



CIVIL ENGINEERING AND CONSTRUCTION TRAINING

Urban Drainage, Culverts and Stormwater Management

5 day course

Classroom, online or in-house

Course overview

Flooded intersections, washed out road crossings and eroded outfalls after a summer thunderstorm are often traced to a culvert or pipe sized for the wrong storm. This course covers the hydrology and hydraulics behind urban stormwater systems. Delegates estimate design floods using the rational method and unit hydrograph approaches with regional rainfall data and return periods, then design kerb inlets, pipe networks and open channels using Manning's equation. Culvert hydraulics follows, distinguishing inlet and outlet control, with headwall and energy dissipation details. Detention ponds, attenuation storage and sustainable drainage measures are sized to limit runoff increases from new development. Erosion protection and maintenance access close the programme. Delegates leave able to design and check a minor and major drainage system for a township or road.

What you will learn

- Estimate design peak flows using the rational method and hydrograph techniques
- Select return periods for minor and major drainage systems
- Design kerb inlets, gully spacing and stormwater pipe networks
- Size open channels and lined drains using Manning's equation
- Analyse culverts under inlet and outlet control and design headwalls
- Size detention and attenuation facilities to limit downstream peak flows
- Apply sustainable drainage measures such as swales, soakaways and permeable surfaces
- Specify erosion protection and energy dissipation at outlets

Who should attend

- Municipal roads and stormwater engineers
- Consulting civil engineers on township and road projects
- Road authority design and maintenance engineers
- Developers' engineers preparing stormwater management plans
- Civil technologists and draughtspersons in drainage design

Course outline

- 01 Rainfall, catchments and return periods
- 02 Rational method and hydrograph techniques
- 03 Inlets, gullies and pipe networks
- 04 Open channel hydraulics
- 05 Culvert design and inlet and outlet control
- 06 Headwalls and energy dissipation
- 07 Detention, attenuation and sustainable drainage
- 08 Erosion control and maintenance planning

Upcoming dates



Dates	Venue	Format	Fee per delegate
26 to 30 October 2026	Online	Online	R8,500
28 December 2026 to 1 January 2027	Maputo, Mozambique	Classroom	USD 1,325
4 to 8 January 2027	Cape Town, South Africa	Classroom	R19,950
25 to 29 January 2027	Lusaka, Zambia	Classroom	USD 1,325

Fees and how to register

This 5 day course is **R8,500** per delegate online, **R19,950** in the classroom in South Africa, Botswana, Namibia, Lesotho and Eswatini, and **USD 1,325** in the classroom elsewhere in Africa. In-house training is quotation on request. Book 2 or more delegates on this course and save 10%.

To register or request an in-house proposal, visit www.afrisciencegroup.com, email info@afriScience.co.za, or WhatsApp us on **+27 63 479 1136**.

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