PLATINUM

ENGINEERING SKILLS TRAINING CENTRE (ESTC)

Prospectus

2015

Anglo American Platinum – Engineering Skills Training Centre (ESTC)
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ANGLO AMERICAN PLATINUM LIMITED

Engineering Skills Training Centre (ESTC)

1. ABOUT US

The Engineering Skills Training Centre (ESTC) was established in 1984 and is situated in Randfontein. The growing demand for qualified artisans in the economy prompted ESTC to open its training facility to the all sectors and individuals with the relevant entry level qualifications.

The centre provides engineering skills training for Stope Servicemen, Learnerships, Apprenticeships; Short Courses, Foremen Development, Planned Maintenance and various specialised short courses.

ESTC committed to safety and quality training is demonstrated by its nationally accepted accreditations.

2. ACCREDITATIONS AND CERTIFICATION

- Accredited training provider by the Mining Qualifications Authority (MQA)
- Programme approval with Manufacturing Engineering Sector Training Authority (MerSETA)
- Decentralised Trade Test Centre
- Institute Of Sectoral and Occupational Excellence (ISOE)
- ISO 9001:2008 certified
- Lexis & Nexis Safety Certification

3. VISION/MISSION

Vision: To become the leading Provider of Engineering Skills training in our region

Mission: ESTC is committed to consistently provide and improve quality learning delivery. We are committed to achieve zero harm through effective management of safety.

4. LEARNERHIPS AND SKILLS PROGRAMMES

LEARNERSHIPS

&

SKILLS

PROGRAMMES

ESTC ENGINEERING TRAINING SERVICES

4.1 Learnerships/ Qualifications:

Entry Requirements:

- Grade 12 with at Least 40% in English, Mathematics and Physical Science;
- N2 with four (4) Subjects relevant to the trade.
- NCV 3 with at least 40% in Mathematics (not Mathematics Literacy) and all other subjects.

Successful candidates will take part in a Learnership programme leading to a selected Qualification and qualified Artisan.

The following Learnership programmes are offered:

- Automotive Electrician
- National Certificate: Electrical L4
- National Certificate: Millwright L4
- National Certificate: Instrument Mechanician L4
- National Certificate: Plater/Welder L3
- National Certificate: Fitting & Turning L3
- National Certificate: Fitting (Including Machining) L3
- National Certificate: Plater/Boilermaker L3
- National Certificate: Diesel Mechanic L3
- National Certificate: Rigger Ropesman L3
- National Certificate: Mechanical Engineering L2
- National Certificate: Engineering Fabrication L2
- National Certificate: Electrical Engineering L2
- Engineering Hard Rock Metalliferous – Stoping and Developing Level 2 (NQF Level 2)

4.1.1 Trade Test Requirements

4.2 Skills Programmes:

MQA Artisan Aide Level 2 – All disciplines (Skills Programme)

Entry Requirements:

- Candidates embarking on learning towards this skills programme have ABET 4/NQF Level 1 or Grade 9 with English and mathematics or equivalent.
- Learners must have knowledge and understanding of Hazard and Risk assessment as prescribed by the MHSA

This MQA Accredited skills programme may be the ideal platform for obtaining credits towards the National Certificate in Engineering (NQF Level 2) and other engineering apprenticeship qualifications or related sub-fields.

The following Skills Programmes are offered at ESTC:

- Fitting including Machining – MQA/SP/0140/13
- Diesel Mechanic - MQA/SP/0141/13
- Plater/ Welder - MQA/SP/0142/13
- Measurement Control & Instrumentation - MQA/SP/0143/13
- Rigger Ropesman - MQA/SP/0144/13
- Electrical - MQA/SP/0145/13

4.3 Learnership/ Skills Programme Training Schedule for 2015

OLD TRAINING WAY				
Training Phase	**Duration**	**Trimester 1**	**Trimester 2**	**Trimester 3**
Phase 1 Training	75 Days	05 Jan – 24 Apr 2015	04 May – 14 Aug 2015	24 Aug – 05 Dec 2015
Phase 4 Training	75 Days	05 Jan – 24 Apr 2015	04 May – 14 Aug 2015	24 Aug – 05 Dec 2015
Phase 6 & Trade Test	75 Days	05 Jan – 24 Apr 2015	04 May – 14 Aug 2015	24 Aug – 05 Dec 2015
Stoping & Developing L 2	90 Days	05 Jan – 08 May 2015	04 May – 04 Sep 2015	24 Aug – 05 Dec 2015
MQA Artisan Aide L 2	90 Days	**On Request and Approval only!**		
Planned Maintenance	30 Days	12 Jan-20 Feb 2015	11 May – 19 Jun 2015	31 Aug – 09 Oct 2015

NEW TRAINING WAY			
Training Phase	**Duration**	**Semester 1**	**Semester 2**
Basic Training	115 Days	05Jan – 12 June 2015	29 June – 04 Dec 2015
Advanced Training	100 Days	05 Jan – 22 May 2015	29 June – 13 Nov 2015
Preparation & T/Test	30 Days	05 Jan – 13 Feb 2015 23 Feb – 02 Apr 2015 13 Apr – 22 May 2015	22 June – 31 July 2015 11 Aug – 09 Oct 2015 12 Oct – 20 Nov 2015

ENGINEERING TRADES						
ELECTRICAL	**MC & I**	**RIGGING**	**DIESEL MECHANIC**	**PLATING/ BOILERMAKING**	**FITTING**	**AUTOMOTIVE ELECTRICIAN**
• Baseline Risk Assessment • Basic Electricity • Motor Theory • Domestic & Panel wiring • Single & three phase circuits • Transformers • Cables • Fault finding • Motor starters • DC Machines • Electronics • Installation Tests • Energy Meters • Plc's • Electrical Protection • Medium Voltage	• Baseline Risk Assessment • Pressure • Flow • Level • Temperature • 2 & 3 term controllers • Electronics • Plc's • Networking	• Baseline Risk Assessment • Rigging Skills • Identify and use various types of ropes • Splicing • Inspection of ropes and equipment • Prepare hoist rope test specimen • Inspect a safety detachment hook • Erect a temporary platform/scaffold • Lift and move loads using various methods and equipment	• Baseline Risk Assessment • Introduction to basic Diesel • Transmission of gearboxes • Wheel alignment • Diesel maintenance • Pneumatics • Hydraulics	• Baseline Risk Assessment • Oxy-Acetylene cutting & welding • Grinding and tempering • Arc welding • Plate forming • Pipe developing & fabrication • Contour marking • MIG & TIG welding	• Baseline Risk Assessment • Introduction to Basic Fitting • Bearings • Turning • Milling • Pneumatics • hydraulics	• Baseline Risk Assessment • Stators • Alternators • Batteries • Electrical wiring • Generators • Solenoids • Plc's • Auto Electrical circuits • Armatures • Rectifiers • Rotors • Regulators •

5. SPECIALIZED SHORT COURSES

SPECIALISED SHORT COURSES

SPECIALIZED SKILLS TRAINING (FACILITATED BY OUTSIDE CONSULTANTS)						
TRAINING PROGRAMME (NAME)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
Legal Knowledge Coaching Foreman (Part A)	Qualified artisan	• Artisans • Foremen • Junior Engineers	4 Days	Prepare candidates for Mine Health and Safety Act Exam	• Interpret and understand • Duties imposed by Mine Health and Safety Act - Part A.	**ADC** 07,14,21,28/02/2015 25/07, 1, 15, 22/08/2015 **This is done on Saturdays** **Edupark** 09-12/02/2015 21-24/07/ 2015
Engineering Standards Coaching Foreman (Part B)	Qualified artisan	• Artisans • Foremen • Junior Engineers	4 Days	Prepare candidates for Mine Standard Exam	• Interpret and understand • Duties imposed by Group Engineering Standards - Part B	**ADC** 07,14,28/03/,11/04/ 2015 29/08, 05,12,19/09/2015 **This is done on Saturdays** **Edupark** 16-19/03/2015 07-10/09/2015
Full time revision (Part A and Part B)	Qualified artisan	• Artisans • Foremen • Junior Engineers	4 Days	Prepare candidates for Mines health safety Exam Prepare candidates for Mine Standard Exam	• Interpret and understand • Duties imposed by Mine Health and Safety Act - Part A. • Duties imposed by Group Engineering Standards - Part B	**ADC** 18/04,,09,16,23/05/2015 03,10,17,24/10/2015 **Edupark** 04-07/05/2015 05- 08/10/2015
Examination (Part A and B)	Qualified artisan	• Artisans • Foremen • Junior Engineers	1 Days	Determine if candidates prepared for Mine Health and Safety Act and Group Engineering Standards Exam.	• Competency determined by written examination.	05/06/2015 06/11/2015

SPECIALIZED SKILLS TRAINING (FACILITATED BY OUTSIDE CONSULTANTS)						
TRAINING PROGRAMME (NAME)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
Conveyor Belt Theory and Repair Techniques	Qualified artisan	• Artisans • Foremen • Junior Engineers	3 Days	Understanding the theory of conveyor belts. Splice a belt	• Understand the basic theory of material handling using conveyor belts • Identify types of conveyor belts and construction materials • Identify various applications for belt types • Store, handle and install conveyor belts • Appreciate costs of damages to conveyor belts • Understand splicing methods	08-10/04/2015 15-17/07/2015 28-30/10/2015
Lubrication and Filtration	Qualified artisan	• Artisans • Foremen • Junior Engineers •	3 Days	Understand basic additives in lubricants Understand grease types Understand key lubricant Understand lubrication fundamentals	• Store and handle filters • Identify minerals vs. synthetic oils • Lubricate compressors • Lubricate internal combustion engines • Lubricate anti-friction bearings • Lubricate gears • Lubricate plain bearing	04-06/02/2015 06-08/05/2015 12-14/08/2015 04-06/11/2015

SPECIALIZED SKILLS TRAINING (FACILITATED BY OUTSIDE CONSULTANTS)						
TRAINING PROGRAMME (NAME)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
Specialized Steel Rope Theory (Specific for EIT's)	Junior Engineer	• Junior Engineers • Engineers	3 Days	Identify types of steel wire ropes Understand safety aspects when dealing with steel wire ropes	• Test steel wire ropes • Discuss rigging configuration and safe rigging practices • Identify reasons for premature failure of steel wire ropes • Lubricate steel wire ropes • Understand maintenance of steel wire ropes (shafts/drag lines) • Discuss grades of steel used in the construction of steel wire ropes • Understand how different steel wire rope types are produced • Identify construction and applications of steel wire rope	09-11/03/2015 11-13/05/2015 17-19/08/2015 12-14/10/2015
Water Treatment Technology	Qualified artisan	• Artisans • Foremen • Junior Engineers	1 Days	Understand the effect of contaminants on pump life Identify filtration and purification methods Understand methods of chemical addition	• Methods of chemical addition • Safety aspects of chemicals including storage • Pumping contaminated water • Methods to purify water • Identifying water treatment terminology	10/04/2015 10/07/2015 16/10/2015

SPECIALIZED SKILLS TRAINING (FACILITATED BY OUTSIDE CONSULTANTS						
TRAINING PROGRAMME (NAME)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
Gas Safety Seminar	Qualified artisan	• Artisans • Foremen • Junior Engineers	4 Days	The participant will be able to apply the basic principles to: Handling of gas cutting and welding equipment	• Gauge less regulators – pressures settings incorrect • Misuse of gas equipment • Live demonstrations on approved gas safety devices • Contamination of multistage and single stage regulators • LPG regulator installed on acetylene cylinder – working pressures excessive • Flashbacks" on old and worn equipment • Damaged bullnose on regulator caused by dropping – leaking gas causing explosion and bodily harm and damage to property • Lubrication used on gas equipment – chemical reaction	02-05/02/2015 23-26/03/2015 20-23/04/2015 18-21/05/2015 22-25/06/2015 06-09/07/2015 17-20/08/2015 07-10/09/2015 26-29/10/2015 23-26/11/2015

SPECIALIZED SKILLS TRAINING (FACILITATED BY OUTSIDE CONSULTANTS						
TRAINING PROGRAMME (NAME)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
Siemens PLC	Qualified artisan	• Artisans • Foremen • Junior Engineers	5 Days	Use and maintain SIMATIC S7 programmable controllers	• Debugging a program • Binary operations and “GATES” • Counters / Timers • Rewiring of programs • Hardware handling • Commissioning and Monitoring / Modifying Variables • Linear / Structured Programming techniques • The SIMATIC S7 system family • STEP 7 installation techniques and components	ST –SERV1: 02-06/03/2015 ST-SERV2: 04-08/05/2015 ST –SERV1: 17-21/08/2015 ST-SERV2: 09-13/11/2015
Concrete Practice Course	Qualified artisan	• Artisans • Foremen • Junior Engineers	3 Days	The participant will be able to: Understand the properties of concrete, materials and equipment Understand the methods used in its production and quality control Identify concrete related Hazards to maintain safety and production	• Pre-stressed concrete • Pre-cast concrete • Off-shutter and architectural finishes • Industrial floors on the ground • Concrete roads • Sampling and testing • Low density concrete • Protection and curing • Concreting in hot and cold weather	**To be advised**

SPECIALIZED SKILLS TRAINING (FACILITATED BY OUTSIDE CONSULTANTS						
TRAINING PROGRAMME (Name)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
Business Centered management	Qualified artisan	• Artisans • Foremen • Junior Engineers	4 Days	The participant will be able to: Be competent to develop, implement and sustain a reliability based maintenance programme. Understand how to reduce life cycle support costs by eliminating the adverse effects of poor design on maintenance and logistics Measure the effectiveness of Maintenance Management and its related Computerized Maintenance Management System ('CMMS' e.g. SAP PM) in your organization	• Maintenance Assessment • Early Equipment Management and Failure Prevention • Business Centered Maintenance TRACC (Implementation Guidelines) • Focused Improvement Program • Continuous Improvement • Introduction to Business Centered Maintenance • Business Centered Maintenance Tasks • Developing the Maintenance Programme (Fast-TRACC RCM)	**ADC:** 13-16/04/2015 18-21/05/2015 07-10/09/2015 **Union:** 2 Courses To be advised **Edupark:** 02-05/03/2015 01-04/06/2015 **Amandelbult:** 2 Courses To be advised
Winder Brake Systems (Hydraulic)	Qualified artisan	• Artisans • Foremen • Junior Engineers	3 Days	Understand the hydraulic brake systems on wonders	• Practice construction of a winder brake system on training boards • Practice brake settings on winders • Static adjustments and tests • Dynamic tests • Brake components • Circuits • Operations	05-06/02/2015 02-03/07/2015 19-20/11/2015

6. DIESEL MECHANIC SHORT COURSES

DIESEL MECHANIC SHORT COURSES

DIESEL MECHANIC SHORT COURSES						
TRAINING PROGRAMME (Name)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
Air Brake Systems	- Basic Pneumatics - Artisans	• Artisans • Foremen	2 days	To equipped artisans with Air Brake System knowledge and skills for repairing and servicing vehicles underground and on surface	The participant will be able to: • Interpret and understand an air flow circuit • Construct a circuit • Identify faults in fault finding	05-06/02/2015 04-05/06/2015 08-09/10/2015

7. FITTING & TURNING SHORT COURSES

FITTING & TURNING SHORT COURSES

FITTING AND TURNING SHORT COURSES						
TRAINING PROGRAMME (Name)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
Roller Bearings	Artisans	• Artisans • Foremen • Engineers	3 days	To equipped artisans with roller bearing knowledge and skills.	The participant will be able to: • Identify all rolling bearings • Understand the reason for selection of rolling bearings vs. other bearings • Understand the care, storage and correct installation procedures of rolling bearings • Understand maintenance requirements • Identify examples and reasons for bearing failures	11-13/02/2015 10-12/06/2015 14-16/10/2015
Alignment Refresher	Artisan	• Artisans • Foremen	4 days	Artisans will be equipped with alignment knowledge and skills	The participant will be able to: • Align V-belt drives • Align chain drives • Align fluid drive couplings • Align tyre couplings • Align pin and bush couplings	10-13/03/2015 14-17/07/2015 10-13/11/2015
Basic Hydraulics	Artisan	• Artisans • Foremen • Engineers	5 days	Artisans will be equipped with basic hydraulic knowledge and skills	• The participant will be able to: • Understand the basic principles and theory of hydraulics including Hydraulic Safety • Identify hydraulic schematic symbols and understand their application • Understand hydraulic circuit operation • Understand planned maintenance associated with hydraulic components • Understand construction of industrial circuits • Practice circuit construction on training panelsPractice circuit construction on training panels	05-09/01/2015 23-27/03/2015 04-08/05/2015 24-28/08/2015

FITTING AND TURNING SHORT COURSES						
TRAINING PROGRAMME (NAME)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
Basic Pneumatics	Artisan	• Artisans • Foremen • Engineers	5 days	Artisans will be equipped with basic pneumatic knowledge and skills	The participant will be able to: • Understand basic principles and theory of pneumatics • Overview and safety • Air treatment devices • Cylinder and valve operations • "wet-screw" rotary type compressors • Reciprocating compressors • Identify pneumatic symbols and understand their application • Understand pneumatic circuit operation • Understand construction of industrial circuits • Understand planned maintenance • Identify motion diagrams and design of a cascade circuit diagram • Fault finding different circuits • Practice advanced circuit construction on training panels	02-06/02/2015 01-05/06/2015 02-06/11/2015
Centrifugal Pumps Refresher	Artisan	• Artisans • Foremen • Engineers	3 days	Artisans will be equipped with centrifugal pump knowledge and skills.	The participant will be able to: • Differentiate between Hydroseal vs Centriseal • Understand adjustments to centrifugal pumps • Dismantle and assemble centrifugal pumps • Understand a maintenance schedule • Identify important warnings • Fault finding on centrifugal pumps	04-06/02/2015 03-05/06/2015 07-09/10/2015

FITTING AND TURNING SHORT COURSES						
TRAINING PROGRAMME (NAME)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
White Metal Bearings	Artisan	• Artisans • Foremen	1 day	Artisans will be equipped with White Metal Bearing knowledge and scraping techniques.	The participant will be able to: • Understand the process of remetaling of white metal bearings • Machining white metal bearing shells • Fitting white metal bearings • Scraping white metal bearings	10/02/2015 09/06/2015 13/10/2015
Electro Pneumatics	-Basic Pneumatic Course -Basic Electrical Course Artisan	• Artisans • Foremen • Engineers	5 days	Artisan, Foreman, Trainee engineers, Engineers and Instrument Mechanicians/ Technicians will be equipped Electro Pneumatic knowledge and skills.	The participant will be able to: • Understand electrical principles • Identify and understand electro pneumatic symbols • Understand control methods. (Electro Pneumatics) • Understand fault finding procedures. • Practice electrical and pneumatic elements. (Relays, valves etc.) Hands on. • Understand electronic sensors and typical industrial circuits. Hands on. • Co-ordinate sequence controls • Practical advanced circuit construction on training panels.	09-13/02/2015 08-12/06/2015 16-20/11/2015

FITTING AND TURNING SHORT COURSES						
TRAINING PROGRAMME (NAME)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
Conveyor Belt: Installation, Fault Finding, Maintenance	Artisans	• Artisans • Foremen	2 days	Artisans will be equipped with conveyor belt installation, fault finding, maintenance knowledge and skills.	The participant will be able to: • Understand the installation of conveyor belt systems • Identify faults on conveyor systems • Maintain conveyor systems	05-06/03/2015 09-10/07/2015 05-06/11/2015
Fluid Pumps	Artisan	• Artisans • Foremen	3 days	Artisans will be equipped with fluid pump knowledge and skills.	The participant will be able to: • Understand construction of slurry pumps • Maintain slurry pumps • Install slurry pumps, including valving and piping requirements • Understand pump efficiency, monitoring and trouble shooting • Identify pump capacities • Understand pump installation and removal and Understand pumping costs ans areas of focus to minimise costs • Understand pumping costs and areas of focus to minimise costs	14-16/04/2015 11-13/08/2015 17-19/11/2015

FITTING AND TURNING SHORT COURSES						
TRAINING PROGRAMME (NAME)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
Hydraulics Systems Trouble Shooting	-Artisan Basic -Hydraulics course	• Artisans • Foremen • Engineers	5 days	Artisans will be equipped with Hydraulics Systems Trouble Shooting knowledge and techniques.	The participant will be able to: • Isolate a hydraulic system • Maintain a hydraulic system safely and correctly • Understand basic principles of cartridge valves • Understand cartridge valve functions and operation • Identify trouble shooting techniques • Isolate faults by systematically eliminating possibilities • Maintain control through good maintenance; Understand preventative maintenance routines Practical fault finding on trainign panels	12-16/01/2015 11-15/05/2015 31/08-04/09/2015

FITTING AND TURNING SHORT COURSES						
TRAINING PROGRAMME (NAME)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
Electro Hydraulics	-Basic Hydraulic course -Basic Electrical course -Artisan	• Artisans • Foremen • Engineers	5 days	Artisan, Foreman, Trainee engineers, and Engineers Will be equipped with Electro Hydraulic knowledge and skills.	The participant will be able to: • Understand electrical principles • Identify and understand Electro Hydraulic symbols • Identify and understand Electrical symbols • Understand control methods. (Electro Hydraulics) • Understand fault finding procedures. • Practice electrical and hydraulic elements. (Relays, valves etc.) Hands on. • Understand electronic sensors and typical industrial circuits. Hands on. • Co-ordinate sequence controls • Practical advanced circuit construction on training panels.	16-20/02/2015 13-17/04/2015 06-10/07/2015 07-11/09/2015

FITTING AND TURNING SHORT COURSES						
TRAINING PROGRAMME (NAME)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
Electro Proportional Hydraulics	-Basic Hydraulic course -Basic Electrical course -Electro Hydraulic course -Artisan	• Artisans • Foremen • Engineers	5 days	To equipped Artisan, Foreman, Trainee engineers, and Engineers with Electro Porportional Hydraulic knowledge and skills.	The participant will be able to: • Understand the principles of proportional hydraulics. • Understand proportional valves, design and mode of operation. • Understand characteristic curves and parameters • Understand the setting of amplifier and set point value specification. • Understand switching examples using proportional valves: • Speed control • Leakage prevention • Positioning • Energy Saving • Understand electronic sensors and electro hydraulic symbols. • Caculate motion sequence for a hydraulic cylinder drive. • Practical advanced circuit construction on training panels, using electrical and proportional elements (relays, sensors, valves, etc.). Hands on.	20-24/04/2015 11-14/08/2015 23-27/11/2015

8. PLATER BOILERMAKER/WELDERSHORT COURSES

PLATER BOILERMAKER/WELDER SHORT COURSES

PLATER BOILERMAKER/WELDER SHORT COURSES						
TRAINING PROGRAMME (NAME)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
Basic Plating Contour Marking	Artisan	• Artisans • Foremen	5 DAYS	To measure, do calculations in order to fabricate pipes.	• Use a centre finder and a contour marker • Understand calculations of different types of pipes • Fabricate different types of pipes • Understand pipe cutting techniques • Understand how to obtain sizes for pipes to be fabricated • Fabricate Unequal pipe lateral, Pipe bend 80^{o} & 90^{o}, Pipe set, Pipe reducer	19-23/01/2015 18-22/05/2015 07-11/09/2015
Advanced Plating Contour Marking	Basic Contour Marking	• Artisans • Foremen	5 DAYS	To measure, do calculations in order to fabricate pipes.	• Use a centre finder and a contour marker • Understand calculations of different types of pipes • Fabricate different types of pipes • Understand pipe cutting techniques • Understand how to obtain sizes for pipes to be fabricated • Fabricate Pipe off-set, T-piece, Y-piece, Sweep-T 90^{o}, Pipe lateral equal sizes	16-20/02/2015 08-12/06/2015 05-09/10/2015
Advanced Plating Developing	Basic Developing and Platers Drawings	• Artisans • Foremen	05 DAYS	To use drawing equipment, and drawing methods to draw and develop chutes and plating templates.	• Use drawing equipment effectively • Interpret drawings • Approach and apply the three drawing methods • Develop and fabricate chutes (hoppers) • Develop and make templates	09-13/02/2015 11-15/05/2015 09-13/11/2015

Arc Welding Refresher	Basic Arc Welding	• Artisans	5 DAYS	To perform different welding methods.	• Distinguish between good and bad welding • Weld a butt joint • Weld a vertical-up butt joint • Weld a horizontal butt joint • Weld a overhead fillet joint • Weld a vertical-up corner joint	02-06/02/2015 01-05/06/2015 14-18/09/2015
Advanced Arc Welding	Basic Arc Welding and Refresher Arc Welding	• Artisans • Foremen	05 DAYS	To perform various welding positions and joints.	• Use various welding techniques • Weld various Fillet and Groove weld positions / joints • Weld a vertical-up butt joint • Weld a overhead fillet joint • Weld 1G, 2G, 5G, 6G Pipe positions	02-06/03/2015 06-10/07/2015 12-16/10/2015
MIG & Tig Welding	Basic Arc Welding and Refresher Arc Welding	• Artisans • Foremen	05 DAYS	To perform Mig and Tig welding positions	• Use Metal Inert Gas (MIG) welding to weld diffrent types of metals • Use Metal Inert Gas welding (MIG) equipmentto weld various welding positions • Set up Tungsten Inert Gas (TIG) welder • Weld various Tig welding positions	09-13/03/2015 13-17/07/2015 02-06/11/2015

PLATER BOILERMAKER/WELDER SHORT COURSES						
TRAINING PROGRAMME (NAME)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
Angle Grinder	Not Applicable	• All Employees	3 DAYS	To use an Angle Grinder safely and correctly	• Identify the different machines • Identify defects in discs and different types of discs and thier applications • Understand the operation of the grinder • Follow the correct procedure for disc replacement • Using the correct protective equipment	**On Request and Approval Only**
Plating Torch Cutting and Gas Welding	Basic Oxy Acetylene and Torch Cutting	• Artisans • artisan Aides	5 DAYS	To assemble, cut and weld with Oxy Acetylene equipment.	• Apply safety and care rules of oxy-acetylene equipment • Assemble equipment • Understand torch lighting procedures • Set different flames • Identify cutting techniques • Cut different profiles	12-16/01/2015 20-24/07/2015 19-23/10/2015

9. ELECTRICAL SHORT COURSES

ELECTRICAL SHORT COURSES

ELECTRICAL SHORT COURSES						
TRAINING PROGRAMME (NAME)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
Medium Voltage	-Artisan	• Artisans • Foremen • Engineers	7days	To equipped artisans with skills regarding medium voltage reticulation, operation and maintenance.	The participant will be able to: • Apply and understand all safety procedures and standards • Correctly use medium voltage testing equipment • Test a medium voltage cable for possible defects • Read and interpret medium voltage reticulation circuits • Perform switching procedures • Perform transformer examinations and maintenance • Understand the operation of a bucholtz relay • Maintain medium voltage sub-stations	09 – 17/02/2015 23/02 – 03/03/2015 09 – 17/03/2015 4 – 12/05/2015 25/05 – 02/06/2015 29/06 – 07/07/2015 27/07 -04/08/2015 24/08 – 01/09/2015 14 – 22/09/2015 28/09 – 06/10/2015 16 – 24/11/2015
Electrical Protection	-Artisan-N3	• Artisans • Foremen • Engineers	5 days	To equipped artisans with knowledge and skills of electrical protection systems on MV reticulation and sub-stations.	The participant will be able to: • Calculate fault levels of electrical circuits • Identify protection relays • Identify electric shock • Understand low voltage protection • Understand safety aspect of electrical protection • Understand feeder protection • Understand rating of circuit breakers • Understand earth leakage principles	02-06/02/2015 01-05/06/2015 05-09/10/2015

ELECTRICAL SHORT COURSES						
TRAINING PROGRAMME (NAME)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
Motor Control	-Engineering maintenance personnel who require knowledge of motor controls -Artisan -Engineering Learners.	• Artisans • Foremen • Engineers	4 days	Artisans will be equipped with knowledge Understand the principles of motor and control gear protection	The participant will be able to: • Interpret and understand – critical functions and safety aspects of electric motor control • Understand the difference between manual and automatic control devices • Identify and understand the application of motors and starters • Identify multiple function products	07-10/04/2015 03-06/08/2015 26-29/10/2015
Fault Finding	-Electrical Artisans, -Foreman -Engineering Learners	• Artisans • Foremen • Engineers	3 days	Artisans will be equipped with skills of applying diagnostic techniques to determine fault location	The participant will be able to: • Understand and apply electrical drawing symbols • Read and interpret electrical drawings • Determine the operation of electrical drawings • Use symptoms of failure to determine probable causes of failure • Apply a systematic approach to fault finding • Use testing equipment effectively	10-12/06/2015 16-18/09/2015 04-06/11/2015
Lilly Controller	-All persons involved in the maintenance and operation of a winding plant -Artisan	• Artisans • Foremen • Engineers	3 days	Artisans will be equipped with knowledge and skills of safely maintaining and operating the lilly controller unit as part of a safety device in a winder.	The participant will be able to: • Identify all component parts • Understand operation of all parts • Setup the controller • Understand man/rock change over • Understand retardation graph development • Understand retardation cam profiling	04-06/03/2015 01-03/07/2015 04-06/11/2015

ELECTRICAL SHORT COURSES						
TRAINING PROGRAMME (NAME)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
Electrical Cable jointing and Terminating	-Electrical Artisans, -Foreman -Engineering Learners	• Artisans • Foremen • Engineers	3 days	Artisans will be equipped with skills and knowledge of jointing and terminating MV cables.	The participant will be able to: • Prepare and joint XLPE and PILC cables using mould and pressure joint • Prepare and terminate XLPE and PILC cables using cold shrink methods • Test cables after jointing and terminating for fault free operation	28-30/01/2015 25-27/02/2015 25-27/03/2015 27-29/05/2015 24-26/06/2015 29-31/07/2015 26-28/08/2015 30/09-02/10/2015 25-27/11/2015

10. INSTRUMENTATION & ELECTRONICS SHORT COURSES

INSTRUMETNATION & ELECTRONICS SHORT COURSES

INSTRUMENTATION & ELECTRONICS SHORT COURSES						
TRAINING PROGRAMME (NAME)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
Basic Electronics Module 1	Artisans (Electrical, Instrumentation, Millwright and Junior Engineers)	• Artisans • Foremen • Engineers	5 days	Artisan, Foreman, Trainee engineers, Engineers and Instrument Mechanicians/ Technicians will be equipped electronic knowledge and skills.	The participant will be able to: • Identify and use Resistors • Identify and use Capacitors • Identify and use Inductors • Identify and use Diodes • Use an Oscilloscope • Rectification circuits	31/08—04/09/2015
Basic Electronics Module 2	Artisans (Electrical, Instrumentation, Millwright and Junior Engineers)	• Artisans • Foremen • Engineers	5 days	Artisan, Foreman, Trainee engineers, and Engineers Will be equipped with electronics systems knowledge and skills.	The participant will be able to: • Identify Zener diodes • Voltage doubler • Identify Transistor action • Identify Transistor configuration • Regulated power supply • Test Thyristor • Thyristor phase control • Solder components	28/09-02/10/2015
Advanced Electronics	Basic Electronics 1 & 2	• Artisans • Foremen • Engineers	5 days	Artisan, Foreman, Trainee engineers, and Engineers Will be equipped with electronics systems knowledge and skills.	The participant will be able to: • Fault Finding Circuits • Test an Amplifier • Use a Transistor as a Switch • Test Multivibrators • Identify Operational Amplifiers • Test a Field Effect Transistor • Test Logic Gates • Construct a Continuity Tester	02-06/11/2015

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INSTRUMENTATION & ELECTRONICS SHORT COURSES						
TRAINING PROGRAMME (NAME)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
DC Winders	Basic Winder Course	• Artisans • Foremen • Engineers	3 day	Artisans will be equipped with knowledge of what a DC winder system consists of, importance and operation of each of the sub-systems as well as the fundamental principles involved	The participant will be able to: • Know what types of drives are used on winders and principles of operation of each driver • Know how speed control is achieved with the different types of drives • Know how control is achieved and understand the basic terminology Know what types of electrical & electronic equipment or devices are used to achieve closed-loop control and Know what types of safety circuits and devices there are and the function of each	02-04/03/2015 14-16/09/2015

INSTRUMENTATION & ELECTRONICS SHORT COURSES						
TRAINING PROGRAMME (NAME)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
Basic Winders	Artisans (Electrical, Instrumentation, Millwright) and Junior Engineers	• Artisans • Foremen • Engineers	3 days	Artisans will be equipped with knowledge and skills of operation and maintanance of a basic winder.	The participant will be able to: • Winder brakes • DC / AC Motors • Power correction • Controller's: Rotorvar, Statorvar, Rectivar, DC-Analog, AC-cycle • Safety CCT: Mains, Back up, Lock out, Lilly, Maintenance • Regulations	21-23/01/2015 01-03/07/2015
AC Winders	Basic Winder Course	• Artisans • Foremen • Engineers	3 days	Artisans will be equipped with basic winders systems Trouble Shooting knowledge and techniques.	The participant will be able to: • Know what a AC winder system consists of and importance and operation of each of the sub-systems as well as the fundamental principles involved • Know what types of drives are used on winders and principles of operation of each driver • Know how speed control is achieved with the different types of drives • Know how control is achieved and understand the basic terminology • Know what types of electrical & electronic equipment or devices are used to achieve closed-loop control • Know what types of safety circuits and devices there are and the function of each	27-29/05/2015 02-04/11/2015

11. RIGGING ROPESMAN SHORT COURSES

RIGGING ROPESMAN SHORT COURSES

RIGGING ROPESMAN SHORT COURSES						
TRAINING PROGRAMME (NAME)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
Inspection & use of Overhead, Gantry and Jib Cranes	Inspection and Maintenance of Hoist Ropes	• Artisans • Foremen • Engineers	1 DAY	To refresh knowledge and skills on an OHC	• Identify the major components of O.H.C. • Perform inspections on O.H.C. • Use overhead, gantry and jib	03/03/2015 02/06/2015 08/09/2015
Inspection and Maintenance of Hoist Ropes	Winder and Hoist Rope Exposure	• Artisans • Foremen • Engineers	2 DAYS	To understand the principles of Inspection, maintenance of hoist ropes.	• Understand manufacturing of ropes • Identify various types of ropes • Identify faults in ropes • Inspect rope sheaves • Coil ropes correctly • Care and maintenance of ropes • Perform inspection on ropes • Lubricate ropes • Cut back-ends of ropes	03-04/02/2015 12-13/05/2015 09-10/09/2015 03-04/11/2015
Rigging Skills	English Literacy ABET Level 4: Reading and Writing	• Artisans • Foremen • Engineering Assistants • Engineers	2 DAYS	To obtain knowledge and understanding when using rigging equipment to lift and move loads.	• Identify and inspect rigging equipment • Lift equipment safely using the correct slinging methods • Move equipment safely using various techniques • Handle equipment safely using various techniques • Understand rope charts, safe working loads, breaking loads	11-12/02/2015 08-09/04/2015 23-24/06/2015 21-22/07/2015 06-07/10/2015

RIGGING ROPESMAN SHORT COURSES						
TRAINING PROGRAMME (NAME)	**MINIMUM ENTRY REQUIREMENTS**	**TARGET POPULATION**	**DURATION**	**OBJECTIVE**	**LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)**	**DATE**
Advanced Rigging Skills	English Literacy ABET Level 4: Reading and Writing	• Artisans • Foremen • Engineering Assistants • Engineers	2 DAYS	To plan and calculate loads before lifting and moving of loads.	• Identify the load material and construction • Calculate the mass of the load • Determine the lifting to lift the load • Determine the lifting equipment to lift the load. • Plan the lifting and moving of the load	24-25/03/2015 03-04/06/2015 08-09/07/2015 10-11/11/2015
Safety Detachment Hook	Inspection and Maintenance of Hoist Ropes	• Artisans • Foremen • Engineers	1 DAY	To create understanding on the types, inspections and operation of Safety Detachment Hooks.	• Identify the types of S.D.H. • Identify and inspect components • Understand the operation and function of the S.D.H. • Understand the various inspections on the S.D.H. • Use a S.D.H. according to the Mines Health and Safety Act	05/03/2015 19/05/2015 07/07/2015 15/09/2015 05/11/2015
Resin capping	Inspection and Maintenance of Hoise Ropes	• Artisans • Foremen • Engineers	2 DAYs	To obtain knowledge and under understanding regarding the installation of Resin capping on a Winder Rope	• Understand CSIR evaluation for white metal and resin capping • Understand resin capping of steel wire ropes • Explain task procedure for resin capping • Understand health and safety data sheet for resin capping • Install resin into a winder rope socket - practical	27-28/01/2015 26-27/05/2015 20-21/10/2015

12. GENERAL TERMS & CONDITIONS OF SERVICE

The following outlines the general terms and conditions that govern the appointment of ESTC to deliver the above services:

1. ESTC will deliver the agreed services according to the specified requirements, standards and timeframes, as mutually agreed and documented by ESTC and the client organisation
2. Deviations from agreed quotations will be mutually discussed and agreed.
3. The client and ESTC will conform to the Agreement to Purchase and Terms & Conditions of Sale as specified.
4. ESTC and the client will conform to mutual confidentiality, technology and copyright protection requirements.
5. The client and its employees may only use ESTC technology and learning materials within those internal areas agreed/licensed by ESTC.
6. ESTC must receive a signed quotation and Purchase Order Number prior to commencement of rendering required service
7. **A signed Quotation and Purchase Order Number implies that the service terms and conditions are accepted.**

13. GENERAL PAYMENT TERMS & CONDITIONS

1. The total cost includes VAT.
2. Payment excludes air travel and car hire. The use of ESTC vehicles for car travel is charged at R 3.50 per kilometre for the full distance.
3. Invoices will be generated for each training intervention on the date of commencement and payment must be received prior to the release of certificates.
4. **Payment terms are strictly 30 days from the presentation of invoices.**
5. **Cancellation** of scheduled training, in three (3) working days or less, will incur the full Training service fee. Please notify the office in writing of the cancellation.
6. **Postponement** of scheduled training within three (3) working days will be invoiced in full, and an extension period to the next scheduled course will apply for the delivery of the training.
7. Withdrawal of candidate from scheduled training after commencement will be invoiced in full and the extension period for the next scheduled course will apply for the delivery of the training
8. Replacement of nominated candidates should be done in writing prior to commencement of training.

ANNEXURE B

ENGINEERING SKILLS TRAINING CENTRE EXTERNAL CLIENT COSTS FOR Y2015

Learnerships:

1 Training	R382.80 per learner per day
2 RPL /Gap Analysis	R1141.03 per learner per day
3 Accommodation @ ESTC	R153.01 per night (Single)
Meals:	
- Breakfast	R48 -12 per meal
- Lunch	R56 -34 per meal
- Dinner	R56 - 34 per meal **R160 - 80**

Short Courses:

4 Training	R1141 - 03 per person per day
5 Accommodation	R289 - 90 per night
Meals: **- Breakfast** **- Lunch** **- Dinner**	 R56 - 34 per meal R64 - 17 per meal R64 - 17 per meal **R184 - 68**

Specialised Short Course costs that are provided by outside facilitator's are not included.

On Site Training

WILL BE ON REQUEST ONLY