer’

2. Actions taken to introduce generic competence model for engineering programmes

- Discussion at Flemish level (learning outcomes)
- Support by central department
- Discussion within each engineering discipline
- Discussion at Faculty level (all disciplines)
- Discussion with staff from ‘Industrial Engineering’
- Discussion with Industry / Work field

1 Knowledge and understanding

Cycle	Description
Bachelor	Is supported by advanced text books with some aspects informed by knowledge at the forefront of their field of study.
Master	provides a basis or opportunity for originality in developing or applying ideas often in a research context.
Doctor	includes a systematic understanding of their field of study and mastery of the methods of research associated with that field.

2 Applying knowledge and understanding

Cycle	Description
Bachelor	through devising and sustaining arguments.
Master	through problem solving abilities applied in new or unfamiliar environments within broader (or multidisciplinary) contexts.
Doctor	has demonstrated by the ability to conceive, design, implement and adapt a substantial process of research with scholarly integrity. 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.

3 Making judgements

Cycle	Description
Bachelor	involves gathering and interpreting relevant data.
Master	demonstrates the ability to integrate knowledge and handle complexity, and formulate judgements with incomplete data.
Doctor	requires being capable of critical analysis, evaluation and synthesis of new and complex ideas.

4 Communication

Cycle	Description
Bachelor	information, ideas, problems and solutions.
Master	their conclusions and the underpinning knowledge and rationale (restricted scope) to specialist and non-specialist audiences (monologue) ..
Doctor	with their peers, the larger scholarly community and with society in general (dialogue) about their areas of expertise (broad scope)..

5 Learning skills

Cycle	Description
Bachelor	have developed those skills needed to study further with a high level of autonomy.
Master	study in a manner that may be largely self-directed or autonomous.
Doctor	expected to be able to promote, within academic and professional contexts, technological, social or cultural advancement.

4. Competence fields for UGent BaSc in Engineering programmes

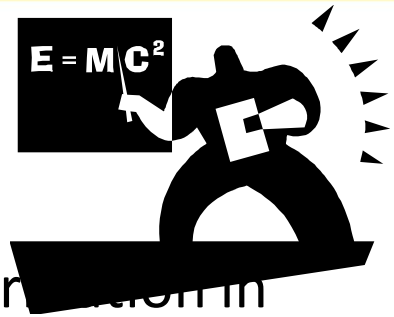
1. Competence in one/more scientific discipline(s)
2. Scientific competences
3. Intellectual competences
4. Cooperation and Communication competences
5. Societal competences
6. Profession-specific competence

Competence in one/more scientific discipline(s)

1. Be familiar with **basic sciences and basic engineering sciences** and ability to apply them in a creative and target-oriented way
2. Use of **applicable sciences and techniques** in a creative and target-oriented way (statistics, ICT, CAD)
3. Be familiar with important terms, basic principles, theories, models, boundaries, methods, processes and applications of civil engineering and ability to apply this knowledge in a creative way
4. Be familiar with standard calculation methods and apply them in standard architectural and civil engineering construction problems. Be able to critically analyse these methods.
5. Be able to interpret basic features and basic characteristics of (building-) materials and their use in simple civil engineering constructions.
6. Identify and conclude transportation-phenomena, especially the flow of water and apply them to standard design-problems.
7. Apply basic knowledge of soil characteristics to basic foundation problems.
8. Be familiar with constructional and physical aspects of buildings and basic principles of construction of roads and bridges.

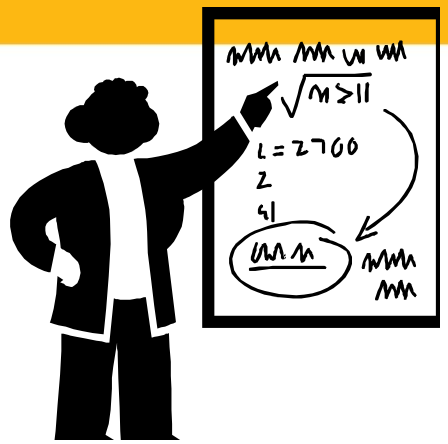
In blue: competences for specific discipline (example: civil engineering)

Scientific competence



1. Look up and work with technical and scientific information in a target-oriented way.
2. Use standard models, methods and techniques in assignments.
3. Schematise and model phenomena, processes and systems.
4. Reason made decisions.
5. Integrated application of basic civil engineering-knowledge to case studies in the field of the construction of buildings.
6. Integral approach of the design and examination of building-activities of others thereby constructively using the limitations of knowledge and applied methods.

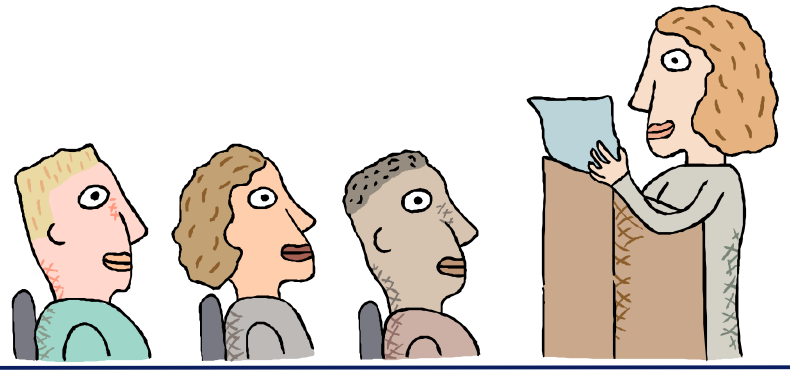
Intellectual competence



1. Master content of studies.
2. Think in a conceptual, analytical, system-oriented, problem-solving and synthesizing way at different levels of abstraction.
3. Show precision, assertiveness and critical reflection.
4. Show scientific curiosity.
5. Deliberate further studies or professional opportunities.

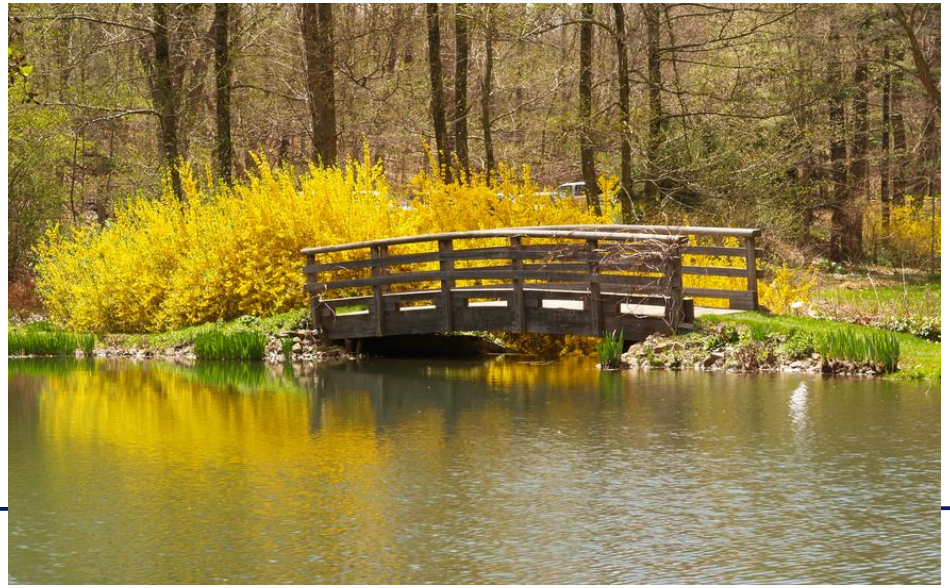
Competence in cooperation and communication

1. Master scientific and discipline-specific technical terminology (also in English).
2. Elaborate concrete tasks systematically.
3. Ability to work in a team.
4. Ability to communicate own work orally, in writing an in graphics.



Societal competence

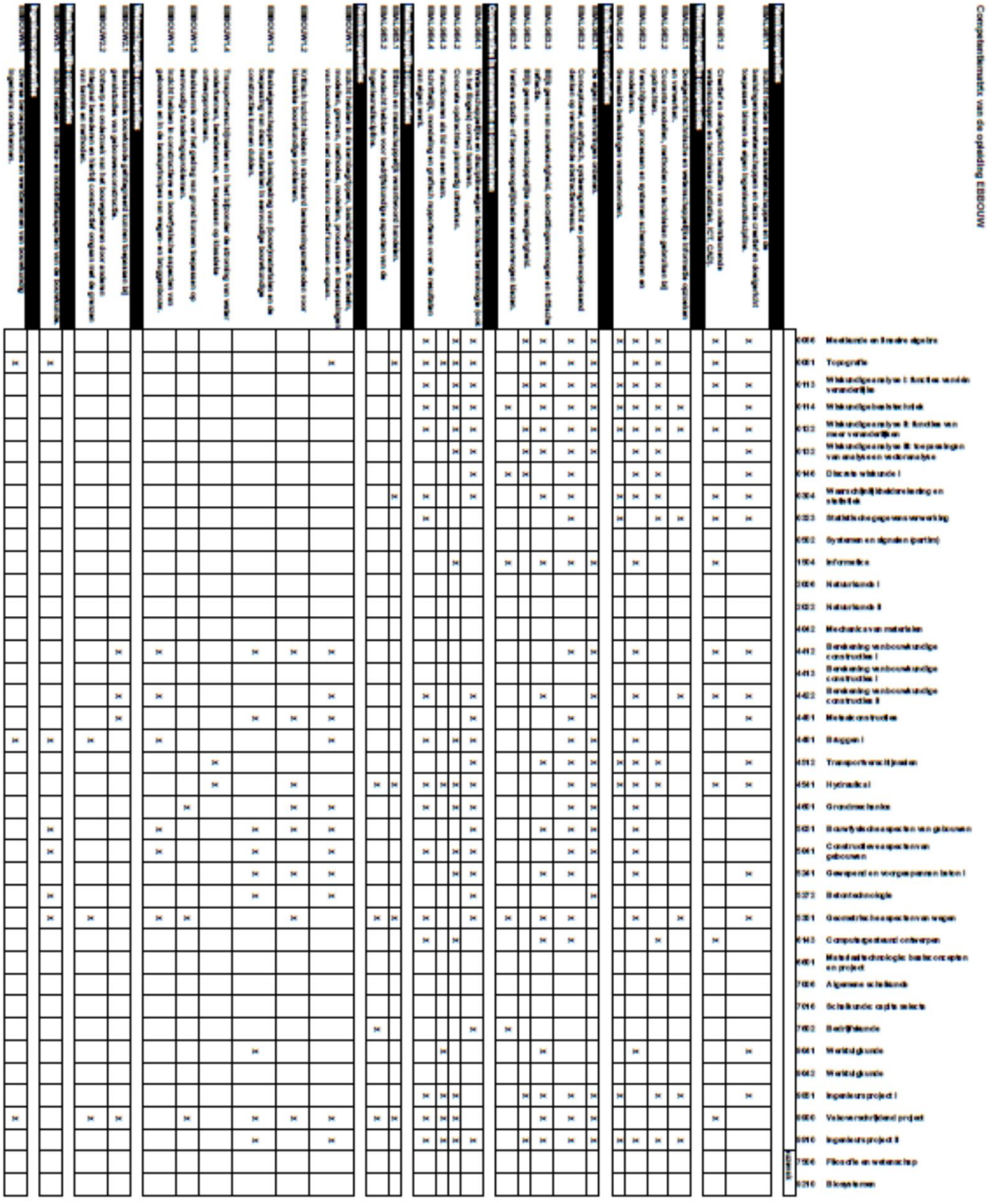
1. Act in an ethical and social way.
2. Awareness of corporate aspects of engineering.
3. Be familiar with aspects of environment and mobility in the field of civil engineering.



Profession-specific competence

1. Identify all kinds of professional situations and fields of activity of a civil engineer.

Competence matrix



5. Final comments

- Difficulties while introducing generic competence model for engineering programmes:
  - Resistance to changes
  - Resistance to administrative work
  - Difficulties in precise wording (Engineering language vs. Educational language)
  - Initially different points of view in different disciplines – making a synthesis was time-consuming

Final comments

- Merits of the generic competence model for engineering programmes:
  - Clear and holistic view on learning outcomes (knowledge, skills, attitude)
  - Clear view on contribution of each course
  - Clear view on Engineering profiles
  - Very helpful towards visitations

Final comments

- Communication of the generic competence model for engineering programmes:
  - Information to staff
  - Information to students
  - Included in Study programme
    - Full list of competences of the study programme
    - Contribution of individual course to competences

Final comments

- Support to the generic competence model for engineering programmes:
  - Initial resistance
  - Most of staff members now accept the model, although some remain indifferent
  - Points of attention:
    - How to verify whether the competences have been acquired?