



ENGINEERING AND TECHNICAL TRAINING

Earthworks, Compaction and Materials Testing

3 day course

Classroom, online or in-house

Course overview

Earthworks are paid by volume and judged by density, and a layer that fails its density test is usually a moisture problem rather than a rolling problem. This course teaches that distinction. Delegates work through cut and fill planning, haul distance and the mass haul thinking that decides earthmoving cost. Material classification for reuse follows, including which excavated material may go back into a fill. Moisture content is treated as the controlling variable, covering optimum moisture, adding water and drying back. Compaction plant is covered by type, with the soils each suits and the layer thickness each can compact. Field density testing is addressed practically, including sand replacement and nuclear methods, and the relative compaction the specification demands. Proof rolling and visual acceptance follow. Slope stability during construction and temporary works are addressed. The course closes on survey control, on volume measurement for payment and on resolving a density dispute.

What you will learn

- Plan cut and fill with haul distance in mind
- Classify excavated material for reuse in fill
- Control moisture content around the optimum
- Select compaction plant and layer thickness for the material
- Carry out field density testing and calculate relative compaction
- Apply proof rolling and visual acceptance
- Measure volumes for payment and resolve a density dispute

Who should attend

- Earthworks foremen and site engineers
- Materials technicians on civil contracts
- Plant supervisors on earthmoving operations
- Clerks of works and resident engineers
- Quantity surveyors measuring earthworks

Course outline

- 01 A moisture problem, not a rolling problem
- 02 Cut, fill and mass haul
- 03 Material classification for reuse
- 04 Moisture content and optimum
- 05 Compaction plant and layer thickness
- 06 Field density testing methods
- 07 Relative compaction and proof rolling
- 08 Slope stability, volume measurement and disputes

Upcoming dates



Dates	Venue	Format	Fee per delegate
23 to 25 September 2026	Gaborone, Botswana	Classroom	R14,950
14 to 16 October 2026	Dar es Salaam, Tanzania	Classroom	USD 995
23 to 25 December 2026	Online	Online	R6,500
11 to 13 January 2027	Accra, Ghana	Classroom	USD 995

Fees and how to register

This 3 day course is **R6,500** per delegate online, **R14,950** in the classroom in South Africa, Botswana, Namibia, Lesotho and Eswatini, and **USD 995** 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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