Guidelines and Reference Points for the Design and Delivery of Degree Programmes in Civil Engineering

Summary

This is the first document in Civil Engineering that is published in the framework of a series of *Tuning Reference Points* for subject areas which started in 2008. It builds on documents published in the past, in particular the publication *A Tuning-AHELO Conceptual Framework of Expected Desired/Learning Outcomes in Engineering*, documents of the European Civil Engineering Education and Training (EUCEET) Association and the *EUR-ACE Framework Standards and Guidelines* (EAFSG).

The document addresses degree profiles, tasks and societal roles graduates will perform in Civil Engineering. It tries to address how the programs try to fit into the wider context of overarching qualifications frameworks like the National and European Qualification Frameworks. These guidelines present general descriptors for the first and the second cycle (bachelor and master levels). There are easy-to-read tables suggested to be used as reference points for the design and delivery of individual degree programmes. According to the Tuning philosophy, each degree programme has its own unique profile, based on the mission of the institution and taking into account its social-cultural setting, its student body, and the strengths of its academic staff.

The document is the result of long and intense collaboration by several experts supported by the Tuning Educational Structures in Europe and financed by the CALOHEE project. CALOHEE means Measuring and Comparing Achievements of Learning Outcomes in Higher Education in Europe and is co-financed and strongly supported by the European Commission as part of its Action Programmes for Higher Education. The document is a contribution to the Tuning's mission to offer a platform for debate and reflection to ensure that graduates are well prepared for their societal role, both in terms of employability and as citizens.

The document suggests learning outcomes of civil engineering programmes for first and second cycles of higher education. Learning outcomes are defined in this document as statements of what a learner is expected to know, understand and be able to demonstrate after completion of a learning experience. These learning outcomes are grouped in terms of knowledge, skills and wider competences (attitudes). Some competences are subject-area related (specific to a subject area) and others are generic (relevant for many or all degree programmes).

The document was produced after a thorough analysis of the Civil Engineering sector and occupations and tasks performed by graduates, a global study of typical degree programmes and of main sub-fields or specializations. That was followed by a methodical verification of existing Civil Engineering qualification systems and quality assurance procedures like ENAEE, ABET, ASCE and CDIO. A framework was then produced with the synthesis of existing lists of required competences. Associated with the list of learning outcomes expected for civil engineering programmes the group involved researched teaching methods, learning approaches and assessment techniques that were proposed for each learning outcome. The teaching methods and learning approaches were proposed based on surveys, desk research and group members´ contributions. The assessment techniques were obtained using an existing model (TALOE) to align these with the different types of learning outcomes.

The result presented in this document is complemented by the Assessment Framework where conclusions are structured. This document is a powerful suggestion to allow comparison and benchmarking of Civil Engineering programmes fostering quality improvement and better qualified graduates.