

**Training and Consulting**  
Range of courses for 2011  
South Africa

**FESTO**

Technology & Organisation



Productivity starts with knowledge and the productivity equation demands a healthy balance between people and technology.

The relentless competitive pressure in industry demands that all stakeholders in skills- in particular manufacturing companies and the training organisations that serve them, optimize their productivity in order to survive and flourish.



Richard Teagle  
MD Festo South Africa

In the case of training activities, this means that training must be tailored closely to your requirements in order to ensure successful implementation.

The basis for this is professional consultancy and precise determination of your requirements. This has been the principle behind the development of our range of training and consultancy services, which comprise everything from an analysis of training needs through to public seminars and in-house training programmes, offering the right solution for every need.

In view of the ever-increasing competitive pressure faced by companies today, lean production systems, reduced downtime and increased machine availability are vital prerequisites for long-term success.

This success can be achieved only if improvements in production and administration are codified into standards at regular intervals and further improved.

For this purpose, companies need staff who are able to recognise potential for optimisation in a timely fashion, no matter whether this relates to communication, organisation or technology.

As an experienced and strong partner, we can help you to prepare your staff and your company to meet these challenges of the future.

This course planner describes our complete range of training and consulting services. A new inclusion is the area of organisational training, for which we are in the process of developing a comprehensive range of services.

We would be delighted to be allowed to offer you support in dealing with the challenges facing your business and hope that this planner will be the first step towards successful training.

# Sustainable commitment to people and technology

**Festo AG**

**Global player in Automation and Didactic.**



13,500 people worldwide are working towards innovative advances in the production of capital and consumer goods. This reflects Festo's philosophy of full partnership and close proximity to more than 300,000 customers in over 200 industries, realised via 250 Festo locations and 58 national Festo companies.

The focus of all activities is on people and technology. From its foundation, Festo has seen itself as a strong partner and an integral component of societies and business worldwide.

The perfect interplay of technology, organisation and people is essential in order to successfully put knowledge into practice at a company. These factors lay the foundations for top performance and financial success.

The Festo Competence Model combines social, logistical and technical skills to form a success-oriented model for initial and further training.

As the world's leading training organisation for automation, there is one thing you can be sure to get from Festo Didactic: Excellence. And it's been that way for many years

**World class training in tune with tomorrow's needs**



**How Festo Didactic keeps South African Industry moving ahead.**

Modern automation solutions arise out of ideas, experience and knowledge. Learning, creativity and curiosity are the pre-requisites. It is our aim as a training organisation to always place our customers in such a position that they can find, and use the most effective solution in each case. It is 33 years since Festo Didactic started developing its automation engineering training programs. We are long since world market leader and trendsetter in seminars, teaching software and training hardware. At present training schools of all kinds, universities, technical colleges and companies in South Africa and over 100 other countries are using the products and training supplied by Festo Didactic for promoting individual skills and conveying new ideas.

**It's time well spent**

- More than 100 courses annually in all major cities.
- Approximately 1000 trainees, technical consultants, technicians, engineers and technical instructors are being trained annually. In its 33 year history Festo Didactic has trained over 33 000 delegates.
- Only industrial - adapted training components and advanced training media are used in the fields of Pneumatics, Hydraulics, PLC, Mechatronics and Process Control.
- Our training courses will refine your staff's inherent skills and bring them up to date with the latest automation technologies.

**Company benefits from Festo Technology courses.**

New Technologies are developing rapidly and job descriptions are constantly changing. The maintenance technician for example is now often also fulfilling an optimisation and training role in addition to troubleshooting and maintenance. The use of modern vocational and further training is vital to the successful implementation of strategies in order to gain the necessary skills to achieve their goals:-

- Fewer machine failures
- Faster repairs
- Higher system availability
- Higher quality of repairs
- Better co-operation between departments
- Greater number of fault prevention measures implemented.

Our training courses prepare employees for their new tasks as a result of the change process.

# Festo Didactic

## Your ideal partner in training



### **Our Philosophy**

Knowledge, learning and education are the themes of our century. Festo Didactic has been dedicated to developing leading solutions that result in more successful training for the future.

Demand for training will continue to grow and that's why we have made it our goal to make learning more efficient.

### **Qualification solutions**

From basic training to the planning, control and handling of complex networked systems and turnkey learning centres, **Festo Didactic** is the leading supplier of equipment for all vocational and continuing training institutions. Our solutions are developed to meet your specific requirements.

Our services include:-

- Curricula and qualification solutions

- Planning and equipping of training centers and classrooms
- Instructor training and refresher courses
- Commissioning and service & support

### **Integrated Learning Systems with innovative technology**

Efficient learning means being able to put knowledge into practice. But it also means learning more in less time. In order to meet these demands all our Learning Systems are integrated. We combine equipment sets and applications developed for activity-focused practical training with harmonised learning media and E-learning offerings to create a comprehensive learning system.

### **Edutainment**

Edutainment from **Festo Didactic** means multimedia

learning with maximum success! A range of media is available for each Learning System, created to present subject matters in an easy-to-understand manner. As a book or software based learning program, or as computer based training or web-based training.

### **Service**

We're at your side, worldwide in more than 100 countries. That is how we ensure that consulting, service delivery quality and reliability meet our exacting standards all year around. As the world's leading training organisation for automation, there is one thing you can be sure to get from Festo Didactic: Excellence.

**[www.festo-didactic.com](http://www.festo-didactic.com)**  
**The Internet marketplace for education and training**

# A hands-on approach to learning

## Training

Courses, workshops, Industrial consulting, best-practice events and corporate strategy games.



### Consulting, analysis in-house courses

Without a doubt, no two sectors of industry are alike; each sector has its own requirements - and no one knows and reacts as individually as Festo Didactic. Whether it's the automotive, electronics or food, packaging and processing industry, we work with you to plan courses, customised to your needs and conduct them on your premises. Joint analysis of requirements can be a very useful initial step.

Experienced instructors and consultants provide customised solutions to make your employees and your company successful.

Public or in-house – the focus is always on hands-on experience using actual products in learning factories.

### Training content Technology Comprehensive skills

Training for “hands-on” Learning with theory in:-

- Pneumatics
- Electro-Pneumatics
- Programmable Logic Controllers
- Mechatronics
- Hydraulics
- Electro-Hydraulics
- Proportional Hydraulics
- Instrumentation & Control

### Course Objectives

The training aim of these courses covers a wide spectrum of automation technology and take into consideration the status of the respective technologies. Our aim is to provide participants with the skill in order to understand these technologies both in theory and practice. Problems and sample solutions are taken from actual industrial applications. The ‘Hands-On’ approach enables participants to train and simulate circuits using **real industrial equipment**.

### Who should attend?

From the Newcomer to Artisan, Learner Artisans, Machine Operators, Foreman, Technicians, Draughtsmen & Engineers. There is no need to have any prior knowledge of Pneumatics/Hydraulics/ Electrics or PLC's - for the individual Basic Courses.

### Participants Benefits

The training courses will enable the participants to:-

- Understand the basic fundamentals of control systems
- Design, read and construct control circuits
- Improve Maintenance & upkeep of equipment.
- Fault find & repair machinery more efficiently.

# Technology & Organisation

## Course Overview

### Technology

Course Title and Venue...	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
<b>Pneumatics (1) Basic PN111</b>												
Johannesburg	26-28	23-25	23-25	19-21	18-20	13-15	13-15	10-12	7-9	5-7	24-30	1-2
Durban			2-4		4-6		6-8		7-9		9-11	
Cape Town			16-18			8-10		31...	2		16-18	
East London				13-15						19-21		
Port Elizabeth	26-28			13-15			13-15			5-7		
Vereeniging					4-6							
<b>Pneumatics (2) Maintenance PN121</b>												
Johannesburg		9-11		6-8		8-10		17-19		12-14		7-9
Durban					11-13					26-28		
Cape Town			30...	1					28-30			
East London						22-24						
Port Elizabeth				18-20			6-8					
Vereeniging									21-23			
<b>Pneumatics (3) Advanced PN122</b>												
Johannesburg					11-13					26-28		
Durban								24-26				
Cape Town							20-22					
<b>Electro - Pneumatics PN211</b>												
Johannesburg		16-18		13-15		1-3	27-29		28-30		23-25	
Durban				19-21					21-23			
Cape Town					4-6						30...	2
Port Elizabeth		2-4				1-3					9-11	
Vereeniging						13-15						
<b>Hydraulics (1) Basic HY511</b>												
Johannesburg		2-4	9-11	13-15	18-20	22-24	27-29	31...	2	5-7	9-11	7-9
Durban				6-8			20-22				23-25	
Cape Town				19-21					14-16			
East London							13-15					
Port Elizabeth						13-15					23-25	
<b>Hydraulics (2) Advanced HY521</b>												
Johannesburg		23-25		6-8		1-3		10-12		12-14	30...	2
Durban						29...	1					
Cape Town								3-5				
<b>Hydraulics (3) Proportional HY132</b>												
Johannesburg					11-13					26-28		
Durban								3-5				
Cape Town										5-7		
<b>Hydraulics (4) Maintenance HY142</b>												
Johannesburg			23-25			13-15		17-19			2-4	
Durban					25-27					19-21		
Cape Town								24-26				
<b>Mobile Hydraulics HY181</b>												
Johannesburg							6-8					

Course Title and Venue...	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
<b>PLC Introduction FST</b> PLC111												
Johannesburg		9-11			25-27			24-26			16-18	
Durban								31...2				
Cape Town							6-8					
Port Elizabeth						8-10					16-18	
<b>PLC CoDeSys</b> PLC271												
Johannesburg			23-25						21-23			
Durban											16-18	
Cape Town									7-9			
<b>PLC Siemens ST-7SERV1</b> PLC211												
Johannesburg		15-18			17-20			2-5			1-4	
Durban							12-15					
Cape Town										11-14		
<b>PLC Siemens ST-7SERV2</b> PLC222												
Johannesburg			15-18						13-16			
Durban									27-30			
Cape Town											22-25	
<b>PLC Siemens ST-7PID</b> PA201												
Johannesburg			2-4		25-27			17-19				7-9
<b>Process Instrumentation</b> PA211												
Johannesburg			9-11			29...1				19-21		
<b>Servo and Stepper Drives</b> ED811												
Johannesburg			30...1									
Durban								10-12				
Cape Town						29...1						
<b>Mechatronics Systems</b> AUT211												
Johannesburg			29...1				19-22				8-11	
Durban									13-16			
Cape Town						21-24						

## Organisation

Course Title and Venue...	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
<b>Lean Production Game</b> LP121												
Johannesburg						6-7					7-8	
<b>Maintenance Strategies TPM</b> LP141												
Johannesburg		7-8							5-6			



## Triple skills

## Experience

For over 33 years, we have been providing support for all development stages of automation technology. Our seminars use the latest technology. Close collaboration with our parent company ensures access to the latest machines and systems, while our trainers have first-hand expertise.

## Innovation

We place tough demands on our training. At our seminars, you will notice the difference compared to other training providers. We provide new answers to long-standing questions that help you to make decisive steps in your company plans.

## Vision

Our trainers are active in their trade, and know the areas of work of your participants. This knowledge extends beyond purely technical requirements to questions concerning topics such as just in time, TPM and Kanban.

# Pneumatics (1) - Basic

<b>PN111</b>	The course deals in detail with the most up-to-date products, current tools and methods used in industry. Our principle is learning from the real world for the real world!
Target group	Everyone who has to deal with pneumatic systems in their working environment
Contents	<ul style="list-style-type: none"> <li>• Objectives of low cost automation</li> <li>• Basic principles of compressed air supply, production, preparation and distribution</li> <li>• Power section devices (Linear and rotary actuators)</li> <li>• Use of directional control valve, flow control, pressure and time control valves and sensors</li> <li>• Structure and function of pneumatic devices and valves</li> <li>• Basic logic functions and their application</li> <li>• Symbolic representation of devices and standards (ISO 1219)</li> <li>• Systematic design of circuit diagrams</li> <li>• Reading pneumatic circuit diagrams</li> <li>• Operating modes in pneumatic control systems</li> <li>• Safety regulations and valid industrial standards</li> <li>• Typical industrial circuits</li> <li>• Identifying and eliminating faults</li> <li>• Practical exercises for all circuits "hands on"</li> </ul>
Outcomes	<p>The Participant:</p> <ul style="list-style-type: none"> <li>• can design, assemble and test basic pneumatic circuits</li> <li>• can identify and describe the design, features and operation of pneumatic components</li> <li>• can identify and explain symbols for pneumatic components</li> <li>• can read and interpret pneumatic circuit diagrams</li> <li>• can interpret technical specifications and data relating to pneumatic components</li> <li>• knows the fundamentals of compressed air generation and preparation</li> </ul>
Requirements	Technical understanding
Duration	3 days
Order no	12065113
Price	R4 500 (excl. VAT)
Accreditation	NQF - Level 3



Course Title and Venue...	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
<b>Pneumatics (1) Basic PN111</b>												
Johannesburg	26-28	23-25	23-25	19-21	18-20	13-15	13-15	10-12	7-9	5-7	2-4	30...2
Durban			2-4		4-6		6-8		7-9		9-11	
Cape Town			16-18			8-10		31...2			16-18	
East London				13-15						19-21		
Port Elizabeth	26-28			13-15			13-15			5-7		
Vereeniging					4-6							

## Pneumatics (2) - Maintenance

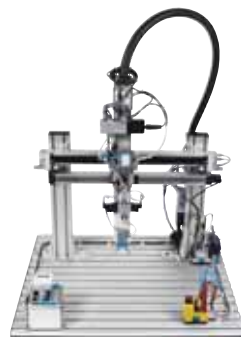
<b>PN121</b>	Extend your specialist knowledge of pneumatic control systems and improve your methodical skills. Practical exercises on training equipment for setting up, commissioning, troubleshooting and fault elimination make it easier to transfer knowledge to your day-to-day work.
Target group	Design Engineers, Plant Engineers, Maintenance staff and instructors
Contents	<ul style="list-style-type: none"> <li>• Pneumatic Symbols and Standards (Revision)</li> <li>• Pneumatic power generation, preparation and distribution</li> <li>• Design, function and identification of pneumatic components</li> <li>• Reconstruction and reading of pneumatic circuits</li> <li>• Reviewing, completing and using machine documentation</li> <li>• Developing and applying troubleshooting strategies</li> <li>• Optimising systems using fault documentation</li> <li>• Learning and applying safety regulations and valid standards</li> <li>• Practical exercise and systematic "hands-on" troubleshooting</li> </ul>
Outcomes	<p>The Participant:</p> <ul style="list-style-type: none"> <li>• knows and can identify the problems associated with poor compressed air preparation</li> <li>• can set up and commission pneumatic systems</li> <li>• can maintain and systematically troubleshoot pneumatic control systems</li> <li>• can understand the causes of downtime and failures</li> <li>• can interpret latest standards and regulations</li> </ul>
Requirements	Pneumatic (1) Basic course
Duration	3 days
Order no	12065115
Price	R4 600 (excl. VAT)
Accreditation	NQF - Level 3



Course Title and Venue...	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
<b>Pneumatics (2) Maintenance PN121</b>												
Johannesburg		9-11		6-8		8-10		17-19		12-14		7-9
Durban					11-13					26-28		
Cape Town			30...1						28-30			
East London						22-24						
Port Elizabeth				18-20			6-8					
Vereeniging									21-23			

# Pneumatics (3) - Advanced

<b>PN122</b>	Extend your technical and methodical knowledge. This addresses specific issues relating to maintenance and the ability to understand the functional relationships of complex machinery
Target group	Design Engineers, Plant Engineers, Maintenance staff and instructors
Contents	<ul style="list-style-type: none"> <li>• Basic Principles of compressed air technology, production, preparation and distribution (Review)</li> <li>• Power section devices and actuators, (specific application) Bellows, Rodless, rotary &amp; Impact cylinders, Pulse Ejectors, Grippers</li> <li>• Valves and basic logic functions (specific application) Counters, Timers, Two Hand and binary control</li> <li>• Positioning, open and closed loop</li> <li>• Sequence, and sequence stepper control</li> <li>• Vacuum technology</li> <li>• Low pressure pneumatics (air sensors and amplifiers)</li> <li>• Emergency Controls (soft start)</li> <li>• Hydraulic feed units</li> <li>• Rotary Index tables, and strip feed units</li> <li>• Practical exercise and typical industrial circuits</li> </ul>
Outcomes	<p>The Participant:</p> <ul style="list-style-type: none"> <li>• can design, assemble and test complex pneumatic systems</li> <li>• can identify and describe the design, features and operation of specific application power section devices and valves</li> <li>• can describe the fundamentals of vacuum generation and applications</li> <li>• can describe the function and applications of low pressure pneumatics</li> <li>• has an understanding of the function of emergency – controls in pneumatic systems</li> </ul>
Requirements	Pneumatic (1) Basic course
Duration	3 days
Order no	12065114
Price	R4 700 (excl. VAT)
Accreditation	NQF - Level 4



Course Title and Venue...	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Pneumatics (3) Advanced	PN122											
Johannesburg					11-13					26-28		
Durban								24-26				
Cape Town							20-22					

# Electro - Pneumatics

<b>PN211</b>	After the course, you will be technically and didactically able to successfully design the electro-pneumatics systems in your company. You will be familiarised with different technologies, identify differences and similarities and be given an opportunity for in-depth discussion.
Target group	Design Engineers, Plant Engineers, Maintenance staff and instructors
Contents	<ul style="list-style-type: none"> <li>• Electrical principles</li> <li>• Electrical and pneumatic symbols and standards</li> <li>• Interaction of electrical control section and pneumatic power section</li> <li>• Function of signal generators (push buttons, switches and relays)</li> <li>• Components of power section control section</li> <li>• Electronic sensors (inductive, capacitive and infrared)</li> <li>• Systematic production and reading of electrical circuit diagrams</li> <li>• Operating modes of electro - pneumatic control systems</li> <li>• Coordinated sequence controls</li> <li>• Fault finding procedures and systematic troubleshooting</li> <li>• Safety regulations and valid standards for electrical engineering and pneumatics</li> <li>• Practical exercises for all circuits "hands-on"</li> <li>• Typical Industrial circuits</li> </ul>
Outcomes	<p>The Participant:</p> <ul style="list-style-type: none"> <li>• can describe the functional relationship between pneumatic and electrical components</li> <li>• can identify and describe the design, features and operation of electro – pneumatic and electrical components</li> <li>• can identify and explain symbols for electro – pneumatic and electrical components</li> <li>• can design, assemble and test an electro – pneumatic circuit</li> <li>• can read and interpret electro – pneumatic circuit diagrams</li> <li>• knows the role of a PLC in automation</li> </ul>
Requirements	Basic knowledge of control technology
Duration	3 days
Order no	12065116
Price	R4 600 (excl. VAT)
Accreditation	NQF - Level 4



Course Title and Venue...	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Electro - Pneumatics PN211												
Johannesburg		16-18		13-15		1-3	27-29		28-30		23-25	
Durban				19-21					21-23			
Cape Town					4-6						30...2	
Port Elizabeth		2-4				1-3					9-11	
Vereeniging						13-15						

# Hydraulics (1) Basic

<b>HY511</b>	This course provides you with an insight into hydraulic hardware technology and its function. You will learn to produce and read circuit diagrams and set the speed, pressure and position for hydraulic drives. As in all courses, practical work is an important component.
Target group	Everyone who has to deal with hydraulic systems in their working environment
Contents	<ul style="list-style-type: none"> <li>• Standards for equipment and circuit diagram representation</li> <li>• Design and function of hydraulic power supply systems</li> <li>• Physical principles</li> <li>• Measurement of volumetric flow rate, pressure and temperature as an aid to troubleshooting</li> <li>• Hardware technology and characteristic data for valves and actuators</li> <li>• Reading and interpreting basic hydraulic circuit diagrams for direction, speed, pressure and position</li> <li>• Basic principles of systematic troubleshooting</li> </ul>
Outcomes	<p>The Participant:</p> <ul style="list-style-type: none"> <li>• is able to name the basic components and their symbols</li> <li>• can explain the physical principles of hydraulics and use them for troubleshooting</li> <li>• knows how the volumetric flow, pressure and temperature are measured in a hydraulic system and what the values mean for evaluation of the system</li> <li>• can design, assemble and test basic hydraulic circuits</li> <li>• can understand, read, and interpret circuit diagrams</li> <li>• can interpret the characteristics data of valves and drive elements</li> </ul>
Requirements	Technical understanding
Duration	3 days
Order no	12065118
Price	R5 700 (excl. VAT)
Accreditation	NQF - Level 3



Course Title and Venue...	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Hydraulics (1) Basic HY511												
Johannesburg		2-4	9-11	13-15	18-20	22-24	27-29	31...2		5-7	9-11	7-9
Durban				6-8			20-22				23-25	
Cape Town				19-21					14-16			
East London							13-15					
Port Elizabeth						13-15					23-25	

## Hydraulics (2) Advanced

### HY521

The in-depth hydraulics training combines hydraulics and electro-hydraulics in order for maintenance staff to extend their technical and methodical knowledge. This enables specific issues relating to maintenance to be dealt with in more detail.

#### Target group

Design Engineers, Plant Engineers, Maintenance staff and instructors

#### Contents

- Standards and safety regulations
- Design and function of hydraulic power supply systems
- Design and function of hydraulic valves for controlling direction, speed, position and force
- Hydraulic drives for linear and rotary movements
- Electric signal control for hydraulic power section with switching solenoid and proportional solenoid interfaces
- Synchronised controls, valve fittings, hydraulic reservoir circuits
- Systematic troubleshooting, damage analysis and weakness elimination
- Intensive practical training involving design of control systems based on circuit diagrams, commissioning and testing

#### Outcomes

The Participant:

- can identify and describe the design, features and operation of electro - hydraulic and electrical components
- can identify and explain symbols for hydraulic, electro - hydraulic and electrical components
- knows the features of special application and piloted valves, special cylinders and hydraulic motors
- can design, assemble and test electro - hydraulic circuits
- can read and interpret hydraulic and electro - hydraulic circuit diagrams
- can apply the principles of systematic troubleshooting to real applications

#### Requirements

Hydraulics (1) Basic or equivalent course

#### Duration

3 days

#### Order no

12065119

#### Price

R5 800 (excl. VAT)

#### Accreditation

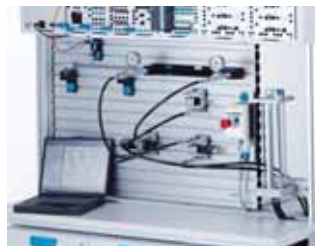
NQF - Level 4



Course Title and Venue...	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Hydraulics (2) Advanced HY521												
Johannesburg		23-25		6-8		1-3		10-12		12-14	30...2	
Durban						29...1						
Cape Town								3-5				

## Hydraulics (3) Proportional

<b>HY132</b>	You will become familiar with the function and actuation of proportional (dynamic) valves and the design of basic circuits in relevant industrial applications. The extensive practical part provides you with an opportunity to design circuits, adjust parameters and gain experience of commissioning and troubleshooting in proportional hydraulic control systems.
Target group	The course is aimed at anyone who is faced with proportional hydraulics in their practical work. The high level of practical relevance makes the course particularly suitable as a supplementary course for instructors.
Contents	<ul style="list-style-type: none"> <li>• Basic principles of proportional hydraulics</li> <li>• Design, function and characteristics data for proportional, directional control, pressure and flow control valves</li> <li>• Generation of target values (analogue and digital)</li> <li>• Adaptation of amplifier electronics to required conditions</li> <li>• Development and interpretation of proportional hydraulic circuit diagrams</li> <li>• Intensive practical training involving design based on circuit diagram and adjusting parameters for optimum commissioning</li> <li>• Instructions for maintenance, troubleshooting and commissioning</li> <li>• Introduction to servo valve technology and control</li> <li>• Proportional valves in open control loop systems, control valves in closed control loops</li> <li>• Current standards and safety regulations for practical operation and exercises</li> </ul>
Outcomes	<p>The Participant:</p> <ul style="list-style-type: none"> <li>• understands the principles of proportional hydraulics</li> <li>• can explain the structure and mode of operation of proportional way, pressure and flow control valves</li> <li>• can interpret the characteristics data of proportional valves</li> <li>• can adapt amplifier electronics to the required conditions</li> <li>• can develop and read proportional hydraulics circuit diagrams</li> <li>• can explain the principles of servo valve technology and controls</li> <li>• can explain the difference between open and closed loop controls</li> <li>• can name current standards and safety regulations for industrial practice</li> </ul>
Requirements	Hydraulics (1) Basic
Duration	3 days
Order no	12221201
Price	R5 900 (excl. VAT)
Accreditation	NQF - Level 5



Course Title and Venue...	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Hydraulics (3) Proportional HY132												
Johannesburg					11-13					26-28		
Durban								3-5				
Cape Town										5-7		

# Hydraulics (4) Maintenance

## HY142

A large percentage of spare parts sold for hydraulic plant and machinery are used to replace defective components. Most of these defects can be traced to improper operation or maintenance. These mistakes and bad practices could cost hydraulic users hundreds of thousands of rands every year. This course will teach your maintenance staff how to avoid this situation and how to reduce the operating cost and increase the uptime of hydraulic equipment.

### Contents

- Hydraulic equipment maintenance - why it's so important
- Maintaining fluid cleanliness
- Maintaining fluid temperature and viscosity within optimum limits
- Maintaining hydraulic system settings to manufacturers' specifications
- Scheduling component change-outs before they fail
- Following the correct commissioning procedures
- Conducting failure analysis
- The true cost of hydraulic fluid leaks
- Fluid contamination and dealing with water in hydraulic fluid
- Troubleshooting basics and how to avoid costly mistakes
- Symptoms of common hydraulic problems and their causes
- Locating internal leakage
- Fundamentals of hydraulic component and cylinder repair

### Outcomes

The Participant:

- can describe how fluid contamination destroys hydraulic components
- can determine an appropriate fluid cleanliness for different types of hydraulic systems
- can achieve and maintain an appropriate fluid cleanliness on a continuous basis
- can identify and rectify abnormal contamination load
- can name the one proactive maintenance routine that will save large sums of money
- will know how to prevent damage to hydraulic systems caused by low fluid viscosity
- can define operating temperature limits based on fluid viscosity values that will maximize component life
- can identify and rectify abnormal heat load
- can identify faulty circuit protection devices - before they cause component failure
- can and will know when to schedule hydraulic component change - outs to minimize operating costs
- will know what to do when installing hydraulic components to avoid cutting short their service life
- can identify and name the causes of common hydraulic problems and how to locate them
- can apply special techniques for troubleshooting simple hydraulic systems
- can recognize and avoid costly troubleshooting mistakes and get the correct diagnosis
- can carry out effective repairs on hydraulic cylinders and components

### Requirements

Hydraulics (1) Basic

### Duration

3 days

### Order no

12230632

### Price

R5 800 (excl. VAT)

### Accreditation

NQF - Level 3



Course Title and Venue...	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Hydraulics (4) Maintenance HY142												
Johannesburg			23-25			13-15		17-19			2-4	
Durban					25-27					19-21		
Cape Town								24-26				

# Mobile Hydraulics

<b>HY152</b>	The know-how needed to design, maintain and operate the mobile hydraulic systems is becoming more important each day. Due to the complexity of the systems compared to industrial hydraulics, the skills needed to maintain and desing require strong mobile hydraulics fundamentals. In this course, you will learn every important detail related to mobile systems, and due to may interesting mobile solutions and circuits, this course also enlarges your perspective of industrial hydraulics.
Target group	Maintenance, Engineering, Trainer
Contents	<ul style="list-style-type: none"> <li>• Hydro static transmission and related components</li> <li>• Steering unit</li> <li>• Working hydraulics</li> <li>• Load holding</li> <li>• Load sensing in constant and variable displacement pumps</li> <li>• Pressure and flow control</li> <li>• Fundamentals of proportional control</li> <li>• Commissioning and maintaining mobile systems</li> </ul>
Outcomes	<p>The Participant:</p> <ul style="list-style-type: none"> <li>• identify the components and explain their functions in a given mobile hydraulic circuit</li> <li>• build and test hydrostatic transmission, working hydraulics and steering circuits</li> <li>• explain load sensing functions and other efficiency components</li> <li>• make adjustments for the required control parameters of mobile hydraulics</li> <li>• measure the required parameters in a mobile hydraulic circuit</li> <li>• systematically troubleshoot and explain maintenance procedures</li> <li>• explain the safety measures in mobile equipments</li> </ul>
Prerequisites	Hydraulics (1) Basic
Duration	3 days
Order no	573359
Price	R5 700 (excl. VAT)
Accreditation	NQF - Level 3



Course Title and Venue...	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Mobile Hydraulics	HY152											
Johannesburg							6-8					

# Programmable Logic Controllers

## Introduction - FST

<b>PLC111</b>	Not every industrial application demands a complex PLC. A few inputs and outputs are often sufficient to automate a simple application quickly and reliably. The small and simple PLC - the FEC - has an equally uncomplicated programming language - FST - which can quickly be learned. After the event, participants can create accurate and clear programs.
Target group	Design Engineers, Plant Engineers, Programmers, Maintenance staff and instructors
Contents	<ul style="list-style-type: none"> <li>• Basic design and control of FECs</li> <li>• Input and output properties</li> <li>• Hardware and software familiarization</li> <li>• Programming languages for FST software: Statement List and Ladder</li> <li>• Basic command set for FEC's</li> <li>• Creating, loading and testing industry related an sequence programs</li> <li>• Creating time delay and counter functions</li> <li>• Program editing</li> <li>• Fault analysis</li> </ul>
Outcomes	<p>The Participant:</p> <ul style="list-style-type: none"> <li>• can read out and create hardware configurations</li> <li>• can create logic associations and sequences as PLC programs and commission these</li> <li>• can implement modes such as Automatic, Manual, and EMERGENCY STOP</li> <li>• can combine various program modules to structured programs</li> <li>• can identify and eliminate faults using the status display</li> <li>• can identify reasons for machine stoppages with the aid of the PLC program</li> </ul>
Requirements	<p>a) Pneumatics (1) Basic  b) Electro - Pneumatics &amp; experience in operating a PC with a Windows interface</p>
Duration	3 days
Order no	12065117
Price	R4 500 (excl. VAT)
Accreditation	NQF - Level 3



Course Title and Venue...	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
PLC Introduction FST PLC111												
Johannesburg		9-11			25-27			24-26			16-18	
Durban								31...2				
Cape Town							6-8					
Port Elizabeth						8-10					16-18	

# Programmable Logic Controllers

## CoDeSys: The standard in IEC 61131-3 controller and PLC programming

<b>PLC282</b>	CoDeSys (Controller Development System) is a comprehensive software tool for industrial automation technology. Basically it consists of two parts: the programming system CoDeSys and the runtime CoDeSys Control. The runtime system turns any intelligent automation device into an IEC 61131-3 controller programmable with CoDeSys. Integrated compilers make sure that the program code is processed at optimal speed.
Target group	Design Engineers, Plant Engineers, Programmers, Maintenance Staff and Instructors
Contents	<ul style="list-style-type: none"> <li>• Basic design and control of CoDeSys</li> <li>• Hardware Configuration</li> <li>• Wiring inputs and outputs</li> <li>• Local and Global addressing of variables</li> <li>• Programming languages for CoDeSys: LD, FBD, ST, IL, SFC, CFC</li> <li>• Timers and Counters functions</li> <li>• Formulate, download and testing of industry related sequence programs</li> </ul>
Outcomes	<p>The Participant:</p> <ul style="list-style-type: none"> <li>• can configure and commission a CoDeSys controller</li> <li>• can build and test hydrostatic transmission, working hydraulics and steering circuits</li> <li>• can create hardware configurations</li> <li>• can create and commission PLC programs with logic associations and sequences</li> <li>• can understand and create program structures</li> <li>• can combine various program modules into structured programs</li> </ul>
Requirements	<p>(a) Pneumatics (1) Basic            (b) Electro- Pneumatics &amp; experience in operating a PC with a windows interface</p>
Duration	3 days
Order no	570612
Price	R4 500 (excl. VAT)
Accreditation	NQF - Level 3



Course Title and Venue...	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
PLC CoDeSys PLC271												
Johannesburg			23-25						21-23			
Durban											16-18	
Cape Town									7-9			

# Programmable Logic Controllers

## Siemens – SIMATIC S7 Maintenance Part 1 (ST-7SERV1)

<b>PLC211</b>	This course is directed at users and maintenance personnel of SIMATIC S7 programmable controllers. You will learn the structure and mode of operation of the Simatic S7 as well as how to create simple logic association and sequence programs. A key element of the course is applying the programming terminology into practise, taking into account the various interfaces between the individual technologies, such as mechanics, electrics, pneumatics, sensors, and the PLC.
Target group	Maintenance, Engineering, Trainer
Contents	<ul style="list-style-type: none"> <li>• The Simatic Step 7 system family</li> <li>• STEP 7 installation techniques</li> <li>• PLC installation and wiring techniques</li> <li>• Hardware handling</li> <li>• From process to project – the SIMATIC Manager</li> <li>• Hardware configuration and addressing of signal modules</li> <li>• CPU properties</li> <li>• Symbolic notation and symbols table</li> <li>• LAD / FBD / STL programming languages</li> <li>• Commissioning and monitoring / modifying variables</li> <li>• Linear / structured programming techniques</li> <li>• Debugging a program</li> <li>• Binary operations and gates</li> <li>• Flip flops</li> <li>• Edge detection</li> <li>• Number formats, load and transfer operations</li> <li>• Counters and timers</li> <li>• Rewiring of programs</li> <li>• Documentation functions, saving and archiving</li> <li>• Copying a program to a memory card</li> </ul>
Outcomes	<p>The Participant:</p> <ul style="list-style-type: none"> <li>• can configure and commission a Simatic S7 controller</li> <li>• can create, read out and change hardware configurations</li> <li>• can create and commission PLC programs with logic associations and sequences</li> <li>• can combine various program modules into structured programs</li> <li>• can find and eliminate faults and errors using the diagnostic buffer and status display</li> </ul>
Prerequisites	Involvement in PLC maintenance
Duration	4 days
Order no	559381
Price	R8 050 (excl. VAT)
Accreditation	Siemens Accredited, NQF - Level 3 Siemens Certificate issued



Course Title and Venue...	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
PLC Siemens ST-7SERV1 PLC211												
Johannesburg		15-18			17-20			2-5			1-4	
Durban							12-15					
Cape Town										11-14		

# Programmable Logic Controllers

## Siemens – SIMATIC S7 Maintenance Part 2 (ST-7SERV2)

<b>PLC222</b>	This course provides the fault-finding techniques required for maintenance and in-depth exercises with standard libraries for those wanting to handle organisation and data blocks, documentation, networking and analog as well as sequence control. This course focuses on the process to be automated. The material in this seminar will allow you to implement and maintain your automation solutions with the Simatic S7.
<b>Target group</b>	Maintenance, Engineering, Trainer
<b>Contents</b>	<ul style="list-style-type: none"> <li>• Hardware commissioning</li> <li>• Memory reset</li> <li>• Variable tables</li> <li>• Modifying outputs in STOP state</li> <li>• STEP 7 project structure</li> <li>• Cyclic and sequential program execution</li> <li>• DB Data storage in data blocks</li> <li>• Complex data types</li> <li>• FB Functions and function blocks</li> <li>• Multiple instance model</li> <li>• Trouble shooting</li> <li>• B, I, L stack handling</li> <li>• Cross reference</li> <li>• Break points in a proAgram</li> <li>• OB Organisation blocks</li> <li>• Analog processing</li> <li>• Documentation and printing</li> <li>• Archiving a project</li> <li>• Communication via MPI</li> <li>• Totally Integrated Automation, examples of programming methods</li> </ul>
<b>Outcomes</b>	<p>The Participant:</p> <ul style="list-style-type: none"> <li>• can understand and create complex program structures</li> <li>• can find errors in complex programs quickly and efficiently</li> <li>• can establish the reasons for machine stoppages with the aid of the PLC program</li> <li>• can make changes and additions to programs developed by others</li> </ul>
<b>Prerequisites</b>	Successful completion of S7 Maintenance Part 1 (ST-7SERV1)
<b>Duration</b>	4 days
<b>Order no</b>	559383
<b>Price</b>	R8 050 (excl. VAT)
<b>Accreditation</b>	Siemens Accredited, NQF - Level 4 Siemens Certificate issued



Course Title and Venue...	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
PLC Siemens ST-7SERV2 PLC222												
Johannesburg			15-18						13-16			
Durban									27-30			
Cape Town											22-25	

# Programmable Logic Controllers

## Siemens – SIMATIC S7 Analog and PID Control (ST-7PID)

PA 201	This course will enable service and commissioning personnel to work with analog signals and effectively optimise plant loops. In this course you will master the principles of automatic process control using the Simatic S7 PLC and the operation of the feedback loop to include proportional, integral and derivative control modes. Also advanced concepts of cascade, ratio and feed forward control. You will also learn and practice controller tuning methods and get an overview of drawings used in industry.
Target group	Maintenance, Engineering, Trainer, Instrumentation
Contents	<ul style="list-style-type: none"> <li>• Fundamentals of analog value processing</li> <li>• Fundamental concepts of closed-loop control</li> <li>• Optimising criteria</li> <li>• Controller selection</li> <li>• PID algorithm for digital control</li> <li>• Continuous, quasi-continuous and discontinuous control</li> <li>• Multi-loop control</li> <li>• Hands-on exercises</li> <li>• Flow, level, temperature, pressure loops</li> </ul>
Outcomes	<p><b>The Participant:</b></p> <ul style="list-style-type: none"> <li>• can perform analog PLC programming</li> <li>• can commission a basic open loop, and closed-loop system</li> <li>• can read and design technical drawings for process technology</li> <li>• can operate, identify and analyze a control system</li> <li>• can identify the fundamentals of closed loop control technology</li> <li>• can operate a control system with a P.I.D controller</li> <li>• can choose the correct loop tuning method</li> </ul>
Requirements	Successful completion of S7-7SERV2 or ST-7PRO1 courses
Duration	4 days
Order no	12221243
Price	R9 350 (excl. VAT)
Accreditation	Siemens Accredited, NQF - Level 5 Siemens Certificate issued



Course Title and Venue...	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
PLC Siemens ST-7PID PA201												
Johannesburg			2-4		25-27			17-19				7-9

# Principles of Industrial Measurement, Control, Instrumentation and Process Valves

<b>PA211</b>	Process control is a unique part of industry that deals with the measuring and controlling of variables that influence materials and equipment during the development of a product. This course describes the working principles of these instruments that are used to do the measuring and controlling.
Target group	Everyone who has to deal with Instrumentation in their working environment.
Contents	<ul style="list-style-type: none"> <li>• Basic principles of pressure, level, flow and temperature measurement</li> <li>• Calibration of measuring instruments</li> <li>• Control valves</li> <li>• Instrumentation Drawings and Symbols</li> </ul>
Outcomes	<p>The Participant:</p> <ul style="list-style-type: none"> <li>• can identify and explain the working principles of process measuring instruments</li> <li>• can identify control valves used for various applications</li> <li>• can read and identify piping and instrumentation drawings</li> </ul>
Requirements	Basic knowledge of electricity
Duration	3 days
Order no	12217003
Price	R4 500 (excl. VAT)
Accreditation	NQF - Level 3



Course Title and Venue...	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Process (1) Instrumentation PA211												
Johannesburg		10-12			19-21			11-13			17-19	
Durban						9-11						
Cape Town							7-9					

# Servo and Stepper Drives - Basic

<b>ED811</b> (E831)	The increasing use of these servo drives in industry has led to a skills gap that can have a negative impact on productivity. If you are a user of conventional pneumatic drive technology, this course provides you with the knowledge and skills to master the basics of electrical servo drives.
Target group	Maintenance, Design/Engineering, Trainer
Contents	<ul style="list-style-type: none"> <li>• Fundamentals of electrical drives</li> <li>• Encoders (absolute, incremental, resolver)</li> <li>• Motors (asynchronous, synchronous, AC servo, DC, stepper)</li> <li>• Controllers, motion profiles, positioning drives</li> </ul>
Outcomes	<p>The Participant:</p> <ul style="list-style-type: none"> <li>• can differentiate controlling a stepper motor and a servo motor</li> <li>• knows the criteria for selecting a drive</li> <li>• can commission an E-drive system</li> <li>• knows the components required for an E-drive system and how to fulfil EMC requirements</li> <li>• can use the configuration software</li> <li>• can assemble, power up and configure a system</li> <li>• can select the most appropriate drive for given application</li> <li>• can identify and eliminate faults and can interpret error messages</li> <li>• can work safely with an E-drive</li> </ul>
Requirements	Basic knowledge of electricity
Duration	3 days
Order no	562553
Price	R4 500 (excl. VAT)
Accreditation	NQF - Level 3



Course Title and Venue...	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Servo and Stepper Drives ED811												
Johannesburg			30...1									
Durban								10-12				
Cape Town						29...1						

# Mechatronics Systems

<b>AUT211</b>	<p>Planning, assembly, programming, commissioning operation, maintenance and troubleshooting of production systems are taught at various levels of complexity:-</p> <ul style="list-style-type: none"> <li>- With innovative technology</li> <li>- With systematic use of industrial components</li> <li>- In close cooperation with market leaders in automation</li> </ul>
Target group	Design Engineers, Plant Engineers, Programmers, Maintenance staff and instructors
Contents	<ul style="list-style-type: none"> <li>• Basic design of a mechatronic control system, incl. pneumatics, mechanics, electrics</li> <li>• Input and output module tasks</li> <li>• The three programming languages: FCH, LDR and STL</li> <li>• Basic command set for PLC</li> <li>• Creating, loading and testing simple programs</li> <li>• Using the status display, fault-finding</li> <li>• Signal storage</li> <li>• PLC timer</li> <li>• Archiving and dearchiving PLC programs</li> </ul>
Outcomes	<p>The Participant:</p> <ul style="list-style-type: none"> <li>• can identify and describe the operation of pneumatic, electro-pneumatic, electrical and PLC components and sensors</li> <li>• can assemble, and test basic mechatronic circuits (pneumatics, electrical, and software)</li> <li>• recognizes and can differentiate between the different types of programming used in industry</li> <li>• can download a program and commission a PLC control system</li> <li>• can troubleshoot basic mechatronic systems</li> </ul>
Requirements	We recommend a basic knowledge of PLC and pneumatic control technology. Participants should also be familiar with operating a PC with a Windows interface
Duration	4 days
Order no	12064186
Price	R4 600 (excl. VAT)
Accreditation	NQF - Level 5



Course Title and Venue...	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Mechatronics (1) Systems AUT211												
Johannesburg			23-26			8-11		31...3			23-26	
Durban								24-27				
Cape Town					4-7							

# Organisation



An excellent company

We know what makes an excellent company: A focus on customer satisfaction, corporate and quality strategy, employee satisfaction, efficient processes, responsible and target-oriented employee management, job-oriented qualification, positive business results and a positive impact on society.

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# Introduction to Lean Production and Value Stream Mapping - A Business Simulation Game

<b>LP111</b>	Taking the form of a strategy game, this training gives you a holistic view of material and information flows within a company and sensitises you to different types of waste in processes. You learn to analyse the causes of delivery problems and low productivity and to develop and implement ideas for meeting customer needs and improving processes. The main goal is to instill lean thinking in your company. The strategy game provides practical experience for all employees involved in lean production projects.
Target group	Maintenance, Design/Engineering, Trainer, Management
Contents	<ul style="list-style-type: none"> <li>• Inventory minimisation as an important basis for increased productivity</li> <li>• The principle of pull production control</li> <li>• Advantages compared to conventional production control methods</li> <li>• Types and function of different pull production control methods</li> <li>• Application of methods</li> <li>• Kanban - the classic pull principle</li> <li>• SMED - Optimisation of setup processes with Single Minute Exchange of Die</li> <li>• CIP processes as part of the business game</li> <li>• Introduction to Value Stream Mapping (VSM)</li> </ul>
Outcomes	<p>The Participant:</p> <ul style="list-style-type: none"> <li>• can analyse the causes of delivery problems and low productivity</li> <li>• can develop and implement ideas for meeting customer requirements and process improvements</li> </ul>
Requirements	Some experience in production control
Duration	2 days
Order no	561209
Price	R3 100 (excl. VAT)
Accreditation	NQF - Level 5



Course Title and Venue...	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Lean Production Game LP121												
Johannesburg						6-7					7-8	

# Maintenance Strategies and Total Productive Maintenance

<b>LP141</b>	This course provides service technicians with an overview of commonly used maintenance strategies, compares these based on different requirements and thus provides you with a basis for making maintenance decisions to maximize availability in your own company.
Target group	Maintenance, Design/Engineering, Trainer, Management
Contents	<ul style="list-style-type: none"> <li>• Production systems and their influence on maintenance</li> <li>• Six typical types of machine and system loss</li> <li>• Roles and self-image in maintenance</li> <li>• Organizational structures for maintenance</li> <li>• Comparison of maintenance strategies:                             <ul style="list-style-type: none"> <li>- Event-oriented maintenance</li> <li>- Routine maintenance</li> <li>- Total Productive Maintenance (TPM)</li> <li>- Reliability-Centered Maintenance (RBM)</li> <li>- Risk-Based Maintenance (RBM)</li> </ul> </li> <li>• Data for recording maintenance performance</li> <li>• Examples and practical exercises</li> </ul>
Outcomes	<p>The Participant:</p> <ul style="list-style-type: none"> <li>• can establish sources of loss on machines and systems</li> <li>• sees maintenance as a service provider for production</li> <li>• can evaluate various maintenance strategies and select the appropriate one for the company or various machines</li> <li>• can implement the company's maintenance strategies</li> <li>• can select and collect data for recording maintenance performance</li> </ul>
Requirements	Experience in maintenance
Duration	2 days
Order no	559428
Price	R3 100 (excl. VAT)
Accreditation	NQF - Level 4



Course Title and Venue...	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Maintenance Strategies TPM LP141												
Johannesburg		7-8							5-6			

# Learning Systems

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- Electrical Machines
- Motor Technology Contractor Set
- Electrical Installations
- Power Supply Systems and Protective Measures
- Servo Motor Drive Technology
- Stepper Motor Drive Technology
- Sensor technology
- Automation technology
- PLC technology
- Microcontrollers

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- Monitoring of learning progress

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### Technology and management:

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- Electropneumatics
- Hydraulics
- Electrohydraulics
- Electrical engineering
- Electronics
- Sensor technology
- Actuators – DC motor
- Open- and closed-loop control
- LOGO! Training
- Fieldbus technology
- GRAFCET
- Machine vision
- Safety engineering
- Process automation

### Organisation:

- Project management
- Time management
- Internet search
- Value stream analysis and mapping
- Poka Yoke
- 5S – Workstation organisation

### People:

- Customer orientation
- Team performance
- Personnel management

### Management system

Classroom Manager

# General Conditions for Booking and Participation

We want booking a course to be easy and trouble-free for you. Attending a course should bring the participant the maximum possible benefit.

We want to be an excellent provider of qualification activities for you. Below you will find a brief outline of how we go about this.



Book direct through e-mail: [helen\\_pretorius@festo.com](mailto:helen_pretorius@festo.com) and [sammy\\_kanye@festo.com](mailto:sammy_kanye@festo.com)

Consultation and registration	Withdrawal	Fees
<p>Make sure of your place on a course by registering as early as possible. The number of places is limited and registrations are dealt with on a first-come, first-served basis. However, if a course is oversubscribed, we make every effort to offer you a suitable alternative date. Our lines are open for telephone enquiries from Monday to Friday, 8.00 to 17.00.</p>	<p>If there are any changes in your company, you can always specify an alternative participant. However, we ask you to notify us of any cancellations at least 5 days before the beginning of the course.</p>	<p>The course prices are exclusive of VAT at the statutory rate and, unless otherwise specified, include the course fees, course documents, meals and drinks during the event.</p>
Order confirmation	<ul style="list-style-type: none"> <li>- Cancellation with full refund only granted if written notification is given 5 working days before commencement of course.</li> <li>- Fees are not refundable for non-attendance or non-timeous cancellation.</li> <li>- However, 50% of the course fee will be credited against attendance within 3 months for the same course</li> <li>- This 50% credit will be forfeited for any further cancellations of the same course.</li> </ul>	<p>Liability</p> <p>We shall only be liable for damage caused deliberately or by gross negligence on the part of our employees. Any other liability is excluded.</p>
<p>We will send a written confirmation of your course booking for your records.</p>		<p>Copyright</p> <p>Reproduction of course documents for non-approved purposes, distribution, sale or communication of their content to third parties is not permitted. The software used for exercises during the courses may not be copied or removed from the course location. Participants are not permitted to transfer their own software.</p>
Cancellation		
<p>We reserve the right to change the location and/or time of events or to cancel them.</p>		

### Trainers

Festo Didactic trainers are trained in education and didactic methods. They maintain a constant practical context as they are involved in technical consulting and supporting customer projects in addition to the courses.

### Course documents

Extensive course documents provide an indispensable practical reference work.

### Catering

The course fees include the course documents, lunch, snacks and drinks during the breaks.

### Certification

A certificate recognised in the industry is awarded for successful completion of a course.

### Venue and course times

Courses are held at Festo Didactic's own modern fully equipped lecture rooms in all major cities.  
3 Day courses 08h00 - 16h00

### How to find us

Festo Didactic Training and Consulting  
22 Electron Ave  
Isando  
1600  
Tel: 011 971 5586  
Fax: 011 974 9020  
E-mail:  
helen\_pretorius@festo.com

Should you require a detailed map please contact our service line

### Consulting

Our customer advisors will be pleased to assist you with any questions on content, locations, dates and also hotel reservations.

Simply call Festo Didactic  
011 971 5586

**All courses are outcomes based.  
Festo Didactic is fully accredited by the Merseta.**



**merSETA**

MANUFACTURING, ENGINEERING  
AND RELATED SERVICES SETA

Please copy and fax this form to:

Festo Didactic  
Training and Consulting  
P.O. Box 255  
Isando  
1600

## Seminar registration

Tel No: 011 971-5586/5500  
Fax No: 011 974-9020  
Service Line: 0860 033 786  
(Free of charge)

We would like to register for the following seminars:

Seminar \_\_\_\_\_

Date \_\_\_\_\_

Location \_\_\_\_\_

**Participants** \_\_\_\_\_

Seminar \_\_\_\_\_

Date \_\_\_\_\_

Location \_\_\_\_\_

**Participants** \_\_\_\_\_

Seminar \_\_\_\_\_

Date \_\_\_\_\_

Location \_\_\_\_\_

**Participants** \_\_\_\_\_

Contact person \_\_\_\_\_

Telephone/fax \_\_\_\_\_

Company/department \_\_\_\_\_

Address \_\_\_\_\_

E-mail \_\_\_\_\_

Invoice address \_\_\_\_\_

Method of payment (see planner for course prices) \*VAT amount subject to legislation

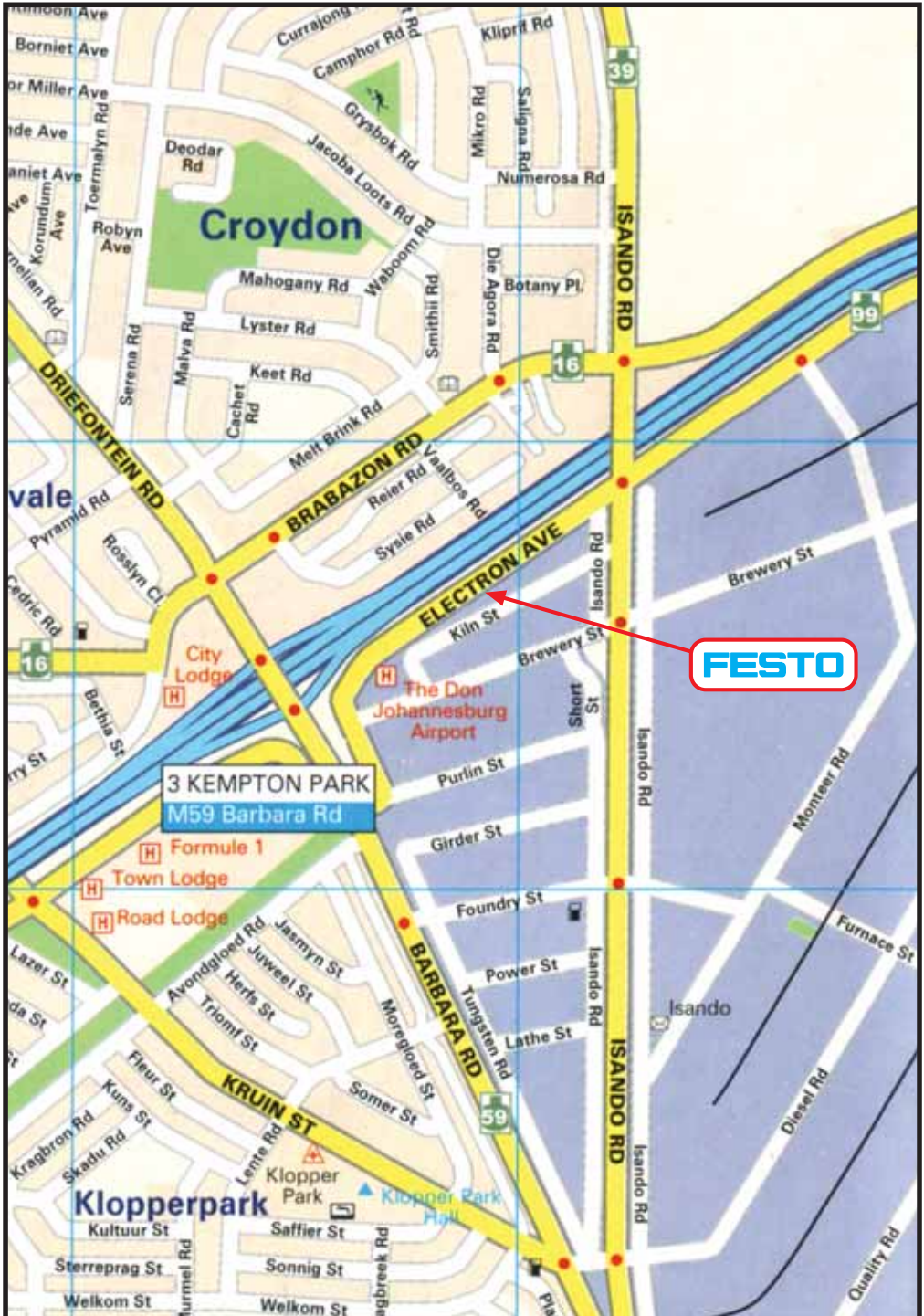
I enclose a cheque made payable to FESTO (PTY) LTD for the amount of R \_\_\_\_\_

I am supplying an official order number \_\_\_\_\_

Full payment to be received before course commencement unless an Order Number provided.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_ / \_\_\_\_\_ 2011

NOTE: We will confirm your booking by tel or by fax / email.



**FESTO**

**3 KEMPTON PARK**  
**M59 Barbara Rd**

# Festo South Africa

## Johannesburg

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22-26 Electron Avenue, Isando  
☒255, Isando, 1600  
☎(011) 971-5500/5586  
FAX (011) 974-9020  
E-Mail:didactic@festo.co.za  
Service Line: 0860 033 786  
(free of charge)

## Durban

21 Buro Centre  
55-57 Buro Crescent  
Mayville  
☒30060, Mayville, 4058  
☎(031) 208-9116/7/8/9  
FAX (031) 209-4646

## Pretoria

Unit B11  
Scientia Technopark  
Meiring Naude Road  
Brumeria  
Postnet Suite  
☒X025  
Lynnwood Ridge, 0040  
☎(012) 349-2510  
FAX (012) 349-1104

## Cape Town

Mutual Industrial Park  
(NO. F2) Voortrekker Road  
(between 12th Ave & 14th  
Ave) Maitland  
☒101 Maitland, 7405  
☎(021) 593-8605/6/7/8  
FAX (021) 593-4482

## Vereeniging

25B Telford Street  
Duncanville, Vereeniging  
☒1016, Vereeniging, 1983  
☎(016) 422-1114  
(016) 421-4389  
FAX (016) 421-3456

## East London

17 Pontoon Road, Central  
East London  
☒7387, East London, 5200  
☎(043) 731-2095/6  
FAX (043) 731-2094

## Bloemfontein

26 McGregor Street, Shop  
9 Old East End,  
Bloemfontein  
☒20121, Willows, 9320  
☎(051) 448-0245  
FAX (051) 448-3907

## Port Elizabeth

25 Lindsay Road, Korsten,  
Port Elizabeth  
☒14002, Sidwell, 6061  
☎(041) 453-2087/8  
FAX (041) 451-2517

## Pietermaritzburg

39 Victoria Road  
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☒11600, Dorpspruit, 3206  
☎(033) 342-5720/22  
FAX (033) 342-7251