
The 7 academic competences

Academic Competences:

a discipline-neutral characterization for University Education

The introduction of the BaMa (Bachelor-Master) structure, around 2002, gave rise to the need for a framework to describe learning-goals of University Programs in a discipline-neutral fashion. This framework, the 'Criteria for Academic Bachelor and Master Curricula' (Meijers, van Overveld, Perrenet, 2007, © TU/e) proposes 7 competence areas, representing the domains of (intended) competence development of BSc or MSc students during their study.

Every competence area comprises between 5 and 8 individual competences. Competences are defined both at BSc and MSc levels.

The structure of competence areas and competences is optionally extended with four discipline-specific scales that operationalize, for a given discipline, the intuition of *academic profundness* in terms of, respectively, abstracting, concretising, analysing, and synthesizing.

The entire structure serves a number of goals, in particular:

- specifying the curriculum as a whole;
- specifying the contribution to a curriculum for the various curriculum elements (course, assignments, ...) in that curriculum;
- specifying the intended development of a student, studying in a curriculum, over time;
- assessing the extent to which individual competences are mastered (in individual students, or in a cohort of students) upon completion of a study program.

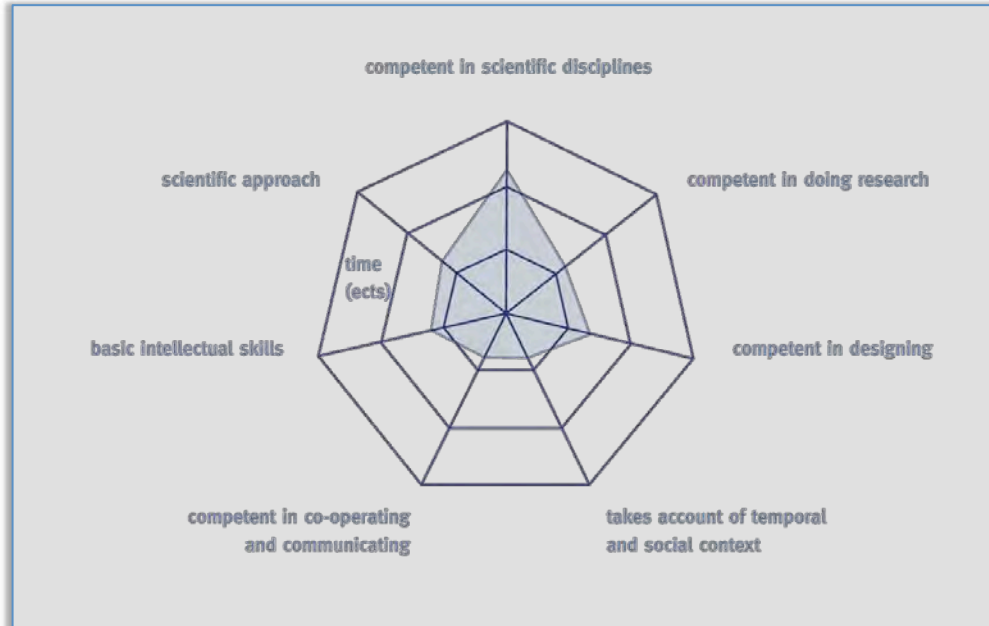


Figure B1: For each of these goals a 'competence profile' can be considered. A competence profile is a distribution, for instance in terms of intended partial study load, over the various competence areas in the form of a radar plot. A fictitious example is shown here.

Based on this framework, the curricula of all programs at TU/e are being described; the framework is used as a format for reporting by NVAO, and an increasing number of universities in the Netherlands and abroad is adopting the system as part of a Quality Insurance system.

The competence area's are:

1. is competent in one or more scientific disciplines

A university graduate is familiar with existing scientific knowledge, and has the competence to increase and develop this through study.

2. is competent in doing research

A university graduate has the competence to acquire new scientific knowledge through research. For this purpose, research means: the development of new knowledge and new insights in a purposeful and methodical way.

3. is competent in designing

As well as carrying out research, many university graduates will also design. Designing is a synthetic activity aimed at the realization of new or modified artifacts or systems with the intention of creating value in accordance with predefined requirements and desires (e.g. mobility, health).

4. has a scientific approach

A university graduate has a systematic approach characterized the development and use of theories, models and coherent interpretations, has a critical attitude, and has insight into the nature of science and technology.

5. possesses basic intellectual skills

A university graduate is competent in reasoning, reflecting, and forming a judgment. These are skills which are learned or sharpened in the context of a discipline, and which are generically applicable from then on.

6. is competent in co-operating and communicating

A university graduate has the competence of being able to work with and for others. This requires not only adequate interaction, a sense of responsibility, and leadership, but also good communication with colleagues and non-colleagues. He or she is also able to participate in a scientific or public debate.

7. takes account of the temporal and the social context

Science and technology are not isolated, and always have a temporal and social context. Beliefs and methods have their origins; decisions have social consequences in time. A university graduate is aware of this, and has the competence to integrate these insights into his or her scientific work.

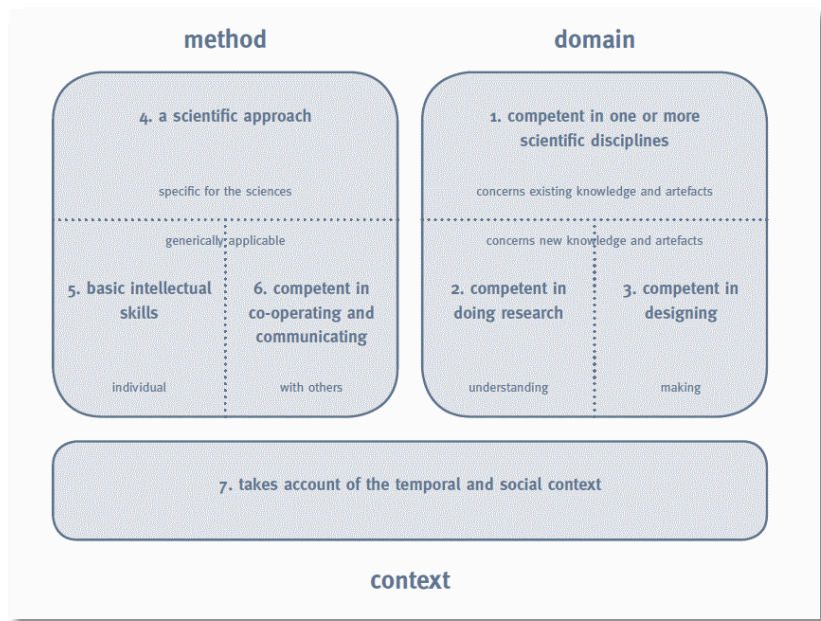


Figure B2: The competence areas can be grouped in clusters Method, Domain and Context as shown here.
