



MANUFACTURING AND PRODUCTION

Foundry Operations: Moulding, Melting and Casting

5 day course

Classroom, online or in-house

Course overview

A foundry converts scrap of uncertain composition into castings sold to a specification, in a process where the product is hidden inside sand until it is too late to change anything. This course covers controlling what can be controlled. Delegates work through pattern and mould design, including draft, machining allowance and the shrinkage that a pattern must anticipate. Moulding methods follow across green sand, chemically bonded and shell processes, with sand properties, permeability and the reclamation that keeps sand usable. Core making is covered. Melting is addressed for cupola, induction and rotary furnaces, with charge calculation, temperature control and the deslagging and degassing that decide metal cleanliness. Metal treatment follows, including inoculation and nodularisation for cast irons. Gating and feeding are worked through as the design decisions that determine whether a casting fills and feeds. Pouring practice and safety are covered. The course closes on shakeout, fettling and dimensional inspection.

What you will learn

- Design patterns allowing for draft, machining and shrinkage
- Select moulding methods and control sand properties and reclamation
- Make cores that survive pouring and break down afterwards
- Calculate a furnace charge and control melt temperature and cleanliness
- Apply inoculation and nodularisation to cast irons
- Design gating and feeding so a casting fills and feeds
- Pour safely, then shake out, fettle and inspect to dimension

Who should attend

- Foundry supervisors and melting shop staff
- Pattern makers and methods engineers
- Quality staff in casting production
- Metallurgists supporting foundry operations
- Buyers specifying castings

Course outline

- 01 Hidden in sand until it is too late
- 02 Pattern design, draft and shrinkage
- 03 Green sand, chemically bonded and shell moulding
- 04 Sand properties, permeability and reclamation
- 05 Core making
- 06 Cupola, induction and rotary melting
- 07 Charge calculation, deslagging and degassing
- 08 Inoculation, gating, feeding, pouring and fettling

Upcoming dates

Dates	Venue	Format	Fee per delegate
5 to 9 October 2026	Lusaka, Zambia	Classroom	USD 1,325
14 to 18 December 2026	Online	Online	R8,500
1 to 5 March 2027	Johannesburg, South Africa	Classroom	R19,950



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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