



## Research in Engineering Education Symposium & Australasian Association for Engineering Education Conference

5 – 8 December, 2021 - Perth, WA



### WORKSHOP

## Teaching engineering for complex contexts

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### WORKSHOP MODE

In hybrid mode during Perth business hours

### OVERVIEW OF WORKSHOP

Humanitarian engineering is a field that addresses poverty, marginalisation and disadvantage (the why), using design thinking (the how), by developing essential service innovations (the what), for complex contexts (the where). With increasing interest from students, universities (including degree programs, majors and minors) and organisations and greater demand through the number and complexity of disasters, responses, and vulnerabilities, the humanitarian engineering field must consider how to ensure appropriate and quality teaching practice. This is critical when graduates will be working with marginalised and vulnerable individuals and communities in high-risk environments with significant consequences from decisions and actions. An ongoing project being led by the humanitarian engineering community of practice within Engineers Australia is determining what humanitarian engineering competencies are critical for practice and how they align to the Engineers Australia Stage 1 framework.

This workshop will unpack leading practice with regards to preparing students to work with marginalised communities, touching on risk, ethics, cross cultural communication, and power dynamics. It will contribute to the development of approaches and frameworks that can be used to review formal university programs to ensure appropriate education and preparation of graduates.

### ACTIVITIES

A review of humanitarian engineering education in Australia, its relationship to the EA Stage 1 Competencies, and the ongoing project of “Professional Humanitarian Engineering” will be briefly introduced. Different aspects of the curriculum related to the application of engineering in complex scenarios will be identified, and then in a World Café format participants will share and develop ideas about how best to prepare students to deal with that complexity.

### TARGET AUDIENCE

No prior knowledge needed to participate in this workshop. The session will be most relevant to educators looking to prepare students to deal with complexity and the application of engineering in complex scenarios. The workshop will be delivered from an Australasian perspective.

### OUTCOMES

Participants will leave the workshop with new strategies to prepare students to deal with complexity and identify how this links to degree learning outcomes. Participants will also have built their networks with other academics interested in engineering in complexity and will have contributed to the professionalisation of humanitarian engineering.

### KEYWORDS

Humanitarian Engineering; Complex Contexts

### PRESENTERS' BACKGROUNDS

All presenters are involved with humanitarian engineering education at their home institutions and beyond and have track records delivering workshops at previous AAEE conferences. They are all members of the humanitarian engineering community of practice within Engineers Australia.