



UNIVERSITY
OF
JOHANNESBURG

**University of Johannesburg's Faculty of Engineering and the Built Environment
The first in South Africa to roll out Accredited BEngTech Qualifications**

In 2017, in line with the Department of Higher Education and Training (DHET), Council of Higher Education's (CHE) new Higher Education Quality Sub-Framework (HEQSF), and Engineering Council of South Africa (ECSA) guidance, the Faculty of Engineering and the Built Environment (FEBE) at University of Johannesburg will roll out its approved three year BEngTech and Built Environment Bachelors qualifications. These new programmes are developed furthering our approach to Conceive-Design-Implement-Operate (CDIO) – the University of Johannesburg is a member of the CDIO consortia.

Consequently, most of FEBE's National Diploma and BTech programmes will be gradually phased out. The last intake of the three year National Diploma occurred in January 2016. We urge National Diploma graduates / alumnus who have not registered or completed their BTech, to register and complete their degrees as soon as possible.

BEngTech Programmes

The programmes supports expanded access, improved quality and increased diversity of provisions, and reinforces a stronger and more co-operative relationship between Higher Education and training institutions and the workplace. In addition, the programmes are responsive to the needs of individual citizens, employers in both public and private sectors, as well as the broader societal and developmental objectives. The programmes provide for improved articulation towards postgraduate qualifications and exit-level outcomes are aligned with those of the Engineering Council of South Africa (ECSA), a signatory of accords associated to the International Engineering Alliance (IEA).

New FEBE qualifications

This qualification is primarily industry oriented, as the knowledge taught emphasises on general engineering principles and application. The qualification provides students with a sound knowledge base in a particular field or discipline and the ability to apply their knowledge and skills to particular career or professional contexts, while equipping them to undertake more specialised and intensive learning. Programmes leading to this qualification tend to have a strong professional or career focus and holders of this qualification are normally prepared to enter a specific niche in the labour market.

Tailored for Relevance

Specifically, these programmes are designed to build the necessary knowledge, understanding, abilities and skills required for further learning towards becoming a competent practicing engineering technologist. This qualification completed provides:

1. Adequate preparation for careers in the engineering profession
2. An educational base required for registration as a Professional Engineering Technologist with ECSA.
3. Entry to NQF level 8 programmes e.g. **BEngTech** (Honours) and Postgraduate Diplomas. Subsequently, this will pave the way for the graduate to enrol for Masters Programmes.
4. The BEngTech is the entry-level qualification for candidacy, i.e. Engineering Technologist (in this regard, the BEngTech replaces the BTech).

Exit-Level Outcomes / Graduate attributes of the new BEng-Tech:

As required by the Engineering Council of South Africa (ECSA), the BEng Tech Programmes will be assessed against eleven exit level outcomes (ELO). These are listed below as follows:

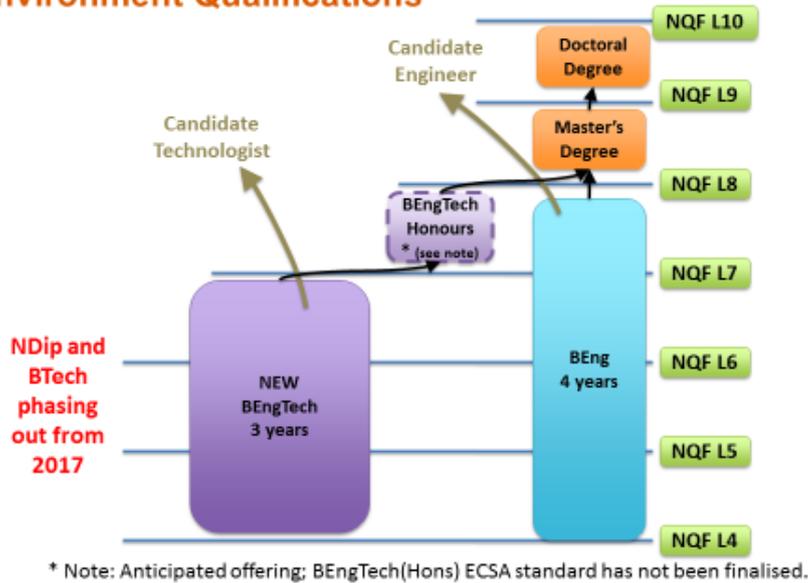
- 1: Problem Solving
- 2: Application of scientific and engineering knowledge
- 3: Engineering Design
- 4: Investigation
- 5: Engineering methods, skills, tools, including Information technology
- 6: Professional and Technical Communication
- 7: Impact of Engineering Activity
- 8: Individual and Teamwork
- 9: Independent Learning
- 10: Engineering Professionalism
- 11: Engineering Management

FEBE UJ Engineering Academic Pathways

The Faculty of Engineering and the Built Environment offers essentially three Bachelors Programmes.

- Three (3) year BEngTech (Engineering Technology Qualification)
- Three (3) year Built Environment Bachelor's Degree (Bachelor of Construction; Bachelor Urban and Regional Planning)
- Four (4) year BEng Degree (Engineering Science Qualification)

UJ's Engineering and Built Environment Qualifications

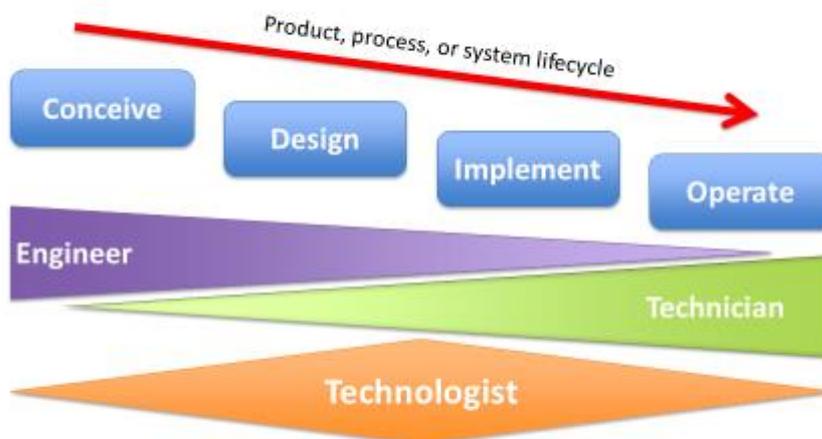


As per the new Higher Education Qualifications Sub-Framework, the model above is reflective of the articulation of the BEng Tech programmes.

Engineering Roles in Perspective

The model below is reflective of Engineering Roles. Whilst an Engineer would focus more on conceiving and design and less on implementation and operation, the Technician's task is inversely proportional. A Technologist, however, will focus on design and implementation, with minimal focus on conceiving and operations.

Engineering Roles in Perspective



The CDIO framework for products/processes/systems is from *Rethinking Engineering Education: The CDIO Approach* by Crawley, et al, 2014; the relationship with the role of technician/technologist/engineer is UJ's approach.