**Designing blended engineering courses**

**Abstract**Biggs and Tang (2011) have analysed changes in the nature of higher education and they see them causing more diversity among students. Consequences are that universities have to deal with larger differences of engagement between students and more need for Outcomes-based teaching and learning that allows for differences in learning styles. In the last five years the increased use of blended and online education has caused new diversity and learning style issues. In addition for engineers, the rapidly changing world brings the need to engage students in diverse learning (Kamp, 2016).

Wageningen university is experiencing all these trends. It tackles them with outcomes-based teaching and engaging students within a rich setting of blended learning. That approach is part of the University Teaching Qualification Programme for new lecturers and also a focus for education innovation projects. Examples of those projects are shown on the [innovation map](https://www.4tu.nl/cee/en/research-innovation/) of the 4TU Centre for Engineering Education (4TU.CEE, 2017). The resulting education programmes are rated as the best in the national surveys of the last twelve years (Looper, Belet, & Moor, 2005-2017).

This paper describes how to design such blended learning courses based on literature. It also reflects the experience of Wageningen university with its successful approach. The prerequisites for course design are a well-constructed curriculum and properly formulated Intended Learning Outcomes (ILOs). The core of course design consists of selecting and combining Teaching and Learning Activity’s (TLAs). The conclusions are that generally a smart design of a combination of (many) types of TLAs is needed to create top-quality blended engineering courses. In addition higher level Intended Learning Outcomes for engineering require rich on-campus TLAs that cannot be completely offered online.

**References** (for this abstract only; not including most of the full article references)

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