

ID: NTA006

Title: Industry Standard Science Industry Maintenance Technician

Version: 7

Revised version 21/08/2015

Review date: September 2017

<b>Name of Industry Standard</b>	<b>Science Industry Maintenance Technician</b>							
<b>Company:</b>	****						<b>OLP Number</b> (AA Coordinator Use ONLY)	
<b>Job Role</b>	<b>Mechanical Maintenance Technician</b>						<b>No. of Apprentices</b>	
<b>Job Description:</b>								
<b>Apprenticeship Advisor:</b>		<b>Start Date</b>		<b>End date:</b>				
<b>AA Coordinator use ONLY</b>								
<b>Apprentice name:</b>								
<b>Apprentice DOB:</b>								
<b>Costing information:</b>								
<b>Knowledge Requirements</b> (approved knowledge qualification. Taken from page 7 of the Life Sciences & Industrial Sciences Apprenticeships Trailblazer Assessment Plan Version.2)	<b>Identified criteria from Work-based Learning Guide Version 1</b>	<b>Anticipated Start Date</b> (e.g. Month 1-36 as appropriate)	<b>Anticipated Completion date</b> (e.g. Month 1-36 as appropriate)	<b>Gold Standard or Employer Job Role Statement/Link</b>	<b>Evidence Collection Method</b>	<b>Delivered by provider or employer</b>	<b>Guided Learning Hours</b>	<b>Credit Value</b>
<b>Mandatory Knowledge Units</b>	<b>Insert Qualification Title and reference number here</b>							
	Standard 18. No 61							

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<b>Optional Knowledge Units</b>								
	Standard 18. No 61							
<b>Industry Standards Competency Requirements</b>								
<b>1. Work safely in a science manufacturing environment, understanding personal responsibility for Health, Safety, and the Environment and principles of risk management.</b>	No's: 1-26			To provide professional, efficient and competent mechanical maintenance support to one of the 6 refinery production Units. The role operates within a team whose wider purpose is to ensure reliability and quality within the framework of HSE, Cost and "Deliver the Plan". To manage the execution of all preventative, legislative and corrective work scopes on mechanical related equipment within one of the 6 refinery Production units in accordance with site HSEQ standards.				
<b>2. Understand and follow quality procedures to meet the requirements of quality standards relevant to the workplace.</b>				A thorough awareness of Engineering Quality Standards and management systems.				
<b>3. Understand the internal and external regulatory</b>				Execute scheduled and corrective maintenance activities in accordance with site and legislative standards.				

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<b>environment pertinent to the sector and the sponsoring company and comply with regulations proficiently.</b>				Improve maintenance efficiency whilst satisfying HSEQ requirements. A sound understanding of operational safety management systems including permit to work. Provide safe and cost effective services to the business with minimum impact on the environment.				
<b>4. Understand and apply problem solving techniques.</b>	No's: 27-29  No's 30-31			Strip and Repair damaged equipment applying failure diagnostic and route cause analysis techniques as appropriate. Adopt defect elimination and root cause analyse strategies through the overhaul of equipment.				
<b>5. Participate in continuous performance improvement.</b>	No's 32-33			Embrace LEAN methodology for all maintenance activities and participate in efficiency initiatives. Entrepreneurial/LEAN mind-set towards cost control and efficiency.				
<b>6. Understand the business environment in which the company operates including personal role within the organisation, ethical practice and codes of conduct.</b>	No's 34-37			A sound understanding of Petrochemical repair and manufacturing techniques in both workshops and plant environments. Understands own strengths and development needs, and takes steps to improve personal performance and achieve results. Proven track record of demonstrating strong corporate values and behaviours.				
<b>7. Safely use all necessary equipment, following the appropriate engineering techniques, procedures and methods of relevance to complete the maintenance activity.</b>				Strip and Repair damaged equipment applying failure diagnostic and route cause analysis techniques as appropriate.				
<b>8. Prepare the work area for maintenance of</b>	No's:38-39			Manufacture or procure components to the correct specification in accordance with				

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<b>plant, systems or components.</b>				site and manufacturers standards.				
<b>9. Carry out planned routine and non-routine maintenance activities, effectively, efficiently and safely.</b>	No's 40-44			To manage the execution of all preventative, legislative and corrective work scopes on mechanical related equipment within one of the 6 refinery Production units in accordance with site HSEQ standards. Improve maintenance planning through objective feedback and non-conformance recording.				
<b>10. Understand and apply the practices and procedures for planning to maintain systems and equipment, relevant to a single specialist discipline or a number of disciplines (mechanical, electrical, instrumentation) as required by the job role whilst following applicable codes and standards.</b>	No's 45-46			To manage the execution of all preventative, legislative and corrective work scopes on mechanical related equipment within one of the 6 Refinery Production units in accordance with site HSEQ standards. Execute scheduled and corrective maintenance activities in accordance with site and legislative standards.				
<b>11. Understand and apply techniques to identify faults in plants, systems and components to achieve satisfactory solutions.</b>	No's: 47			Strip and Repair damaged equipment applying failure diagnostic and root cause analysis techniques as appropriate. Raise incidents that provide learning opportunities and participate in follow up corrective action.				
<b>12. Reinstate the work area after completing the maintenance of plant, systems and components.</b>	No's: 48-49			Support Refinery Shutdowns/Projects as when required.				
<b>13. Conduct safe and effective exchange of plant and equipment to</b>	No: 50-51			Responsible for communicating corrective actions taken and for the recording of history where appropriate.				

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<b>others and accept and confirm responsibility for the plant and equipment within the work area.</b>				Liaise with operations, engineering and contractors at all levels within the business.				
<b>14. Manufacture or assemble components within skill set.</b>	No:52			Manufacture or procure components to the correct specification in accordance with site and manufacturers standards.				
<b>15. Understand how to identify obsolescence and end-of-life issues.</b>	No's 53-54			Adopt defect elimination and root cause analyse strategies through the overhaul of equipment.				
<b>16. Understand and apply information extracted from engineering drawings, specification diagrams and maintenance manuals and/or computer database systems including accurate data input.</b>	No's:55-58			Install and commission process equipment and have an understanding of operation, monitoring and recording of data. Make effective use of I.T systems where applicable. IT skills (MS office, email etc).				
<b>17. Understand and apply technical knowledge relevant to a single specialist discipline or a number of disciplines (mechanical, electrical,</b>	No's:59-60			Maintain/Increase personal competence in line with emerging standards and cross-discipline skills.				

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<p><b>instrumentation) as required by the job role.</b></p>								
<p><b>18. Develop and apply theoretical knowledge of engineering and its application to the required sector &amp; job role. This should be acquired through a qualification set at level 3 (or above) that is approved by a licensed professional engineering institution.</b></p>	<p>No: 61</p>			<p>Completed a recognised mechanical engineering apprenticeship. C&amp;G, NVQ, ONC/HNC or equivalent in a mechanical field.</p>				
<p><b>19. Demonstrate the required attitudes, behaviours and interpersonal skills associated with the professional workplace.</b></p>				<p>Proven track record of demonstrating strong corporate values and behaviours            Has a positive outlook at work and focuses on doing the job well.            Works co-operatively with others to get things done, willingly giving help and support to colleagues.            Works well as part of a team, contributes to team meetings and supports team decisions.</p>				
<p><b>Mandatory Other (Functional Skills, ERR, PLTS)</b></p>								
<p><b>Functional Skills Maths</b></p>		<p>1</p>	<p>24</p>	<p>Provides the Apprentice with the</p>				

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<b>Level 2</b>				underpinning Maths knowledge for the completion of the programme role				
<b>Functional Skills English Level 2</b>		1	24	Provides the Apprentice with the underpinning English knowledge for the completion of the programme role				
<b>ERR</b>		N/A	N/A	N/A				
<b>PLTS (Including Mentoring &amp; Appraisals)</b>		N/A	N/A	N/A				
<b>Mandatory Other – Behaviours</b>								
<b>Personal Responsibility - Demonstrate personal responsibility towards safety systems( incl. risk management and environment)</b>				Contributes to the improvement of safety, reliability and financial performance. Raise unsafe act/conditions and other incidents as required.				
<b>Communication - Communicate effectively using a full range of skills: speaking; listening; writing; body language; presentation</b>				Communicates own views and factual information clearly and listens to other, asks questions to ensure a good understanding of information given.				
<b>Team Work - Work and interact effectively within a team</b>				Works co-operatively with others to get things done, willingly giving help and support to colleagues. Works well as part of a team, contributes to team meetings and supports team decisions. Mentor peer group and Work Experience students.				
<b>Independence and Responsibility - Work independently and take responsibility for initiating and completing tasks</b>				Understands own strengths and development needs, and takes steps to improve personal performance and achieve results.				

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<p><b>Impact of work - Understand impact of work on others, especially where related to diversity and equality</b></p>				<p>Treats other with respect, is polite and courteous.</p>				
<p><b>Time Management - Accepts responsibility for managing own time and workload within a given plan to complete work to schedule</b></p>				<p>Organises self and work to achieve objectives. Manages own time and resources effectively and informs others if problems occur.</p>				
<p><b>Change Management - Ability to handle change and respond to change management processes</b></p>				<p>Due to various dynamics in Operations there will be a need to engage and be adaptable in changing environment.</p>				
<p><b>Specialism identified within the Industry Standard</b></p>	<p><b>Linked to Standard Number</b></p>	<p><b>AT LEAST ONE SPECIALISM MUST BE CHOSEN FOR THIS QUALIFICATION</b></p> <p>In addition to the core competences these are specific to a work context and need to be achieved by anyone being trained for a job role in that work context</p> <p>In the context of the science industry and all three specialist pathways below, the following equipment and assets may be included:</p> <ul style="list-style-type: none"> <li>• Actuators</li> <li>• Distribution systems</li> <li>• Cabling systems</li> <li>• Circuit boards</li> <li>• Circuit protection</li> <li>• Components of process or manufacturing systems</li> <li>• Compressors</li> <li>• Conveyers</li> <li>• Electrical panels</li> <li>• Flow devices</li> <li>• Gear boxes</li> <li>• Heat exchangers</li> <li>• HVAC systems</li> <li>• Hydraulic systems</li> <li>• Level devices</li> <li>• Lighting systems</li> <li>• Motors (AC/DC)</li> <li>• Pipework systems</li> <li>• Plant items</li> <li>• Pneumatic systems</li> <li>• Pumps</li> <li>• Pressure devices</li> <li>• Pressure vessels</li> <li>• Protection devices</li> <li>• Rotating equipment</li> <li>• Temperature devices</li> <li>• Transmission systems</li> <li>• Turbines</li> </ul>						



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		• Valves						
<b>A: Electrical</b>								
<b>A1: Understand and safely use hand tools and associated trade tools</b>	<b>No 7</b>							
<b>A2: Adjust electrical plant and equipment to meet operating requirements</b>	<b>No 10</b>							
<b>A3: Assemble components of electrical plant and equipment</b>	<b>No 14</b>							
<b>A4: Carry out planned maintenance procedures on electrical plant and equipment</b>	<b>No: 9</b>							
<b>A5: Diagnose and correct electrical faults (plant)</b>	<b>No 11</b>							
<b>A6: Diagnose and determine the causes of faults in electrical plant and equipment</b>	<b>No 11:</b>							
<b>A7: Dismantle electrical plant and equipment</b>	<b>No: 9</b>							
<b>A8: Establish that an engineering maintenance process has been completed to specification</b>	<b>No: 13</b>							
<b>A9: Inspection, testing and commissioning of electrical installations (plant)</b>	<b>No: 9,10</b>							
<b>A10: Monitor the performance and condition of electrical</b>	<b>No: 9,10</b>							

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<b>plant and equipment</b>								
<b>A11: Position and install electrical plant and equipment</b>	<b>No: 9,10</b>							
<b>A12: Remove components from electrical plant and equipment</b>	<b>No: 9,10</b>							
<b>A13: Repair components of electrical plant and equipment to operational condition</b>	<b>No: 9,10</b>							
<b>A14: Replace components in electrical plant and equipment</b>	<b>No: 9,10</b>							
<b>A15: Review effectiveness of condition monitoring activities</b>	<b>No: 9,10</b>							
<b>B: Mechanical</b>								
<b>B1: Understand and safely use hand tools and associated trade tools</b>	<b>No 7</b>							
<b>B2: Adjust mechanical plant and equipment to meet operating requirements</b>	<b>No 10</b>							
<b>B3: Analyse the test results relating to the tested mechanical plant and equipment</b>	<b>No 9</b>							
<b>B4: Assess the performance and condition of mechanical plant and equipment</b>	<b>No's 9,10</b>							
<b>B5 Carry out planned maintenance procedures on mechanical plant and equipment to meet operating requirements</b>	<b>No 9</b>							

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<b>B6: Diagnose and determine the causes of faults in mechanical plant and equipment</b>	<b>No 11</b>							
<b>B7: Dismantle mechanical plant and equipment</b>	<b>No 9</b>							
<b>B8: Hand over or take control of mechanical plant and equipment</b>	<b>No 13</b>							
<b>B9: Maintaining mechanical equipment</b>	<b>No 9</b>							
<b>B10 Monitor the performance and condition of mechanical plant and equipment</b>	<b>No's 9,10</b>							
<b>B11: Remove components from mechanical plant and equipment</b>	<b>No's 9,10</b>							
<b>B12: Replace components in mechanical plant and equipment</b>	<b>No's 9,10</b>							
<b>B13: Review effectiveness of condition monitoring activities</b>	<b>No's 9,10</b>							
<b>B14: Test the performance and condition of mechanical plant and equipment</b>	<b>No's 9,10</b>							
<b>C: Instrumentation</b>								
<b>C1: Understand and safely use hand tools and associated trade tools</b>	<b>No 7</b>							
<b>C2: Adjust instrument and control systems to meet</b>	<b>No 10</b>							

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<b>operating requirements</b>								
<b>C3: Assemble components of instrument and control systems</b>	<b>No 14</b>							
<b>C4: Assess the performance and condition of instrument and control systems</b>	<b>No 9,10</b>							
<b>C5: Carry out planned maintenance procedures on instrument and control systems</b>	<b>No 9</b>							
<b>C6: Carry out maintenance on instrumentation and control equipment</b>	<b>No 9</b>							
<b>C7: Determine the feasibility of repair of components from instrument and control systems</b>	<b>No 11</b>							
<b>C8: Diagnose and determine the causes of faults in instrument and control systems</b>	<b>No 11</b>							
<b>C9: Dismantle instrument and control systems</b>	<b>No 9</b>							
<b>C10: Maintain instrumentation and control systems</b>	<b>No 9</b>							
<b>C11: Monitor the performance and condition of instrument and control systems</b>	<b>No 9,10</b>							
<b>C12: Perform asset condition monitoring</b>	<b>No 9,10</b>							
<b>C13: Position and install instrument and control systems</b>	<b>No 9,10</b>							
<b>C14: Remove components</b>	<b>No 9,10</b>							

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<b>from instrument and control systems</b>								
<b>C15: Repair components of instrument and control systems to operational condition</b>	<b>No 9,10</b>							
<b>C16: Replace components from instrument and control systems</b>	<b>No 9,10</b>							
<b>C17: Review effectiveness of condition monitoring activities</b>	<b>No 9,10</b>							
<b>C18: Test the performance and condition of instrument and control systems</b>	<b>No 9,10</b>							
<b>Other – e.g. commercial/internal Training</b>								

**Behaviours Evaluation Assessment Criteria**

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	<b>Does not meet Expectation</b> <i>Apprentice failed to demonstrate an acceptable level of behaviour. Improvement is required</i>	<b>Meets Expectation</b> <i>Apprentice demonstrated acceptable level of behaviour and meets the minimum level of behaviour expected</i>	<b>Exceeds Expectation</b> <i>Apprentice demonstrated consistent and positive behaviours in this area that reflect those expected of outstanding apprentices</i>
<b>Personal Responsibility:</b>	<i>Demonstrate personal responsibility towards safety systems( incl. risk management and environment)</i>		
Assessment criteria	Little evidence of personal responsibility to safety systems.	Good personal responsibility towards safety systems.	Exhibits high standards of personal responsibility toward safety systems.  Seeks to influence the behaviour of others.
	Tries to play down incidents in which they are involved.	Responds positively to suggestions for own improvements in personal responsibility for safety issues.	Actively monitor the safety of self and others, challenging and making suggestions where appropriate.
<b>Communication:</b>	<i>Communicate effectively using a full range of skills: speaking; listening; writing; body language; presentation</i>		
Assessment criteria	Misinterprets or is slow to comprehend oral and/or written instructions.	Readily comprehends oral and/or written instructions when first presented.	Superior comprehension of oral and/or written instructions. Checks back to avoid any misunderstanding.
	Communications are vague or poorly written or spoken.  Difficulty conveying meaning to others.	Passes on information both verbal and written, in a way that is easily understood	Is able to adapt both verbal and written communication to be understood by different audiences (e.g. peer, supervisor, senior manager, and visitor).
	Will not ask questions and demonstrates little willingness to listen.	Listens and will question and challenge appropriately to enhance own understanding.	Listens and questions to enhance own and others understanding.  Supports and acknowledges contributions from others.
	Unable to effectively present personal viewpoint.	Able to effectively present personal viewpoint.	Able to influence others to see personal viewpoint.

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	<b>Does not meet Expectation</b> <i>Apprentice failed to demonstrate an acceptable level of behaviour. Improvement is required</i>	<b>Meets Expectation</b> <i>Apprentice demonstrated acceptable level of behaviour and meets the minimum level of behaviour expected</i>	<b>Exceeds Expectation</b> <i>Apprentice demonstrated consistent and positive behaviours in this area that reflect those expected of outstanding apprentices</i>
	Unwilling to see other people's point of view.	Receptive to other people's point of view.	Ability to reason from different points of view.
<b>Team Work</b>	<i>Work and interact effectively within a team</i>		
Assessment criteria	Unwilling to contribute during team discussions / problem solving.	Makes a useful contribution during team discussions / problem solving.	Contributes and willing to lead team based discussions / problem solving.
	Can reduce morale and enthusiasm within the team.	A good team member gets on well with colleagues.	Builds working relationships between team and other groups.  Seeks to diffuse conflict situations where they arise.
	Exhibits negative behaviour concerning team/organisational mission.	Demonstrates knowledge and understanding of team organisation/mission.	A strong team player helps bind the team together to achieve team organisation/mission.
	Does not accept responsibility for own impact on team performance.	Works cooperatively with others to achieve overall team goals.	Puts team goals ahead of personal achievement and recognition.
<b>Independence and Responsibility:</b>	<i>Work independently and take responsibility for initiating and completing tasks</i>		
Assessment criteria	Inclined to wait for direction on work tasks.	Normally does not need to be told what to do next, can be trusted to complete tasks.	Looks ahead and progresses work in areas of the job.
	Regularly needs to be told what to do or how to do it.	Identifies obstacles to achieving work assigned and escalates.	Will seek to resolve obstacles to achieving work assigned themselves before escalating.
	Supervision required to progress work.	Can be relied on to manage their work with little supervision.	Holds themselves accountable for their own performance.

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	Over reliance on supervisor for motivation.	Self-motivated and deals with work/learning balance in a positive way.	Maintains motivation and encourages others to do the same.
<b>Impact of work:</b>	<i>Understand impact of work on others, especially where related to diversity and equality</i>		
Assessment criteria	Others feel the need to recheck their work or have to finish off the job after them.  Work rarely makes a contribution to team quality.	Works to the required standard of accuracy, neatness and thoroughness.  Often makes valued contributions to team quality.	Has a reputation within the work group for doing jobs right first time, every time.  Consistently makes a valued contribution to team quality.
	Little respect for the values of others.	Respects the value of others.	Actively encourages work group to respect the values of others
	Has difficulty being tactful, considerate and respectful in dealing with others.	Usually tactful, considerate and respectful in dealing with others.	Always tactful, considerate and respectful in dealing with others.
	<b>Time management</b>	<i>Accepts responsibility for managing own time and workload within a given plan to complete work to schedule</i>	
Assessment criteria	Does not deliver consistently and can waste time on non-essentials.	Continually demonstrates efficient use of work time.	Continuously strives for improved productivity.
	Unreliable timekeeping	Timekeeping complies with company protocols.	Encourages others to comply with company timekeeping protocols.
	Not fully prepared in advance holds up group activities.	Always prepares in advance ready to participate in group activities.	Encourages others to prepare in advance for group activities



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<b>Change Management:</b>	<i>Ability to handle change and respond to change management processes</i>		
Assessment criteria	Has difficulty adjusting to changes in workload or assignments.	Is flexible, willing and able to respond to changes in work situations and/or learn new skill.	Capable of supporting others with change in work situations and / or learning new skill.
	Resists change or innovation or takes a “wait and see” approach.	Works hard to implement successful change in areas of responsibility as directed by supervisor.	Recommends changes to improve own work and work of others and implements as agreed with supervisor.
	Does not value own contribution.	Able to demonstrate examples of situations when they have changed practice or personal behaviour.	Evidence of influencing change of practice or personal behaviour by others.