

## Terms of Reference for Civil Engineering Competences – TUNING approach

Authors: Alfredo SOEIRO

<sup>1</sup> AECEF and University of Porto, avsoeiro@fe.up.pt

Forum topics	<input type="checkbox"/> Energy in 21st Century	<input type="checkbox"/> Cultural Heritage in Digital World
	<input checked="" type="checkbox"/> Engineering Capacity Building	<input type="checkbox"/> Disaster Risk Management & Governance for Resilient Communities
	<input type="checkbox"/> Construction 4.0	<input type="checkbox"/> BIM Lifecycle, Facility & Asset Management

**Abstract:** (250 to 500 words: for each heading use the bullet points or narrative - the submission including graphics should not exceed one page)

Problems - Issues / Challenges-Needs	This work done in the subject area of Civil Engineering concern degree profiles and the tasks and societal roles graduates will take on, but also show how different degrees fit into the wider context of overarching qualifications frameworks. In other words, which are the essential elements that constitute a particular subject area in higher education? Among other aspects, the guidelines include general descriptors for the first and the second cycle, the bachelor and master, presented in easy-to-read tables, and are meant 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.
Solutions - Methods / Results - Findings	The Tuning methodology is based on student-centred and active learning approaches it has promoted since its very launch. Tuning's mission is to offer a platform for debate and reflection which leads to higher education models able to ensure that graduates are well prepared for their societal role, both in terms of employability and as citizens. Graduates need to have obtained as the outcome of their learning process the optimum set of competences required to execute their future tasks and take on their expected roles. As part of their education graduates should have developed levels of critical thinking and awareness that foster civic, social and cultural engagement. The Tuning methodology is based on student-centred and active learning approaches it has promoted since its very launch. Tuning's mission is to offer a platform for debate and reflection which leads to higher education models able to ensure that graduates are well prepared for their societal role, both in terms of employability and as citizens. Graduates need to have obtained as the outcome of their learning process the optimum set of competences required to execute their future tasks and take on their expected roles. As part of their education graduates should have developed levels of critical thinking and awareness that foster civic, social and cultural engagement.
Novelty - Value / Relevance to ...	In developing the (CALOHEE) Tuning model, it was concluded that 'dimensions' are an indispensable tool, because they make it possible to distinguish the principal aspects that constitute the subject area. Dimensions help give structure to a particular sector or subject area and also make its basic characteristics more transparent. Furthermore, the 'dimension approach' is complementary to the categories included in the EQF for LLL, which uses the categories of knowledge, skills and wider competences to structure its descriptors. Thus, in CALOHEE terms, the three columns correspond to a 'knowledge framework', a 'skills framework' and a 'wider competency framework', linked by level. The last column, the 'wider competency framework', refers to the wider world of work and society and identifies the competences required to operate successfully in the work place and as a citizen. It builds on the first two elements: knowledge and understanding and the skills necessary to develop and apply this knowledge. The use of the learning outcomes and competences approach implies changes regarding the teaching, learning and assessment methods. Tuning has identified approaches and best practices to form the key generic and subject specific competences. Finally, Tuning has drawn attention to the role of quality in the process of (re-)designing, developing and implementing study programmes. It has developed an approach for quality enhancement which involves all elements of the learning chain. It has also developed a number of tools and identified examples of good practice which can help institutions to improve the quality of their degree programmes.
Forum statement	The ultimate ambition of the CALOHEE Tuning for Civil Engineering initiative is to develop a transnational multi-dimensional competence model which allows for actual measuring and comparing of learning, taking into account the specific mission and profile of each degree programme, within its cultural and academic context. This model should offer sets of consistent test formats and items which make it possible the assessment of deep knowledge and understanding as well as high level skills.

**Keywords:** (up to 5 keywords)

Civil Engineering, Competences, Bachelor, Master, Tuning

**Graphics:** (please use the gray area below for *representative graphics* or *graphical summary*: select the gray area below and paste your graphics)