

University of Johannesburg's multi-partner 'Mahlale Innovation Consortium' opens ventilator design competition for SA students

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Concerns about world-wide ventilator shortages, medical device development and sufficient maintenance skills, as a result of Covid-19 pandemic, have led to multiple projects at major academic institutions that seek to find alternative means for emergency ventilation. Therefore, student designers and engineers are challenged to go beyond the classroom or laboratory and showcase their technical and commercial abilities by demonstrating new and creative ways digital manufacturing can add value.



MAHLALE INNOVATION CONSORTIUM

The Mahlale Innovation Consortium (MIC), an alliance of five Higher Education Institutions (HEI), was formed in response to a request from merSETA to promote local manufacturing of ventilators to contribute to the National Ventilator Project. The consortium announced an eight-week hackathon hosted on [MIC](#)

to design a rapidly deployable, minimum viable mechanical ventilator for patients with Covid-19-related ventilator-dependent lung injury and to curb the skills shortage of engineers.

The consortium members include: University of Johannesburg (UJ), Tshwane University of Technology (TUT), Central University of Technology (CUT), Vaal University of Technology (VUT) and North-West University (NWU).

The Mahlale Student Design Competition (MSDC) will be carried out by the consortium under the ventilation project that aims to address a shortage of skilled engineers and technicians to locally manufacture and repair existing and old ventilators and other medical devices.

This particular competition is open for all scholars and students studying in South Africa with an active, registered student number and a possibility of seeing their designs into prototypes for testing.

"The engineering profession won't be exempt from Covid-19 job fallout, but the effects will be temporary. More engineers will be needed than ever before when the world turns to a semblance of normalcy," says Ms Nickey Janse van Rensburg, the technology manager at UJ PEETS (UJ's Process, Energy, Environment and Technology Station) and Project Chair at the MIC.

"Proposals must address collateral issues to find a rapid ventilator production system to support field hospitals that are still requiring critical infrastructure such as pressurised oxygen," explained Nickey.

Competition design entries will be evaluated by judges who will assess safety, reliability, and manufacturability, while minimising cost and complex software and electronics.

"The Challenge enables participants to gain real-industry experience, practical employability skills and enhanced business and people skills, all within a set time frame. All of the best ideas seem impossible at first, but in this new age could change the world," says Prof. Leenta Grobler, one of the competition judges.

"The contest will involve the new generations to re-think a positive future to make more ventilators or address other medical device shortages. Of course, being able to picture a future like this is not the same thing as knowing what to do to make it a reality, but by entering the competition we will help them make their ideas evident," added Prof Grobler.

The competition closes on June 14, 2021. The winner of each category will be awarded a cash voucher. In addition, one of the winners stands a chance to win a 3D printer sponsored by 3D Printing Systems SA. Some of the winning solutions could receive follow-on contracts if the prototype is selected for production and deployment.

Until June 2021 students will have the chance to submit their solutions inspired by three different themes:

- Open Category: For all scholars and students studying in South Africa with an active, registered student number. Enter any service or product that you have implemented to flatten the curve during the Covid-19 pandemic.
- Innovation Category: Enter any new business idea, invention, innovation that can be used to combat Covid-19 or other health-related threats in the future.
- Engineering Category: Enter any improvements, innovations or concepts that will reduce the shortage of ventilators in South Africa.

The equipment to be developed should only be used in states of emergency for the decentralised treatment of non-intensive care Covid-19 patients, in order to reduce demand for hospitalisation. The selected digital blueprints will be provided to the government to enable them to start decentralised large scale production wherever it is needed the most.

More details for MSDC and how to enter is available on the MIC website: <http://mahlaleinnovationconsortium.co.za/>.

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Vaal University of Technology

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