



Sprinkler Design and Calculation Course 2024

This course is split into 10 modules which are spread out at 1 module per month over the period of one year.

We firmly believe that the learning experience should be enjoyable. The courses are formulated around actual experience and they have 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 print out. The modules provide the candidate with the required information in order for them 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 them from both an individual and networking point of view. It is through these that invaluable experience is gained. Delegates are kept to manageable limits, which enables personal attention to be given as required. Networking consists of small groups who will 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 modules run concurrently whereby it is not possible to miss modules or to select individual modules unless the level of understanding of the individual is regarded as competent.**
- **The cost of the course includes all learning materials such as Rule Books and stationery.**
- **We are often asked how the course is invoiced.**
- **Our preference, and the method that we use as a standard for this course, is that the deposit is invoiced first, which is equivalent to two modules payment.**
- **Then, before each module an invoice is sent for the cost of the module.**
- **The deposit pays for the last two modules, and therefore you are not invoiced for module 9 and 10**
- **However, some companies prefer to pay the full amount of R 73,500.00 excluding VAT upfront, and we can accommodate you accordingly. If this is your preference, please inform ASIB when the course application form is handed in.**

The following pages detail each module's content, its duration as well as the expected outcome.

MODULE 1	
TOPIC COVERED	OUTCOME
The origins of sprinkler systems	<i>This section will enable the candidate to gain an understanding of the origins of sprinkler installations and how rules, standards and codes started to evolve and what level of importance needs to be placed upon past experience</i>
The history of sprinkler systems	
Original design parameters	
Lessons learned from early systems	
Basic sprinkler operation	<i>Promote an understanding of how a sprinkler operates</i>
Control valve assemblies	<i>This section provides an understanding of the differing types of installation control valves and their operational functions as well as suitability for differing risks</i>
Sprinkler heads	<i>This section provides an understanding of the differing types of sprinkler heads and what has an effect on their operation as well as suitability for differing risks</i>
Fire venting	<i>Promotes the importance and place of fire venting in sprinkler protected structures</i>
Drencher systems and water curtains	<i>The essential difference and understanding between drencher systems and water curtains are achieved in this section</i>
Ninth Edition Systems	<i>Promotes an understanding and appreciation of the basic design parameters behind the design of Ninth Edition Sprinkler Systems and the water supply requirements</i>
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 February 2024
Cost	
	R 7,350.00 Excluding VAT

MODULE 2

TOPIC COVERED	OUTCOME
Tenth Edition Systems - Overview	<i>Promotes an understanding of the origins of the Tenth Edition Rules and the unique aspects of as well as the importance of these due to the number in existence within South Africa</i>
Tenth Edition - Categorisation	<i>Creates an awareness of the way in which products were categorised and the basis behind this</i>
Tenth Edition pipe size tables	<i>Promotes an understanding and awareness of what pipe size table are</i>
Extra Light Hazard	<i>Enables the candidate to recognise, size and calculate an Extra Light Hazard Tenth Edition pipe size sprinkler installation</i>
Ordinary Hazard	<i>Enables the candidate to recognise size and calculate an Ordinary Hazard Tenth Edition pipe size sprinkler installation. Provides the ability to size and calculate an Ordinary Hazard sprinkler installation pumped water supply for differing heights of building using predetermined pump characteristics</i>
Extra High Hazard	<i>Enables the candidate to recognise size and calculate an Extra High Hazard Tenth Edition pipe size sprinkler installation. Provides the ability to size and calculate a High Hazard sprinkler installation pumped water supply for differing design densities of discharge when using predetermined pump characteristics Provides the ability to use the pro-rata system</i>
Duration	Three days
Daily Starting Time	08:30 - 09:00
Daily Finish	16:00 - 16:30
Dates	Tuesday, Wednesday and Thursday 12, 13 and 14 March 2024
Cost	R 7,350.00 Excluding VAT

MODULE 3

TOPIC COVERED	OUTCOME
Introduction to sprinkler design calculation	<i>Creates an understanding of what is to be achieved when calculating a hydraulic design Provides the required understanding of design density of discharge, assumed maximum area of operation, density decay</i>
Sprinkler K Factors	<i>Enables the candidate to develop an understanding of a coefficient of discharge through the K-Factor of a sprinkler and the use of "K" in order to determine flow and pressure through an orifice</i>
Friction loss in pipe work	<i>Forms part of the understanding required of laminar and turbulent flow, pipe diameters and how to calculate friction loss using the Hazen-Williams formula and the shortened "K" method. Provides a rudimentary understanding of the Darcy-Weisbach formula and its uses, finding Reynolds Numbers and the use of the Moody Diagram</i>
Method of calculating a sprinkler range	<i>Provides an understanding of the process for basic progressive steps in the calculation of multiple sprinklers on a range</i>
Average spacing and actual spacing	<i>Initiates the required understanding, the use and application of the actual spacing of a sprinkler against the average spacing of a sprinkler system</i>
Static gain	<i>Provides an understanding of how to calculate sprinkler systems where static gain is a factor</i>
Basic pipe sizing	<i>Creates an initial and basic understanding of how to size pipes in hydraulically designed sprinkler systems when undergoing, for example, multiple changes in direction</i>
Flow correcting	<i>Creates an awareness and understanding of when and how to correct flows at junctions or splits where the pressure differs</i>
Duration	Three days
Daily Starting Time	08:30 - 09:00
Daily Finish	16:00 - 16:30
Dates	Tuesday, Wednesday and Thursday 16, 17 and 18 April 2024
Cost	R 7,350.00 Excluding VAT

MODULE 4

TOPIC COVERED	OUTCOME
Calculation of risers	<i>Provides an understanding of how to calculate a sprinkler system range that utilises risers or rise pipes</i>
Calculation of main distribution pipe risers	<i>Provides an understanding of how to calculate multiple main distribution pipe risers using either flow corrections or substituting "K" values for flow and pressure</i>
Calculation of droppers	<i>Provides an understanding of how to calculate a sprinkler system range that utilises drop pipes</i>
Calculation of extreme static gain	<i>Creates an awareness of situations where static gain influences sprinkler performance and methods of overcoming this</i>
Pipe size versus hydraulic design	<i>Develops an understanding of the differences in calculating sprinkler systems against using pipe sizes and thereby provides the candidate with a thought process based on comparison</i>
Full calculation	<i>An extensive exercise is given to the candidate to utilise the overall knowledge gained at this stage in order to pipe size and calculate a complete sprinkler systems remote area of operation</i>
Duration	Three days
Daily Starting Time	08:30 - 09:00
Daily Finish	16:00 - 16:30
Dates	Tuesday, Wednesday and Thursday 14, 15 and 16 May 2024
Cost	R 7,350.00 Excluding VAT

MODULE 5

TOPIC COVERED	OUTCOME
Ring Mains	<p><i>Provides an understanding and appreciation of how to calculate a ring main supply and to balance the flows and pressures</i></p> <p><i>A calculation is provided incorporating all accumulated knowledge and applied to a ring main</i></p>
Pipe diameter manipulation	<p><i>Creates an understanding and ability of how to equate differing diameters and incorporate these into, at this stage, ring main calculations</i></p>
Looped mains	<p><i>Gives the candidate the required knowledge of the interaction of looped mains in system friction losses</i></p> <p><i>Creates an understanding of the use of differing pipe diameters in looped main systems</i></p>
Multiple loop or pipe compression	<p><i>Provides the ability to reduce extensive lengths of pipe, loops or ring mains to single lengths of pipe for ease of calculation</i></p>
Introduction to gridded systems	<p><i>Provides a basic introduction to the calculation of multiple loops with practical exercises</i></p>
Note: Intensive exercises	<p><i>This course has a more than the average number individual and networking exercises</i></p>
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 June 2024
Cost	R 7,350.00 Excluding VAT

MODULE 6	
TOPIC COVERED	OUTCOME
Balancing looped systems	<i>Creates the ability to calculate the split of flows in a looped systems or small grids</i>
Application of the Hardy-Cross formulae	<i>Creates an ability in the use of the Hardy-Cross formulae relating to ring mains, looped systems or small grids</i>
Note: Intensive exercises	<i>This course has intensive exercises that tend to be exhaustive</i>
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 July 2024
Cost	R 7,350.00 Excluding VAT

MODULE 7	
TOPIC COVERED	OUTCOME
Grid systems	<i>Provides the candidate with an understanding of the concept and application of grid systems Provides exercises in respect of the calculation of a mini-grid system in order to understand the split of flows and balancing of pressures</i>
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 August 2024
Cost	R 7,350.00 Excluding VAT

MODULE 8

TOPIC COVERED	OUTCOME
Storage risks	<i>Provides an understanding of how to generally assess storage risks in terms of the current rules</i>
Categorisation methodology	<i>Creates a basic understanding of how to categorise packaging materials and assessing the risk</i>
Shelves	<i>Provides an understanding of the protection of shelves and shelving and allowances for differing configurations</i>
Racking	<i>Provides an understanding of the protection of racks and allowances for differing configurations</i>
Balancing of systems	<i>Creates an awareness of the need to balance the roof and rack sprinkler installations</i>
Duration	Three days
Daily Starting Time	08:30 - 09:00
Daily Finish	16:00 - 16:30
Dates	Tuesday, Wednesday and Thursday 17, 18 and 19 September 2024
Cost	R 7,350.00 Excluding VAT

MODULE 9

TOPIC COVERED	OUTCOME
Town main water supplies	<i>Provides an understanding of the requirements for a town main water supply and how to extrapolate known quantities into a water supply curve from the point of connection or point of sprinkler supply Creates an understanding of the requirements relating to the installation of a town main supply and the allowable usable quantities</i>
System curves	<i>Gives the candidate the ability to calculate and understand what a resistance curve is in relation to a sprinkler system</i>
Elevated private reservoir	<i>Provides an understanding of the requirements of an elevated private reservoir</i>
Gravity tank	<i>Provides an understanding of the requirements of a gravity tank</i>
Calculation of available water	<i>Enables the candidate to calculate a friction loss resistance curve and to estimate the quantity of water available from an elevated water supply</i>
Calculation of junction points	<i>Enables the candidate to calculate an intercept point of a water supply against a system demand point and an awareness of its use</i>
Gravity and velocity	<i>Creates an awareness of gravity and the effect this has on velocity in relation to a water supplies and sprinkler systems</i>
Overview of pumps	<i>Provides an introduction into pumps and enables the candidate to calculate pumps running in parallel and in series and the effect this has on sprinkler systems Provides useful definitions of common terms Provides the ability to determine the differences between types of pumps and creates an understanding of how to read a composite characteristic pump curve</i>

Duration	Three days
Daily Starting Time	08:30 - 09:00
Daily Finish	16:00 - 16:30
Dates	Tuesday, Wednesday and Thursday 15, 16 and 17 October 2024
Cost	R 7,350.00 Excluding VAT

MODULE 10

TOPIC COVERED	OUTCOME
Centrifugal fire pumps	<i>Provides an understanding of a pump impeller and how to calculate peripheral velocities Provides an understanding and application of the pump affinity laws Provides an understanding of a pumps power requirements</i>
Pump suction tanks	<i>Creates an awareness of the requirements for a suction tank feeding a sprinkler system</i>
Suction line and NPSH	<i>Provides an understanding of the requirements for a pump suction line and NPSH requirements Creates an awareness of cavitation</i>
General	<i>Provides the required knowledge in respect of the general requirements relating to a pumped water supply feeding a sprinkler system</i>
Orifice plate calculation	<i>Provides the candidate with the ability to calculate and size an orifice plate within a sprinkler system or proving test pipe and where to apply them</i>
Duration	Three days
Daily Starting Time	08:30 - 09:00
Daily Finish	16:00 - 16:30
Dates	Tuesday, Wednesday and Thursday 12, 13 and 14 November 2024
Cost	R 7,350.00 Excluding VAT