ACQA as an Instrument for Self-Assessment

Experiences at the Faculty of Engineering Science at KU Leuven

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KU Leuven structure

• KU Leuven
  o approx. 40,000 students
  55 Bachelor's programmes
  133 Master's programmes

• 3 scientific groups, 15 faculties

<table>
<thead>
<tr>
<th>BOARD OF TRUSTEES</th>
<th>BOARD OF GOVERNORS</th>
<th>ACADEMIC COUNCIL</th>
<th>EXECUTIVE BOARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humanities and Social Sciences</td>
<td>Biomedical Sciences Group</td>
<td>Science, Engineering and Technology Group</td>
<td></td>
</tr>
<tr>
<td>20,472 students 3,015 international</td>
<td>9,871 students 1,235 international</td>
<td>8,451 students 1,946 international</td>
<td></td>
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</tbody>
</table>

Figures: February 2012

1st ENAEE Conference, 12-13 November 2012, Porto, Portugal
Faculty of Engineering Science

- 4,400 students in
  - 3-year Bachelor’s programme
  - 2-year Master’s programme

<table>
<thead>
<tr>
<th>Mechanical engineering</th>
<th>Electrical engineering</th>
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<tbody>
<tr>
<td>Chemical engineering</td>
<td>Civil engineering</td>
</tr>
<tr>
<td>Computer science</td>
<td>Materials engineering</td>
</tr>
<tr>
<td>Biomedical engineering</td>
<td>Energy</td>
</tr>
<tr>
<td>Nuclear engineering</td>
<td>Industrial management</td>
</tr>
<tr>
<td>Nanoscience and nanotechnology</td>
<td>Traffic, logistics &amp; ITS</td>
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Context

- Student focused approach: LEARNING OUTCOMES!

- Questions:
  - Profile of the programme in terms of learning outcomes?
  - Contribution of a particular part of the programme to the development of specific competences?
  - ...!! Need for methodologies for specifying and evaluating learning outcomes!!
ACQA instrument

• Based on the ACQA (Academic Competences and Quality Assurance) framework

• Developed at TU Eindhoven

• Resulting in competence profiles

ACQA framework

• 7 competence areas

• Level based description of the activities of
  o Analysis
  o Synthesis
  o Abstraction
  o Concretisation
**ACQA: 7 competence areas**

<table>
<thead>
<tr>
<th>METHOD</th>
<th>DOMAIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. a scientific approach</td>
<td>1. competent in one or more scientific discipline</td>
</tr>
<tr>
<td>specific for the sciences</td>
<td>concerns existing knowledge and artefacts</td>
</tr>
<tr>
<td>generically applicable</td>
<td>concerns new knowledge and artefacts</td>
</tr>
<tr>
<td>5. basic intellectual skills</td>
<td>2. competent in doing research</td>
</tr>
<tr>
<td>individual</td>
<td>understanding</td>
</tr>
<tr>
<td>6. competent in co-operating and communicating</td>
<td>3. competent in designing</td>
</tr>
<tr>
<td>with others</td>
<td>making</td>
</tr>
</tbody>
</table>

7. takes account of the temporal and social context

**COMPETENCE**

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**Competence profile?**

- Evaluation of the curriculum as intended by the lecturers
- Structured interviews with lecturers to find out how much time is spent on which competences (areas)
- Since it is timebased, course outcomes can be combined into a competence profile of a curriculum
Competence profile!

- Competence profiles & self-assessment?
  - Defining and visualising essential aspects
  - National and international benchmarking
  - Evidence of stakeholders opinion
  - Common language (ECTS-cards)

Radial axis = percentage of time
Visualising essential aspects

Module problem solving and designing

context

communicating

intellectual skills

scientific approach

designing

research

discipline

radial axis = percentage of time

Competence profiles & self-assessment?

• Defining and visualising essential aspects

• National and international benchmarking

• Evidence of stakeholders opinion

• Common language (ECTS-cards)

radial axis = percentage of time
(Inter)national benchmarking

Master Electrical Engineering

- Discipline
- Research
- Designing
- Scientific approach
- Intellectual skills
- Communicating
- Context

radial axis = percentage of time

Competence profiles & self-assessment?

- Defining and visualising essential aspects
- National and international benchmarking
- Evidence of stakeholders opinion
- Common language (ECTS-cards)
Competence profiles & self-assessment?

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Future perspectives

Involving the students!!