



Department of Civil Engineering
and Geomatics

Road Maintenance in a Tertiary
Curriculum

P NEAL

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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 composition
 - Behaviour & 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**