

Speaker:

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Title:

Competency-based Education in Engineering – Needs and Assessments

Abstract:

Enhancing competency levels of working engineers and engineering students has been recognized as essential for their future careers since they are going to encounter diverse environments across multiple cultures, business partners and disciplinary fields. Future engineers are expected to have the ability to understand concepts from not only from different cultures and but also from broader fields, and this tendency is now accelerated by rapidly progressing and emerging technologies. They need to cope with radical changes brought by Industry 4.0 and impact of COVID-19 pandemic. The restructuring of engineering education, aiming at enhancing students' ability to thrive in such working environments, is increasingly a topic of discussion among educators and personnel in charge of engineering educational programs. These circumstances pose a challenge to both academia and the industry in terms of engineering education: preparing engineers and engineering students to be more ready for diverse contexts. Many companies and universities have been making training programs and curricula for enhancing the competencies of their employees and students, and efforts to assess the outcomes of engineering education, post-graduate trainings, working adult education. This discussion can be restated in the context of competencies that engineering education should foster: what competencies should be focused as the teaching objectives of a course and how to measure its educational outcomes. The course should strengthen the future competencies of working engineers and engineering students. The assessment of competency needs in the industry and the competency levels of an individual is an important issue here. In this talk, the speaker will introduce assessment indices and a test that have been used to identify competency needs and competency levels and some results of competency surveys conducted by the speaker and her colleagues.