

Turning students into work-ready engineers

While engineers are generally rational and logical thinkers, immersed in the “hard” data of technology, who would rather not get involved with the intangible issues of human behaviour, they will inevitably end up spending nearly two-thirds of their time interacting with people.

This may be in the form of collaborating with other professionals, performing a project as a member of a team of engineers, managing staff or meeting with suppliers and service providers. It is therefore essential that they develop the soft skills required to deal with attitudes, perceptions, group norms and interpersonal conflict when they leave university and start working in industry. The ability to interact well with people is what distinguishes a highly effective engineer from a mundane one.

The Tuks Engineering Leadership Academy (TUKSELA) in the Department of Mining Engineering was established in 2013 to develop the soft skills that engineers require to function exceptionally in the world of work. While it was initially designed specifically for mining engineers, the programme is now available to students in all engineering disciplines.

The academy programme was initially launched with the support of Sasol, and entailed a multidisciplinary adaptation of the programme aimed specifically at Sasol bursary-holders. This was due to the experience of this company that newly graduated engineers were often in need of certain non-technical skills before they could function effectively in industry. A similar programme was presented to final-year mining

engineering students of the University of Pretoria, with a focus on the dynamics of the mining industry.

The programme is aimed at equipping final-year students with basic leadership skills to supplement their technical education. The result is a well-rounded engineer, who can integrate interpersonal skills with technical know-how. As a result, prospective employers can be confident that a graduate from the University of Pretoria who has completed this programme will meet his or her expectations of employing a work-ready graduate.

The programme focuses on increasing the ability of graduates to adapt to the work environment and manage people issues that may affect their performance. According to Clive Knobbs, who heads up TUKSELA, “the programme will delve into the heart of the basic drivers of human behaviour and teach delegates to identify and manage the hidden dynamics of their own behaviour and that of others.”

Knobbs is ideally suited to facilitate this programme, as his experience as former CEO and Chairman of Harmony Gold Mining Company (Pty) Ltd gives him insight into what the industry expects of graduates. His passion is to pass on his extensive experience in management and leadership to develop

young undergraduate engineers, and to prepare them more adequately for the transition from student to employee.

The programme also utilises the expertise of Erna Gerryts, a registered educational psychologist. By applying three psychometric instruments, she focuses in the first instance on self-awareness, the core attribute in developing leadership. Emotional intelligence, which will enable young engineers to read the signs of intrapersonal and interpersonal constructs, is also exposed, revealing those constructs that promote or inhibit students’ leadership approach. They are then encouraged and assisted to examine themselves in the fundamental areas of self-awareness, self-esteem and self-confidence in order to function more effectively in the workplace.

The programme provides an essential link between technical knowledge and the successful implementation of this knowledge through the association with people as individuals and in groups. It adds a dimension to the young engineer’s toolbox, which is necessary when he or she is exposed to the rigours and reality of the workplace.

In 2015, 90 final-year engineering students took part in this programme, which entails eight modules presented over 50 contact hours (25 hours in the

classroom and 25 hours of experiential training in small groups with and without a facilitator as coach).

During the course of the programme, business-based case studies are used as examples on which role-playing exercises and simulations are based. Participants practise making presentations, engage in group work, learn interviewing techniques and perfect their communication skills.

There has been interest in this programme from other mining schools in Gauteng, as well as the Mining Qualifications Authority. Based on the positive feedback received from industry, TUKSELA was asked to present two comprehensive three-day leadership courses to 100 final-year engineering students at the University of Johannesburg earlier in 2015.

Following the initial sponsorship of the programme by Sasol, the programme is currently seeking an industry sponsor to ensure that it can continue to deliver effective, work-ready engineers to industry. 🌱

