THE AUTOMATIC SPRINKLER INSPECTION BUREAU (PTY) LIMITED

ASIB

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SPRINKLER DESIGN AND CALCULATION COURSE 2027

Course Outline

This course is split into ten modules, presented at one module per month from February to November 2027.

We firmly believe that the learning experience should be enjoyable. The course is formulated around actual experience and has an extensive visual impact. It is important to us that the delegate leaves each class with a thorough understanding and full working ability.

Hydraulic design is complex and little understood in general. The ability to plug numbers into a computer program designed for sprinkler hydraulic calculation means very little unless you know what is being achieved and can read the resultant printout. The modules provide the candidate with the required information in order to make informed decisions when undertaking hydraulic design. We aim to provide a thorough grounding and, through actual application, the candidate will come away with a proper grasp of the requirements of fixed fire protection.

The material covered has many practical exercises built into it from both an individual and a networking point of view. It is through these that invaluable experience is gained. Delegates are kept to manageable numbers, which enables personal attention to be given as required. Networking consists of small groups who collectively solve the problem given by sharing knowledge gained either in the course or within their working environment.

Lectures move through the phases that have been experienced by South Africa and the broader global sprinkler industry for the past two hundred years or more. They include past rules and their application through to the very latest. The course also prepares delegates for the ASIB Competency Examination.

COURSE STRUCTURE

- The modules run consecutively and build on one another, so the course is booked as a whole. Individual modules may be booked only where ASIB regards the delegate as competent.
- The attendance certificate is issued only on attendance of all three days of all ten modules, once the course fees have been paid in full.
- Where a module is missed, the class notes for that module are issued. There are no recordings or catch-up sessions.
- The cost of the course includes all learning materials such as Rule Books, class notes and stationery, and one Sharp EL-5250 programmable calculator per delegate.
- Delegates are expected to have Grade 12 mathematics.
- The course is presented at the ASIB Course and Examination Centre, Bedfordview, on Tuesday, Wednesday and Thursday of the module week.

COURSE DATES 2027

MODULE	CONTENT	DATES (TUE - THU)
Module 1	Introduction to Fire Sprinklers and the Ninth Edition	9 - 11 February 2027
Module 2	Tenth Edition Pipe Size Tables, Friction Loss and Pumps	9 - 11 March 2027
Module 3	Tenth Edition Pumps, High Rise and Extra High Hazard	13 - 15 April 2027
Module 4	Introduction to Hydraulically Calculated Design	11 - 13 May 2027
Module 5	K-Factors, Pipe Sizing and the Full Calculation	8 - 10 June 2027
Module 6	Ring Mains, Looped Systems and Hardy Cross	6 - 8 July 2027
Module 7	Risk Assessment of Storage	3 - 5 August 2027
Module 8	Grid Systems and Water Supplies	7 - 9 September 2027
Module 9	Gravity Supplies, Pumps and Power	5 - 7 October 2027
Module 10	Suction, NPSH and Orifice Plates	2 - 4 November 2027

COURSE FEES

	EXCLUDING VAT	INCLUDING VAT (15%)
Per module	R 8,395.00	R 9,654.25
Deposit (Modules 1 and 2)	R 16,790.00	R 19,308.50
Full course (10 modules)	R 83,950.00	R 96,542.50

BOOKING AND PAYMENT TERMS

1. **Confirmation.** A booking is confirmed only once the deposit reflects, and places are allocated in that order.
2. **Deposit.** The deposit of R 16,790.00 excluding VAT (two modules) pays for Modules 1 and 2 and is non-refundable. It is paid using the booking reference emailed on receipt of the application form, and invoiced once it reflects.
3. **Modules 3 to 10.** Each module is invoiced in advance, and the invoice must be paid before the module begins. A delegate is not admitted to a module while the company's account with ASIB is in arrears, whether for the course or for any other ASIB service.
4. **Full payment.** Companies may instead pay the full course fee of R 83,950.00 excluding VAT upfront, in the same way; please indicate this on the application form.
5. **Commitment to the full course.** A booking commits the company named on the application form to the full course of ten modules for its delegate, over ten months, February to November 2027. The course fee is for a seat on a programme booked as a whole, not a charge for days attended.
6. **Missed modules.** A module that is not attended, for any reason, including illness or refusal of admission under item 3, is invoiced in full and remains payable. Once the delegate has been withdrawn in writing, item 7 applies instead.
7. **Withdrawal.** The company may withdraw its delegate only by written notice of withdrawal to ASIB. Missing a module or querying an invoice is not notice of withdrawal. The deposit is not refunded if the delegate withdraws before the course starts. After the course has started, every module that has started by the day ASIB receives the notice, and the next module to start after that day, remain payable.
8. **Non-payment.** ASIB may remove a delegate from the course while the company's account remains in arrears. A removed delegate is treated as withdrawn on the date of removal, and item 7 applies.
9. **Invoicing and payment.** Invoices are issued to the company named on the application form, which is responsible for all fees under these terms, even if the delegate leaves its employment during the course. A delegate who books privately is personally responsible for the fees. A payment counts only once it reflects in ASIB's bank account; a proof of payment is not enough. All fees exclude VAT at 15%.
10. **Acceptance.** Ticking the acceptance box on the online application form and typing your name is the agreed way of accepting these terms.

MODULE 1: INTRODUCTION TO FIRE SPRINKLERS AND THE NINTH EDITION

TOPIC COVERED	OUTCOME
The history of fire sprinklers	*This section traces the origins of sprinkler protection, from the first perforated-pipe systems to the automatic sprinkler, and how rules, standards and codes evolved from past experience*
ASIB and the Rules	*Explains the founding of ASIB, what the Rules are and are not, their relationship with national standards and where they sit in the legal framework*
Design density, area of operation and hazard classification	*Introduces the core design parameters: design density of discharge, the assumed maximum area of operation, hazard classification and maximum spacing*
Control valve assemblies	*Provides an understanding of the differing types of installation control valves (wet, dry, alternate and pre-action), their operating sequence and their suitability for differing risks*
Multiple jet controls and special-risk protection	*Introduces protection beyond ordinary sprinklers: multiple jet controls, LPG and transformer vessels, conveyor belts and high and medium velocity spray nozzles*
Sprinkler heads	*Provides an understanding of the operating mechanisms, orientation, response, construction, approval markings and testing of sprinkler heads*
Sprinkler operation, fire venting and drenchers	*Promotes an understanding of the factors affecting sprinkler operation and distribution, the place of fire venting in sprinkler-protected buildings, and the difference between drencher systems and sprinklers*
Ninth Edition systems	*Promotes an understanding of the Ninth Edition pipe size tables and the water supply pressures required for differing building heights*

Duration	Three days
Daily Starting Time	08:30 - 09:00
Daily Finish	16:00 - 16:30
Dates	Tuesday, Wednesday and Thursday 9, 10 and 11 February 2027
Cost	R 8,395.00 Excluding VAT (covered by the deposit)

MODULE 2: TENTH EDITION PIPE SIZE TABLES, FRICTION LOSS AND PUMPS

TOPIC COVERED	OUTCOME
Tenth Edition framework	*Promotes an understanding of the Tenth Edition Rules, the categorisation of products and the basis of the pipe size tables*
Extra Light Hazard	*Enables the candidate to recognise, size and calculate an Extra Light Hazard Tenth Edition pipe size installation*
Ordinary Hazard	*Enables the candidate to recognise, lay out and size an Ordinary Hazard Tenth Edition pipe size installation*
Friction loss and the Hazen-Williams formula	*Develops an understanding of standing and residual pressure, friction loss, the equivalent length of fittings, the Hazen-Williams formula, the shortened K formula and static loss and gain*
The programmable calculator	*Introduces the Sharp EL-5250 programmable calculator and the first design programs, including the velocity check*
Preferred and alternate pipe diameters	*Enables the candidate to apply preferred and alternate pipe diameters*
Ordinary Hazard pump sizing	*Provides the ability to size an Ordinary Hazard pumped water supply from the pump duty table, including the 45 m rule and interpolation*
Multi-stage pumps and high rise	*Introduces parallel and series pumping, high-rise zoning, the life safety bypass and the limits of pumping*

Duration	Three days
Daily Starting Time	08:30 - 09:00
Daily Finish	16:00 - 16:30
Dates	Tuesday, Wednesday and Thursday 9, 10 and 11 March 2027
Cost	R 8,395.00 Excluding VAT (covered by the deposit)

MODULE 3: TENTH EDITION PUMPS, HIGH RISE AND EXTRA HIGH HAZARD

TOPIC COVERED	OUTCOME
Trunk main losses	*Enables the candidate to calculate trunk main losses for Tenth Edition pumped supplies*
Multi-stage, multi-take-off pumps	*Provides the ability to stage pumps for high-rise Ordinary Hazard installations through two-stage, three-stage and staggered valve exercises*
Ordinary Hazard static gain	*Develops an understanding of static gain in multi-storey buildings and of where pumping becomes impossible*
Extra High Hazard pipe size tables	*Enables the candidate to recognise, lay out and size an Extra High Hazard Tenth Edition pipe size installation, including the choice of table and the drainage arrangement*
The Extra High Hazard design procedure	*Provides the five-step Extra High Hazard design procedure, applied in a full class exercise from categorisation through to pump sizing*
The pro-rata system	*Provides the ability to use the pro-rata system*

Duration	Three days
Daily Starting Time	08:30 - 09:00
Daily Finish	16:00 - 16:30
Dates	Tuesday, Wednesday and Thursday 13, 14 and 15 April 2027
Cost	R 8,395.00 Excluding VAT

MODULE 4: INTRODUCTION TO HYDRAULICALLY CALCULATED DESIGN

TOPIC COVERED	OUTCOME
Introduction to calculated design	*Creates an understanding of what is to be achieved when calculating a hydraulic design*
Flow, pressure and the K-factor	*Develops an understanding of the K-factor of a sprinkler and its use in determining flow and pressure through an orifice*
Sprinklers in simultaneous operation	*Provides an understanding of which sprinklers are deemed to be in simultaneous operation*
The progressive calculation	*Provides an understanding of the progressive, repetitive steps in the calculation of multiple sprinklers along a range*
Static head in calculated design	*Provides an understanding of how static head is treated in a calculated system*
Trigonometry and cut lengths	*Introduces the basic trigonometry needed for pipe lengths, with the calculator cut length program*
Flow correcting	*Creates an understanding of when and how to correct flows at junctions where the pressure differs, with the calculator flow correction program*

Duration	Three days
Daily Starting Time	08:30 - 09:00
Daily Finish	16:00 - 16:30
Dates	Tuesday, Wednesday and Thursday 11, 12 and 13 May 2027
Cost	R 8,395.00 Excluding VAT

MODULE 5: K-FACTORS, PIPE SIZING AND THE FULL CALCULATION

TOPIC COVERED	OUTCOME
The K-factor beyond the sprinkler head	*Extends the K-factor from the sprinkler head to pipework, with worked exercises in assigning a K*
Flow corrections with the K-factor	*Provides the ability to correct flows by substituting K values for flow and pressure*
Velocity and pipe sizing	*Creates an understanding of how to size pipes in hydraulically designed systems*
The shape of the area of operation	*Develops an understanding of the shape and placement of the assumed maximum area of operation*
Full calculation	*An extensive exercise in which the candidate pipe-sizes and calculates a complete remote area of operation*
Design density decay	*Provides an understanding of design density decay*
Introduction to ring mains	*Introduces the calculation of a ring main supply*

Duration	Three days
Daily Starting Time	08:30 - 09:00
Daily Finish	16:00 - 16:30
Dates	Tuesday, Wednesday and Thursday 8, 9 and 10 June 2027
Cost	R 8,395.00 Excluding VAT

MODULE 6: RING MAINS, LOOPED SYSTEMS AND HARDY CROSS

TOPIC COVERED	OUTCOME
Ring mains	*Provides an understanding of how to calculate a ring main supply, including unsymmetrical rings, and to balance the flows and pressures*
Pipe conversion	*Creates the ability to equate differing pipe diameters and lengths for calculation*
Compound and incorporated loops	*Provides the ability to reduce compound loops and to incorporate loops into a system calculation*
Points of entry	*Develops an understanding of the effect of the point of entry on a looped system*
Application of the Hardy Cross method	*Creates the ability to use the Hardy Cross method to balance looped systems and small grids, through a fully worked grid*
Note: Intensive exercises	*This module has intensive exercises that tend to be exhaustive*

Duration	Three days
Daily Starting Time	08:30 - 09:00
Daily Finish	16:00 - 16:30
Dates	Tuesday, Wednesday and Thursday 6, 7 and 8 July 2027
Cost	R 8,395.00 Excluding VAT

MODULE 7: RISK ASSESSMENT OF STORAGE

TOPIC COVERED	OUTCOME
Risk assessment	*Provides an understanding of how to assess storage risks in terms of the current rules*
Ordinary and High Hazard storage	*Enables the candidate to apply the storage tables, including the effect of excessive clearance*
Categorisation methodology	*Creates the ability to identify and categorise goods and packaging materials and to assess the risk*
Storage types, shelves and mezzanine floors	*Provides an understanding of the protection of differing storage types, shelving and mezzanine floors*
Racking and in-rack protection	*Provides an understanding of beam pallet racking, in-rack protection by category and the in-rack calculation*
Special storage risks and ESFR	*Introduces special storage risks and early suppression fast response (ESFR) protection*

Duration	Three days
Daily Starting Time	08:30 - 09:00
Daily Finish	16:00 - 16:30
Dates	Tuesday, Wednesday and Thursday 3, 4 and 5 August 2027
Cost	R 8,395.00 Excluding VAT

MODULE 8: GRID SYSTEMS AND WATER SUPPLIES

TOPIC COVERED	OUTCOME
Grid systems	*Provides the candidate with an understanding of the concept of grid systems, where they may not be used and the pipework requirements*
Calculating a grid	*Enables the candidate to place the area of operation and calculate a grid, including the skew method, and to recognise a good and a bad grid*
Water supply curves	*Gives the candidate the ability to establish and plot a water supply curve*
System curves	*Gives the candidate the ability to calculate a system resistance curve, including Qmax and Pmax*
The intercept	*Enables the candidate to calculate the intercept point of a water supply against the system demand*
Town main water supplies	*Provides an understanding of the requirements for a town main supply and of sizing the trunk main from a town main*

Duration	Three days
Daily Starting Time	08:30 - 09:00
Daily Finish	16:00 - 16:30
Dates	Tuesday, Wednesday and Thursday 7, 8 and 9 September 2027
Cost	R 8,395.00 Excluding VAT

MODULE 9: GRAVITY SUPPLIES, PUMPS AND POWER

TOPIC COVERED	OUTCOME
Elevated private reservoirs and gravity tanks	*Provides an understanding of the requirements of elevated reservoirs and gravity tanks and of calculating the flow available from a gravity supply*
Gravity and velocity	*Creates an awareness of gravity and the effect this has on velocity in water supplies*
Types of pumps and the centrifugal pump	*Provides the ability to determine the differences between types of pumps and an understanding of how a centrifugal pump works*
Pumps in parallel and in series	*Enables the candidate to calculate pumps running in parallel and in series and the effect this has on sprinkler systems*
Pump performance curves	*Creates an understanding of how to read a composite characteristic pump curve*
Impeller velocity and the affinity laws	*Provides an understanding of impeller peripheral velocity and the application of the pump affinity laws*
Pump power and the driver	*Provides an understanding of a pump's power requirements, sizing the driver, deration and engine selection*

Duration	Three days
Daily Starting Time	08:30 - 09:00
Daily Finish	16:00 - 16:30
Dates	Tuesday, Wednesday and Thursday 5, 6 and 7 October 2027
Cost	R 8,395.00 Excluding VAT

MODULE 10: SUCTION, NPSH AND ORIFICE PLATES

TOPIC COVERED	OUTCOME
Pump suction tanks	*Creates an awareness of the requirements for a suction tank feeding a sprinkler system*
Suction lines	*Provides an understanding of the requirements for a pump suction line*
Net positive suction head	*Provides an understanding of NPSH available against NPSH required and creates an awareness of cavitation*
General	*Provides the required knowledge in respect of the general requirements of a pumped water supply feeding a sprinkler system*
Orifice plate calculation	*Provides the candidate with the ability to calculate and size an orifice plate within a sprinkler system or proving test pipe, and an understanding of where orifice plates are applied*

Duration	Three days
Daily Starting Time	08:30 - 09:00
Daily Finish	16:00 - 16:30
Dates	Tuesday, Wednesday and Thursday 2, 3 and 4 November 2027
Cost	R 8,395.00 Excluding VAT