

THE FUTURE OF CONTINUING ENGINEERING EDUCATION IN THE ERA OF DIGITALIZATION AND PERSONALIZATION

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Conference Key Areas: *Future engineering skills and talent management
Engineering curriculum design, challenge based education, maker projects, use of
professional tools.*

Keywords: *continuing engineering education, lifelong learning, upskill and reskill,
professional development*

ABSTRACT

The pace of introduction of new technology and thus continuous change in skill needs at workplaces, especially for the engineers, has increased. While digitization induced changes in manufacturing, construction and supply chain sectors may not be felt the same in every sector, this will be hard to escape. Both young and experienced engineers will experience the change, and the need to continuously assess and close the skills gap will arise. How will we, the continuing engineering educators and administrators will respond to it?

Prepared for engineering educators and administrators, this workshop will shed light on the future of continuing engineering education as we go through exponentially shortened time frames of technological revolution and in very recent time, in an unprecedented COVID-19 pandemic.

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WORKSHOP FOCUS

Traditionally, professional engineers and technologists have practiced a structured path for advancement in career, thus continuous professional development for those engineers has followed structured curriculum and pathway. However, during Industry 4.0, an era of digitalization – artificial intelligence, data analytics, and blockchain –, does it look the same? Or, during the yet to arrive Industry 5.0, which is predicted to be the era of personalization and focus on humans and machine cooperation, how will the path of continuous professional development of the professional engineer look like? Will the engineers ever stop learning? Will they continuously have to reskill to cope with the ever-changing technology-based workplace or simply upskill to move forward?

As we are experiencing the consequences of the COVID-19 pandemic, we are asking ourselves, what knowledge and skills that the industry will need in the post-pandemic world? Will it radically change from pre-pandemic need? Will the industry change so rapidly over the next few years that the engineers will need to reskill and upskill themselves continuously? Will academia be able to prepare the students for a life of continuous learning?

The workshop participants will critically assess –

- the skills that the industry will require from the engineers in entry level and later
- how the industry and academia collaboratively can develop continuing engineering education curriculum to address such needs, and
- how the industry and academia collaboratively can prepare the students for a lifetime of learning.

WORKSHOP METHODOLOGY

Before the Workshop

Before the workshop, the participants will be requested to read a number of web-based freely available articles and international reports focused on the future of work and learning, as cited in the References [1, 2, 3, 4, 5]

During the Workshop

This workshop aims to gather practitioners in the field of lifelong learning in engineering to brainstorm several paths for closing the obvious skills gap, rapid curriculum development, and deployment via accessible formats, flexible learning modes and paths, assessment, learning outcome evaluation and recognition, accreditation, and personalization.

The 80-minute virtual workshop will be divided into six sections:

1. Presentation on the current situation of work and learning [Main Virtual Room]
2. Brainstorming discussions in groups on the possibilities during Industry 4.0 – Digitization [Breakout Virtual Rooms]
3. Presentations on the future of work and learning [Main Virtual Room]
4. Brainstorming discussions in groups on the possibilities during Industry 5.0 – Personalization [Breakout Virtual Rooms]
5. Presentation by each group [Main Virtual Room]
6. A list of work to do by the participants, as the workshop outcomes are summarized. [Main Virtual Room]

After the Workshop

At the end of the workshop, participants are expected to experience the following learning outcomes:

- A thorough knowledge of the current and future scenario of work for engineers
- how engineering education will need to incorporate a lifetime of learning mindset
- a framework developed by the participants themselves on how continuing engineering education learning communities will shape in the future while remaining agile in nature.

Based on the workshop outcomes and group presentations, we will explore the possibility to write and submit a proposal together with the participating attendees for the new European subsidy programs.

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