Mathematics assessment for engineering education: innovations and implications for capacity efficiency

Speaker: Tracy Craig

Abstract

At the University of Twente, under the mantle of the mathematics education research group FERMAT, we have introduced and studied a number of topics in the teaching and assessment of mathematics, particularly in the context of engineering education. We have considered design principles for digitalisable final answer assessment of linear algebra, formative assessment of skills necessary for a successful transition from high school, and open-book, technology-mediated assessment of vector calculus. Each of these approaches has implications for capacity efficiency, both negatively and positively. For mathematics teachers in technical universities, balancing efficiency with educational quality is crucial, especially when teaching large cohorts of engineering students with diverse backgrounds and skill levels. In this presentation we shall discuss the inherent tension between a focus on efficiency and a focus on valid and reliable assessment of student learning.

Short biography

Tracy Craig is an associate professor in the department of Applied Mathematics in the chair of Mathematics of Imaging and AI. She is the head of the UT mathematics education research group FERMAT. Her teaching focus is on first-year courses, typically calculus and linear algebra. Her research interests are in the fields of mathematics education and engineering education. She taught and carried out research at the University of Cape Town 1998-2017 and joined the University of Twente in 2018.

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