



## **Educating Future Engineers- Challenges in university education not only during a global pandemic**

Jörg Niemann, Claudia Fussenecker,  
Martin Schlösser, Marius Schöning,  
Alexander Paul

*Department of Mechanical Engineering, University of Applied Sciences  
Düsseldorf*

**Abstract:** The Covid-19 pandemic has been influencing every aspect of the globalized world since its breakout. Not only the economic environment is changing rapidly, but also the education in universities all around the globe is facing challenges that have never been thought about before. But how are responsible decision makers dealing with these obstacles? And in addition to the challenges coming from a global pandemic, serious shortages of qualified professionals and technical job-specific skills are hampering Europe's sustainable growth. Even more so, relatively newer technologies, such as digitalization and Industry 4.0, require a new set of qualifications for future engineers. Deficiencies in these areas can have a negative impact on innovation and, therefore, also for the well-being of the industry and economy. New skills in education as well as new training methods are required in order to train successful engineers that meet the requirements set by industry and society. How does a future engineering education look like? And how does it fit in the new ways of teaching during these uncertain times? To get a qualified picture of the necessary requirements, as well as possible limitations students of engineering studies have been questioned. This survey was combined with a literature review. Furthermore, a recently finished EU-research project regarding this subject has been taken into consideration and been evaluated in order to come up with future solutions.

**Keywords:** Engineering Education, Skills, Teaching Methods, Covid-19