

FACULTY OF ENGINEERING & THE BUILT ENVIRONMENT



Department of Civil Engineering and Geomatics

Road Maintenance in a Tertiary

Curriculum

PNEAL

A KAMALIE

APRIIL 2023

HEQSF Qualifications

- Diploma in Civil Engineering (NQF 6)
- Advanced Diploma in Civil Engineering (NQF 7)
- Bachelor of Engineering Technology in Civil Engineering(NQF 7)
- Bachelor of Engineering Technology Honours in Civil Engineering (NQF 8)



Curriculum Content Diploma in Civil Engineering

- Construction Materials Technology (first introduction to road) materials in Y1-14 credits)
 - Source of bitumen
 - Bitumen & tar (advantages and disadvantages)
 - Bitumen Production

 - Chemical compositionBehaviour & Characteristics
 - Types of bitumen and their properties
 - Test of bitumen
 - Applications
 - Health & Safety



Curriculum Content Diploma in Civil Engineering

- Transportation Engineering in Y2 (21 credits)
 - -SABITA Manuals
 - -Red Book
 - -TRH 3,8,12; TG1,2; SAPEM Ch 4-10; UTG 4,7
 - -LABORATORY PRACTICALS (*Marshal Designs For Low Volumes Roads*)
 - -PROJECT WORK (Asphalt design proposals are submitted based on lab results)
 - -Recurriculation To Introduce Surface Repair And Maintenance Technique



Curriculum Content Advanced Diploma in Civil Engineering

- Geotechnical Engineering in Y4 (14 credits)
 - -TRH 20; TG1,2; SAPEM Ch 4-10;
 - -ROAD DESIGN (SAPEM CH 10 VS TRH4)
 - -PROJECT WORK (Road layer work design and links between tensile stress and fatigue)
 - -Asphalt surface design; micro-strain is introduced to monitor fatigue cracking
 - -Newly Introduced For 2024 Is Gyratory Compaction On Modified Asphalt



Challenges faced by the Department...

- Large First Year Classes approx. 150 First Year Students (Diploma only)
- Limited Budget to Maintain and keep laboratory facilities current
- Difficulty in attracting suitably qualified, skilled academics
- Core Curriculum demands limit flexibility for additional content



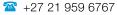
A few thoughts on road surface failure...

- -SA needs a well trained and skilled labour force (who take pride in their work)
- More frequent monitoring of roads that have breached their original design life (especially old and dry surfacing)
- Provinces need to spend a healthy budget-and ALL of it (pay the labour force a decent salary)
- The Metros need to manage available skills –employ skilled people
- Engineers have a CPD responsibility- why not initiate a similar program for the labour force?









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THANK YOU BAIE DANKIE ENKOSI