

ENGINEERING SKILLS TRAINING CENTRE (ESTC)

Prospectus 2014

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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 industry prompted ESTC to open its training facility to the private sector and individuals with the relevant entry level qualifications.

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

ESTC's commitment to safety and quality training is demonstrated by its nationally accepted accreditations and to the upliftment and education of our country's people.

2. ACCREDITATIONS AND CERTIFICATION

- Accredited training provider for 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 within the engineering fraternity We are committed to achieve zero harm through effective management of safety in all our disciplines

4. OSD STRATEGY

The Engineering Skills Training Centre (ESTC), as part of the Human Resource Development (HRD) and Transformation function, has been mandated by EXCO to provide a particular HRD service within the Platinum Division, as set out in the Company's operating model. This is done for the following disciplines:

• Engineering

There are 6 main focus areas, they are:

4.1. Strategy

We provide a framework for skills development throughout the Platinum division to ensure compliance with:

- legislation and regulations
- industry requirements and
- Company strategic objectives including the Integrated Development Strategy and Culture transformation.
- We focus on driving performance through measuring, analysing and improving our service.

4.2. HRD Governance

We influence industry policy and its implementation through active participation on various external bodies such as those established by the MQA.

ESTC:

- Develop Group policies and procedures and
- Communicate national and industry developments impacting on learning delivery

4.3. Standards and procedures

ESTC develop clear standards and procedures which complement the ESTC Governance policy. Gaps in the relevant areas are identified and addressed to ensure that the Learning Delivery sites will continue to be examples of best practise.

4.4. Quality assurance and auditing

ESTC provides an integrated internal auditing service to assist sites to maintain both their ISO 9001:2008 listing as well as their Accredited Provider status. This service is based on clearly defined criteria as set out in relevant legislation and industry specific requirements. ESTC acknowledges that auditing must take place against site specific policies and procedures.

ESTC strives to identify areas of best practise in order to continually improve our Learning Delivery systems.

In addition, ESTC provides External Assessment and Moderation of national learnerships. This control mechanism ensures that learners who complete their qualifications are able to meet production demands.

4.5. Learning material development

ESTC integrates the threads of "Safe Profitable Platinum" into Group learning material. This is done through researching best practice in order to develop standardised, nationally compliant learning material (to include all learning from incidents).

This material is in line with requirements as set out in the

- various national qualifications and Skills programmes
- The Anglo American Platinum job catalogue.

Gap closure initiatives are implemented in order to confirm the validity of current material or effect revisions where appropriate. New material is developed where necessary. *This is done for the following disciplines – Mining Conventional, Mining mechanised and Engineering.*

4.6. Learning From Incidents (LFI)

ESTC is actively involved in the communication of all LFI incidents. The management of change process includes:

- a risk assessment
- validation of standards and procedures
- drafting standards where necessary
- revising learning material where applicable and
- Updating learning delivery practices of training, assessment and moderation.

5. LEARNERHIPS AND SKILLS PROGRAMMES



ESTC ENGINEERING TRAINING SERVICES

5.1 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)

5.2 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

	OLD TRAINING WAY									
Training Phase	Duration	Trimester 1	Trime	ester 2	Trimester 3					
Phase 1 Training	75 Days	06 Jan – 25 Apr 2014	05 May – 15	Aug 2014	25 Aug – 05 Dec 2014					
Phase 4 Training	75 Days	06 Jan – 25 Apr 2014	05 May – 15	Aug 2014	25 Aug – 05 Dec 2014					
Phase 6 & Trade Test	75 Days	06 Jan – 25 Apr 2014	05 May – 15	Aug 2014	25 Aug – 05 Dec 2014					
Stoping & Developing L 2	90 Days	06 Jan – 09 May 2014	05 May – 05	Sep 2014	04 Aug – 05 Dec 2014					
MQA Artisan Aide L 2	90 Days	On	Request and	Approval only	!					
Planned Maintenance	30 Days	13 Jan-21 Feb 2014	12 May – 20	Jun 2014	01 Sep – 10 Oct 2014					
		NEW TRAINING W	AY							
Training Phase	Duration	Semester 1			Semester 2					
Basic Training	115 Days	06 Jan – 13 June 2014		30 June – 05	Dec 2014					
Advanced Training	100 Days	06 Jan – 23 May 2014		30 June – 14	Nov 2014					
		06 Jan – 14 Feb 2014								
Preparation & T/Test	30 Days	24 Feb – 04 Apr 2014		01 Sept – 10	Oct 2014					
		14 Apr – 23 May 2014		13 Oct – 21 M	Nov 2014					

5.3 Learnership/ Skills Programme Training Schedule for 2014

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

6. SPECIALIZED SHORT COURSES



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	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)	EIT Programme Trade Certificate	 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 08,15,22/02,01/03/2014 19,26/07,02,16/08/2014 This is done on Saturdays Edupark 10-13/02/2014 21-24/07/2014			
Engineering Standards Coaching Foreman (Part B)	EIT Programme Trade Certificate	 Artisans Foremen Junior Engineers 	4 Days	Prepare candidates for Mine Standard Exam	 Interpret and understand Duties imposed by Group Engineering Standards - Part B 	ADC 15,29/03, 05,12/04/2014 23,30/08, 06,13/09/2014 Edupark 10-13/03/2014 11-14/08/2014			
Full time revision (Part A and Part B)	EIT Programme Trade Certificate	 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 03,10,17,24/05/2014 27/09,04,11,18/10/2014 Edupark 05-08/05/2014 06-09/10/2014			
Examination (Part A and B)	EIT Programme Trade Certificate	 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.	06/06/2014 07/11/2014			

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		SPECIALIZED S	KILLS TRAININ	G (FACILITATED BY OUTSIDE CO	DNSULTANTS)	
TRAINING PROGRAMME (NAME)	MINIMUM ENTRY REQUIREMENTS	TARGET POPULATION	DURATION	OBJECTIVE	LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)	DATE
Conveyor Belt Theory and Repair Techniques	EIT Programme Trade Certificate	 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 	09-11/04/2014 16-18/07/2014 29-31/10/2014
Lubrication and Filtration	EIT Programme Trade Certificate	 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 	05-07/02/2014 07-09/05/2014 13-15/08/2014 06-08/11/2014

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	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)	EIT Programme	 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 	To be advised				
Water Treatment Technology	EIT Programme Trade Certificate	 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 	11/04/2014 11/07/2014 17/10/2014				

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	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	Phase 4/ Advance Plating Programme EIT Programme Trade Certificate	 Phase 4/ Advance Plating Learners 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 	03-06/02/2014 24-27/03/2014 22-25/04/2014 19-22/05/2014 23-26/06/2014 07-10/07/2014 11-14/08/2014 08-11/09/2014 27-30/10/2014 24-27/11/2014			

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		SPECIALIZED S	SKILLS TRAININ	IG (FACILITATED BY OUTSIDE CO	ONSULTANTS	
TRAINING PROGRAMME (NAME)	MINIMUM ENTRY REQUIREMENTS	TARGET POPULATION	DURATION	OBJECTIVE	LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)	DATE
Siemens PLC	EIT Programme Electrical, Instrumentation Trade Certificate	 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: 03-07/03/2014 ST-SERV2: 05-09/05/2014 ST –SERV1: 18-22/08/2014 ST-SERV2: 10-14/11/2014
Concrete Practice Course	EIT Programme	 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

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	SPECIALIZED SKILLS TRAINING (FACILITATED BY OUTSIDE CONSULTANTS									
TRAINING PROGRAMM (Name)	IE MINIMUM ENTRY REQUIREMENTS	TARGET POPULATION	DURATION	OBJECTIVE	LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)	DATE				
Business Centered management	EIT Programme Trade Certificate	 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: 14-17/04/2014 19-22/05/2014 08-11/09/2014 Union: 10-113/02/2014 20-23/10/2014 Edupark: 03-06/03/2014 02-05/06/2014 03-06/11/2014 Amandelbult: 24-27/02/2014 11-14/08/2014				
Winder Brake Syst (Hydraulic)	tems EIT Programme Trade Certificate	 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 	06-07/02/2014 03-04/07/2014 20-21/11/2014				

7. DIESEL MECHANIC SHORT COURSES

DIESEL MECHANIC SHORT COURSES

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	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	ArtisansForemen	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 	06-07/02/2014 05-06/06/2014 09-10/10/2014				

8. FITTING & TURNING SHORT COURSES

FITTING & TURNING SHORT COURSES

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	FITTING AND TURNING SHORT COURSES									
TRAINING PROGRAMME (Name)	MINIMUM ENTRY REQUIREMENTS	TARGET POPULATION	DURATION	OBJECTIVE	LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)	DATE				
Roller Bearings	Phase 4 /Advanced Fitting and Diesel Programme Trade Certificate EIT Programme Stopeservicemen Certificate	 Fitting/Millwrig hts/Diesel Artisans Foremen Engineers EIT Fitters/Diesel/ Millwrights Learners Stopeserviceme n 	3 days	To equipped candidates 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 	12-14/02/2014 11-13/06/2014 15-17/10/2014				
Alignment Refresher	Phase 4/Advanced Fitting Programme Trade Certificate EIT programme	 Fitting/Millwrig ht Artisans Foremen Engineers EIT Fitters/Millwrig hts learners 	4 days	Candidates will be equipped with alignment knowledge and skills using different techniques e.g. Dial test Indicators, Lazer	 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 	11-14/03/2014 08-11/07/2014 11-14/11/2014				
Basic Hydraulics	Phase 4/Advanced Fitting Programme Trade Certificate Exposure to Hydraulics systems(Workplace)	 Artisans Foremen Engineers Fitters/Millwrig hts learners 	5 days	Candidates 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 panels 	06-10/01/2014 10-14/03/2014 26-30/05/2014 25-29/08/2014				

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	FITTING AND TURNING SHORT COURSES									
TRAINING PROGRAMME (NAME)	MINIMUM ENTRY REQUIREMENTS	TARGET POPULATION	DURATION	OBJECTIVE	LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)	DATE				
Basic Pneumatics	Phase 4 /Advanced Fitting Programme Trade Certificate Exposure to Pneumatic Systems (Workplace)	 Artisans Foremen Engineers Fitters/Millw rights learners 	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 planned maintenance Identify motion diagrams and design of a cascade circuit diagram Fault finding different circuits Practice advanced circuit construction on training panels 	03-07/02/2014 02-06/06/2014 17-21/11/2014				
Centrifugal Pumps Refresher	Trade Certificate Stopeservicemen Certificate	 Fitting/Millw rights Artisans Foremen Engineers Stopeservice men 	3 days	Candidates 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 	05-07/02/2014 04-06/06/2014 08-10/10/2014				

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	FITTING AND TURNING SHORT COURSES									
TRAINING PROGRAMME (NAME)	MINIMUM ENTRY REQUIREMENTS	TARGET POPULATION	DURATION	OBJECTIVE	LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)	DATE				
White Metal Bearings	White Metal Bearing Exposure (workplace) EIT Programme	 All Engineerin g Personnel 	1 day	Candidates 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 	11/02/2014 10/06/2014 14/10/2014				
Electro Pneumatics	Basic Pneumatic Course Trade Certificate	 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. 	10-14/02/2014 09-13/06/2014 24-28/11/2014				

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	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	Phase 4 /Advanced Fitting Programm e Trade Certificate	 Fitting/Millw right Artisans Foremen Engineers Fitting/Millw right Learners 	2 days	Candidates 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 	06-07/03/2014 03-04/07/2014 06-07/11/2014				
Fluid Pumps	Phase 4/Advanced Fitting Programme Trade Certificate Stopeservicemen Certificates	 Fitter/Millwr ights Artisans Foremen Engineers Stopeservice men 	3 days	Candidates will be equipped with fluid pump knowledge and skills.	 The participant will be able to: Understand construction of slurry pumps Maintain 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 	08-10/04/2014 12-14/08/2014 18-20/11/2014				

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	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	Basic Hydraulics course Trade Test Certificate	 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 	13-17/01/2014 07-11/04/2014 19-23/05/2014 01-05/09/2014				

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	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 Trade Certificate	 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 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. 	17-21/02/2014 07-11/07/2014 18-22/08/2014 06-10/10/2014			

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			FITTING AND	D 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 -Electro Hydraulic course -Trade Certificate	 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. 	14-18/04/2014 11-15/08/2014 03-07/11/2014

9. PLATER BOILERMAKER/WELDERSHORT COURSES

PLATER BOILERMAKER/WELDER SHORT COURSES

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	PLATER BOILERMAKER/WELDER SHORT COURSES								
TRAINING PROGRAMME (NAME)	MINIMUM ENTRY REQUIREMENTS	TARGET POPULATION	DURATION	OBJECTIVE	LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)	DATE			
Advanced Plating Contour Marking	Phase 1, 4 & 6 Plating Programme Trade Certificate	ArtisansForemen	10 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 	27/01-07/02/2014 30/06-11/07/2014 13-24/10/2014			
Advanced Plating Developing	Phase 1, 4 & 6 Plating Programme Trade Certificate	ArtisansForemen	10 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 	10-21/02/2014 12-23/05/2014 01-12/09/2014			
Arc Welding Refresher	Phase 1, 4 & 6 Plating Programme Plating Trade Certificate	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 	03-07/03/2014 14-18/07/2014 10-14/11/2014			
Advanced Arc & MIG Welding	Refresher Arc Welding Phase 1, 4 & 6 Plating Programme	ArtisansForemen	10 DAYS	To perform basic welding positions and joints.	 Preheating and post heating techniques Distinguish between good and bad welding Preparing of work pieces before welding Use various welding techniques Weld various positions / joints 	31/03-11/04/2014 21/07-01/08/2014 27/10-07/11/2014			

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	PLATER BOILERMAKER/WELDER SHORT COURSES									
TRAINING PROGRAMME (NAME)	MINIMUM ENTRY REQUIREMENTS	TARGET POPULATION	DURATION	OBJECTIVE	LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)	DATE				
Angle Grinder	All Engineering programmes Knowledge and Understanding of Engineering Disciplines	All Engineering Personnel	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	Phase 1, 4 & 6 Plating Programme Plating Trade Certificate	 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 	10-14/03/2014 02-06/06/2014 06-10/10/2014				

10. ELECTRICAL SHORT COURSES

ELECTRICAL SHORT COURSES

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			ELECT	RICAL SHORT COURSES		
TRAINING PROGRAMME (NAME)	MINIMUM ENTRY REQUIREMENTS	TARGET POPULATION	DURATION	OBJECTIVE	LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)	DATE
Medium Voltage	EIT Programme Phase 4/ Advanced Electrical Programme Trade Certificate	 Electrical, Millwright 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 	20-28/01/2014 10-18/02/2014 04-12/03/2014 24/03-01/04/2014 05-13/05/2014 19-27/05/2014 23/06-01/07/2014 14-22/07/2014 28/07-05/08/2014 11-19/08/2014 01-09/09/2014
Electrical Protection	EIT Programme Phase 4/ Advanced Electrical Programme Trade Certificate	 Electrical, Millwright 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 	03-07/02/2014 02-06/06/2014 06-10/10/2014

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			ELECT	RICAL SHORT COURSES		
TRAINING PROGRAMME (NAME)	MINIMUM ENTRY REQUIREMENTS	TARGET POPULATION	DURATION	OBJECTIVE	LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)	DATE
Motor Control	EIT Programme Phase 4/ Advanced Electrical Programme Trade Certificate	 Electrical, Millwright 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 	10-13/03/2014 12-15/05/2014 08-11/08/2014
Fault Finding	EIT Programme Phase 4/ Advanced Electrical Programme Trade Certificate	 Electrical, Millwright 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 	12-14/03/2014 09-11/07/2014 12-14/11/2014
Lilly Controller	-All persons involved in the maintenance and operation of a winding plant	ArtisansForemenEngineers	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 	05-07/03/2014 02-04/07/2014

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			ELECT	RICAL SHORT COURSES		
TRAINING PROGRAMME (NAME)	MINIMUM ENTRY REQUIREMENTS	TARGET POPULATION	DURATION	OBJECTIVE	LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)	DATE
Electrical Cable jointing and Terminating	EIT Programme Phase 4/ Advanced Electrical Programme Trade Certificate	 Electrical, Millwright Artisans Foremen Engineers 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 	19-21/02/2014 26-28/03/2014 23-25/04/2014 21-23/05/2014 18-20/06/2014 16-18/07/2014 20-22/08/2014 17-19/09/2014 22-24/10/2014 19-21/11/2014
IGBT	-All Electrical personnel involved in maintenance of battery powered locomotives	 Electrical, Millwright Artisans Foremen Engineers 	3 days	Artisans will be equipped with knowledge and skills of maintaining and repairing D.C. drive control systems	 The participant will be able to: Understand D.C. motor drive theory Control D.C. motor speed (Forward and reverse) Understand theory and operation of silicon diodes and rectifiers Understand forced commutations, controlled braking and acceleration Understand safety aspects associated with D.C. control systems Practically do fault finding and repair Maintain batteries used on loco controllers 	26-28/02/2014 30/04-02/05/2014 27-29/08/2014

11. INSTRUMENTATION & ELECTRONICS SHORT COURSES

INSTRUMETNATION & ELECTRONICS SHORT COURSES

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	INSTRUMENTATION & ELECTRONICS SHORT COURSES								
TRAINING PROGRAMME (NAME)	MINIMUM ENTRY REQUIREMENTS	TARGET POPULATION	DURATION	OBJECTIVE	LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)	DATE			
Basic Electronics Module 1	EIT Programme Phase 4/ Basic Electrical Programme Trade Certificate	 Electrical, Millwright and MC & I Learners 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 	12-16/02/2014 25-29/08/2014			
Basic Electronics Module 2	Basic Electronics Module 1	 Phase 6/ Advanced Electrical, Millwright, Auto Electrical & Instrument Learners 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 	07-11/04/2014 20-24/10/2014			
Advanced Electronics	Basic Electronics 1 & 2	 Phase 6/ Advanced Instrument Learners 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 	02-06/06/2014 17-21/11/2014			

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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	Electrical, Instrumentation Artisans and Junior Engineers, 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 	03-05/03/2014 15-17/09/2014				

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INSTRUMENTATION & ELECTRONICS SHORT COURSES							
TRAINING PROGRAMME (NAME)	MINIMUM ENTRY REQUIREMENTS	TARGET POPULATION	DURATION	OBJECTIVE	LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)	DATE	
Basic Winders	EIT Programme Electrical and Instrumentation Trade Certificate	Electrical, Instrumentation Artisans and Junior Engineers, 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	22-24/01/2014 02-04/07/2014	
AC Winders	Basic Winder Course	Electrical, Instrumentation Artisans and Junior Engineers, 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 eac 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 wit the different types of drives Know how control is achieved and understand the basic terminology Know what types of electrical & electror equipment or devices are used to achieve closed-loop control Know what types of safety circuits and devices there are and the function of eac 	h 05-07/05/2014 03-05/11/2014 nic re	

12. RIGGING ROPESMAN SHORT COURSES

RIGGING ROPESMAN SHORT COURSES

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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	ArtisansForemenEngineers	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 	04/03/2014 03/06/2014 09/09/2014
Inspection and Maintenance of Hoist Ropes	Winder and Hoist Rope Exposure(Workplace) Rigger Training Programme Trade Certificate	 Artisans Foremen Engineers Rigger Learners 	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 	04-05/02/2014 08-09/04/2014 05-06/06/2014 11-12/09/2014 04-05/11/2014
Rigging Skills / Safe Lifting Techniques	Knowledge and Understanding of Engineering Disciplines	All Engineering Personnel	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 	05-06/02/2014 09-10/04/2014 24-25/06/2014 12-13/08/2014 07-08/10/2014

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RIGGING ROPESMAN SHORT COURSES						
TRAINING PROGRAMME (NAME)	MINIMUM ENTRY REQUIREMENTS	TARGET POPULATION	DURATION	OBJECTIVE	LEARNING OUTCOMES (CRITICAL CONTENT / TASKS)	DATE
Safety Detachment Hook	Inspection and Maintenance of Hoist Ropes	 Artisans Foremen Engineers Rigger Learners 	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 	06/03/2014 20/05/2014 08/07/2014 16/09/2014 05/11/2014
Resin capping	Inspection and Maintenance of Hoist Ropes	 Rigger 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 	28-29/01/2014 25-26/03/2014 27-28/05/2014 09-10/07/2014 21-22/10/2014

13. 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.

14. 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.