

Leisure and Entertainment Engineering Technician Apprenticeship Standard, Level 3 End-point Assessment Plan

January 2018

Introduction & Overview

This document sets out the requirements for end-point assessment (EPA) for the Leisure and Entertainment Engineering Technician apprenticeship standard. It is written for end-point assessment organisations (EPAOs) who need to know how EPA for this apprenticeship must operate. It will also be of interest to Leisure and Entertainment Engineering Technician apprentices, their training providers and employers.

Full time apprentices will typically spend 30 to 36 months on-programme working towards the apprenticeship standard, with 20% off-the-job training.

The EPA should only start once the employer is confident that the apprentice has developed all the knowledge, skills and behaviours (KSBs) defined in the apprenticeship standard. As a EPA gateway requirement, apprentices must compile a log book. In addition, apprentices without English and mathematics at level 2 must achieve this level prior to taking their EPA.¹

The EPA must be completed over a period of 2 days, which do not have to be consecutive, totalling a maximum 10-hours assessment time. The EPA must be conducted by independent assessors, appointed by an EPAO. Employers must choose an EPAO approved to deliver the EPA for this apprenticeship from the Education & Skills Funding Agency's Register of End-Point Assessment Organisations (RoEPAO).

The EPA consists of 3 distinct methods:

- Observation
- Knowledge test
- Interview, underpinned by a log book

Performance in the EPA will determine the apprenticeship grade of fail, pass or distinction.

End-point Assessment Gateway

The EPA should only commence once the employer is confident that the apprentice has developed all the KSBs defined in the apprenticeship standard; they may wish to take advice from their apprentice's training provider(s).

Apprentices without English and mathematics at level 2 must achieve this level prior to taking their EPA.

¹ For those with an education, health and care plan or a legacy statement the apprenticeships English and maths minimum requirement is Entry Level 3. British Sign Language qualification are an alternative to English qualifications for those whom this is their primary language.

Apprentices must have compiled a log book containing sufficient evidence to demonstrate the KSBs that will be assessed by the EPA interview (see Annex A). Evidence sources may include, a record of the various equipment types worked on and the tasks completed by the apprentice, such as fault finding, installation and maintenance; examples of risk assessments undertaken, records of supervisor reviews and sign off and any supporting photographs and documents. The log book must contain a minimum of one piece of evidence to demonstrate each KSB. Evidence must be holistically mapped against the KSBs i.e. each piece of evidence is likely to demonstrate more than one KSB. The log book must contain no less than 10 and a maximum of 12 pieces of evidence. EPAOs must provide guidance on the content of the evidence log book.

End-point Assessment Independent Assessors, Markers and Invigilators

EPAOs must appoint independent assessors to conduct EPA observations and interviews.

Independent assessors must meet the following requirements:

- Hold an engineering qualification at Level 4 or above.
- Have 4 years' engineering experience in the Leisure and Entertainment sector
- Currently work in the Leisure and Entertainment sector or have evidence of a minimum of 5 days continuing professional development per year related to engineering in the sector since leaving.
- Hold or be working towards an assessor qualification, for example A1.
- Have no direct connection with the apprentice, their employer or training provider.

The same independent assessor may or may not conduct an apprentice's observation and interview, allowing EPAOs flexibility in scheduling.

EPAOs must appoint invigilators and markers to invigilate and mark the knowledge test. They must have no direct connection with the apprentice, their employer or training provider. There are no specific qualification or experience requirements for invigilators/markers. They must be trained in the task(s) by their EPAO and operate according to their guidance.

End-point Assessment Methods & Timescales

The end-point assessment consists of 3 distinct assessment methods:

- Knowledge test
- Observation
- Interview, underpinned by a log book

The EPA must be completed over a period of 2 days, which do not have to be consecutive, totalling a maximum 10-hours assessment time. The order in which apprentices can take assessments is flexible to allow EPAOs flexibility and efficiency in scheduling.

See Annex A for KSBs to be assessed by each assessment method.

Each assessment method will be graded pass, distinction or fail - see Annex B for the grading criteria.

Requirements for each assessment method are detailed below.

Method 1 – Knowledge test

- Knowledge tests must consist of 40 scenario based multiple choice questions.
- Each question must present the apprentice with a maximum of 5 options to be selected from. The candidate must select all the possible correct options (some questions might only have one correct option; other questions might have multiple correct options).
- Each correct answer must be assigned one mark, any incorrect or missing answers must be assigned 0 marks. Where an apprentice incorrectly selects more than one option to any single question, 0 marks must be awarded. Where an apprentice fails to select all possible correct options, 0 marks must be awarded. Apprentices must have a maximum of 60 minutes to complete the knowledge test.
- To be awarded a pass, the candidate must pass at least one of each of 15 ‘threshold questions’ representing the 15 knowledge competences pass criteria.
- The knowledge test is closed book i.e. the apprentice can’t refer to reference books or materials.
- Knowledge tests can be either electronic or a paper-based question paper.
- Apprentices must take the knowledge test in a suitably controlled environment i.e. quiet space, free of distractions and influence, in the presence of an invigilator. The maximum invigilator to apprentice ratio must be 1 to 10.
- Questions must be determined by EPAOs being mindful of quality assurance, it is recommended they are developed in consultation with representative employers.
- EPAOs must develop and hold a minimum bank of 120 questions, including 45 variations of the ‘threshold questions’ to ensure sufficient variation; questions must be refreshed as a minimum annually (or following any major changes to legislation).
- Knowledge tests must be marked by markers following a marking guide produced by the EPAO. Alternatively, electronic marking is permissible.

Example questions:

- Which of the following are Non-Destructive Testing (NDT) Techniques?
 - Magnetic Powder Testing
 - Ultrasonic Testing
 - Tensile Testing
 - Visual Testing
 - Dye Penetrant Testing
- Which statements are correct regarding the location of critical spots at welded components?
 - Cracks might start at the edges of holes
 - Areas under tensional stress are prone to cracks

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- Cracks might start at the end of welds
- Areas under compressional stress are never prone to cracks
- A new component will never show a crack indication
- Under the Amusement Device Inspection Procedures Scheme (ADIPS) what inspections/tests must be carried out by an Approved Inspection Body (AIB)?
 - Design Review
 - Monthly Inspection
 - In-Service Annual Inspection
 - Initial Test
 - Assessment of Conformity to Design

Method 2 – Observation

- Apprentices must be observed by an independent assessor completing 3 specified tasks relating to their role. During or after each task completion the independent assessor must ask 4 set open questions to assess related underpinning knowledge. They may ask follow up questions where clarification is required. Questioning must be completed within the total time allowed for the observation.
- KSBs observed and answers to questions must be documented by the independent assessor.
- Apprentices must be provided with written instructions on the tasks they must complete including timescales.
- Observations must be carried out over a continuous period of one working day (with break's in line with working regulations), with a minimum assessment time of 5 hours and maximum total assessment time period of 5 and a half hours.
- Observations must be conducted on Leisure and Entertainment Engineering plant and equipment in a realistic work situation under controlled conditions i.e. not in the presence of the general public. It is anticipated that EPAOs will use employers' facilities to carry out the observation.
- Independent assessors may observe up to a maximum of 2 apprentices at any one time, to allow for cost effective use of resources while maintaining quality and rigour.
- Observation specifications must be determined by EPAOs being mindful of quality assurance, it is recommended they are developed in consultation with representative employers.
- EPAOs must develop a minimum bank of 9 observation specifications, each including 4 questions relating to underpinning knowledge, to ensure sufficient variation; observation specifications must be refreshed as a minimum annually.

Example observation specifications:

- **Fault finding** – Respond to a fault on a ride/attraction. Undertake the job hazard analysis/risk assessment for the task. Carry out the appropriate fault finding to a successful conclusion. Re-instate the ride to operational readiness for handover back to the operational staff ensuring that the correct maintenance paperwork/maintenance management system work order is completed, the post maintenance tool check relevant testing is carried out.

- **Monthly maintenance** – Prepare the relevant work orders/maintenance paperwork and gather the required tools/spares for the monthly maintenance showing compliance/understanding of tool calibration and spares conformity. Demonstrate safe systems of work for an isolation task (either electrical or mechanical) or working at height task. Complete one of the specified tasks (as directed by the assessor) from the monthly maintenance checklist up to a point directed by the assessor then conduct a safe and thorough handover of the task to another technician (simulating a shift change over and demonstrating effective communication skills)
- **Non-Destructive Testing** - Carry out a visual inspection NDT technique explaining what is being assessed and why. Successfully find an indication using the visual technique (there will be 3 indications to find 1 easy, 1 moderate and the 3rd hard). Explain the next steps after finding an indication. Use the technical manuals ride log-book for the ride/attraction to demonstrate what actions need to be taken next. The minor indication is acceptable but the remaining 2 not.

Method 3 – Interview

- Independent assessors must conduct an interview on a one-to-one basis with the apprentice.
- Independent assessors must ask 10 standardised open questions synoptically examining KSBs. They may ask follow-up questions to probe further into the detail in order to satisfy him/herself of the depth of KSBs.
- Apprentices must bring their log book to their interview to refer to and show the assessor evidence contained within to help illustrate their answers.
- The interview will typically last a minimum of one hour and a maximum of one hour 15 minutes.
- Interviews must be conducted under controlled conditions i.e. quiet space, free of distractions and influence. It is anticipated that EPAO will use employers' facilities to carry out the interview.
- Answers to questions must be recorded or documented by the independent assessor.
- Interview questions must be determined by EPAO being mindful of quality assurance, it is recommended they are developed in consultation with representative employers.
- EPAOs must develop a minimum bank of 30 questions, to ensure sufficient variation; questions must be refreshed as a minimum annually.
- Example interview question:
- A large bolt from one of the rides/attractions has sheared and you have checked stores and there are no more available. You have also called the normal supplier and he has none in stock, however, you have found a bolt that you think could be used instead. What would you do to return the ride to operation? What other considerations might need to be taken into account?

Apprenticeship Grading

An independent assessor must combine the results of the 3 assessments to determine the apprenticeship grade, in line with the requirements outlined below. If there is more than one

independent assessor involved in assessing the apprentice, the EPAO will designate one to combine the results. Grades must not be confirmed until after moderation.

To successfully complete the apprenticeship, apprentice's must as a minimum pass all 3 assessment methods. Failure of any one assessment method will result in an overall fail.

To achieve a **Pass**, an apprentice must gain a pass or above in all 3 assessment methods. Pass represents full competence against the standard.

To achieve a **Distinction**, an apprentice must meet the distinction criteria in all 3 assessments.

Re-sits and Re-takes

Apprentices that fail the EPA will have the opportunity to re-sit/re-take. A re-sit does not require further learning, whereas a re-take does. Re-sits/re-takes must not to be offered to apprentices wishing to move from pass to distinction. EPAOs must ensure that apprentices taking a re-sit/re-take have a different knowledge test, observation task and/or interview questions as applicable.

Apprentices must re-sit/re-take one or more failed assessment method within 6 months of the original assessment. If more than 6-months elapse, all 3 assessment methods must be re-sat/re-taken. If any of the assessments needs to be re-sat/re-taken the maximum overall apprenticeship grade that can be achieved is a pass, unless the EPAO determines the apprentice failed for reasons beyond their control.

Professional Body Recognition

Successful apprentices can apply for Professional registration as an Engineering Technician (EngTech).

End-point Assessment Organisations

EPAOs must be approved to deliver the EPA for this apprenticeship and be on the Education & Skills Funding Agency's Register of End-Point Assessment Organisations (RoEPAO).

EPAOs must conduct assessments in environments where apprentices can complete the 3 assessment methods, under controlled conditions - ensuring apprentices have access to fair and consistent assessment. It is anticipated that assessments will be conducted at a suitable employer's premises (either that of the apprentice or that of another employer). This is due to the specialist nature of the apprenticeship meaning numbers will be relatively low and potential high costs involved in setting up separate test centres. Therefore, apprentices may be required to travel to access an assessment.

EPAOs must develop EPA tools, processes and supporting materials, including:

- A bank of multi-choice questions for the knowledge test

- A bank of observation specifications including set questions to assess related knowledge; written task instructions for the apprentice; and documentation to record the observation and answers to questions
- A bank of interview questions and documentation to record the answers
- Guidance for apprentices on the EPA and compiling a log book

Internal quality assurance

Internal quality assurance refers to the requirements that EPAOs must have in place to ensure consistent (reliable) and accurate (valid) assessment decisions. EPAOs for this apprenticeship must undertake the following:

- Appoint independent assessors, invigilators and markers that meet the requirements as detailed in this plan
- Appoint independent persons to conduct internal quality assurance
- Produce assessment tools and supporting materials for the EPA that follow best assessment practice, it is recommended that they do so in consultation with representative employers from the sector to ensure consistency
- Provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading
- Have quality assurance systems and procedures that support fair, reliable and consistent assessment across organisations and over time
- Operate regular standardisation events that enable assessors to attend a minimum of two events per year
- Operate moderation of assessment activity and decisions, through examination of documentation and observation of activity, with a minimum of 20 percent of each independent assessor's assessments moderated

External Quality Assurance

External quality assurance arrangements will ensure that EPAOs delivering EPA for this standard operate consistently and in line with this plan.

External quality assurance for this apprenticeship standard will be undertaken by the Institute for Apprenticeships.

Implementation

Affordability: It is anticipated that the EPA will not represent more than 20% of the maximum funding band for this apprenticeship – band 13, £21,000, based on quotes received.

Volumes: It is anticipated that there will be 150 starts per year on this apprenticeship and 200 starts once established.

Annex A – Knowledge, Skills and Behaviours to be assessed by each assessment method

Knowledge	Observation	Knowledge Test	Interview
1. The Entertainment and Leisure Industry and their role within it		✓	✓
2. Health, Safety and Risk Assessment in the Entertainment and Leisure Sector (ISO17842 Parts 2 and 3) Safety of amusement rides and amusement devices, including working at heights and manual handling	✓	✓	✓
3. Analytical and scientific methods for Engineers		✓	✓
4. Instrumentation and Control Principles and Applications	✓	✓	✓
5. Mathematics for Engineering Technicians		✓	✓
6. Principles of attraction/ride maintenance strategy and daily, weekly, monthly, annual preventative maintenance	✓	✓	✓
7. Principles of inspection and fault finding on a minimum of three rides and attractions	✓	✓	✓
8. Mechanical, Electrical, Electronic and Digital Principles, Processes and Applications	✓	✓	
9. Quality Management/Assurance Principles and Safety Management Systems		✓	✓
10. Applications for Pneumatics and Hydraulics		✓	✓
11. Ride and Attraction maintenance processes, principles and applications	✓	✓	✓
12. Condition Monitoring and Fault Diagnosis	✓	✓	
13. Key principles of lean manufacturing business improvement techniques such as 5S (organise work area), PDCA (Plan, Do, Check, Act) and TPM (Total Productive Maintenance)		✓	✓
14. The cultural diversity of customers and the principles of communication and customer service		✓	✓
15. Principles of First Aid and supporting the evacuation of customers		✓	

Skills	Observation	Knowledge Test	Interview
1. Compliance with statutory regulations and organisational safety requirements in the Entertainment and Leisure Sector	✓		✓
2. Use and interpret engineering data sources such as manufacturers ride and attraction manuals and documentation such as manuals, drawings, blue prints and specifications	✓		✓
3. Create and maintain clear and concise attraction documentation to support all key processes such as maintenance logs and use of computerised management systems	✓		✓
4. Delivery of key performance indicators such as ride and attraction availability using lean manufacturing techniques such as 5S, PDCA and TPM to improve efficiency and effectiveness (and customer experience)	✓		✓
5. Use resources, techniques and obtained facts to undertake complex fault diagnosis/testing, trouble shooting, removing, cleaning/lubrication, inspection, repair and replacement of attraction equipment in one of the following contexts: Electrical, Mechanical, Multi-Skilled	✓		✓
6. Apply mathematical techniques to solve attraction/ride engineering problems such as electrical loading and analysis of ride cycle times	✓	✓	
7. Plan and prepare for daily, weekly, monthly, annually, maintenance of rides and attractions through a structured and logical process to ensure their safe and efficient operation	✓		✓
8. Support installation, testing and commissioning of attraction/ride equipment	✓		
9. Produce replacement components using manual and machine equipment such as queue lines and gating systems			✓
10. Research and source parts for repairs and maintenance. Ensures inventory of parts are on hand for proper and timely maintenance of ride operations	✓		✓
11. Use a minimum of three maintenance tools such as amp meters, voltmeters, compound gauges and pressure gauges	✓		
12. Minimise attraction/ride machinery and equipment downtime by carrying out	✓		

preventative maintenance (including at heights)			
13. Confirmation testing and smooth handover of attraction/ride equipment	✓		
14. Follow rules, procedures and principles to ensure work completed is fit for purpose with an attention to detail/error checks throughout	✓		✓
15. Communicate clearly, using appropriate verbal and non-verbal communication skills, delivered in a warm, professional, accurate and timely manner which instils confidence in colleagues and in customers	✓		✓

Behaviours	Observation	Knowledge Test	Interview
1. Safety Mindset. Disciplined and responsible approach to manage, mitigate and avoid risk to themselves, colleagues or the public and strict compliance.	✓		✓
2. Risk Awareness. High concentration, the desire to reduce risks.	✓		✓
3. Strong Work Ethic. Integrity, aims for excellence, time management, acts as an ambassador for their employer and for their occupation.			✓
4. Problem Solving. Takes responsibility until a solution is reached, challenges others, works to solve the root cause of problems.	✓		✓
5. Responsibility and Resilience. Accepts and seeks responsibility, motivated to succeed and complete work.			✓
6. Team Player. Builds and maintains good relationships with others – works well with people from different disciplines to accomplish an activity safely and on time.	✓		✓
7. Customer Focused. Culturally aware and able to communicate in warm and professional manner with ride/attraction customers and colleagues		✓	✓
8. Adaptability. Responsive to change, flexibility to changing environment and demands			✓

Annex B Grading Criteria

To be a competent worker and pass the apprenticeship all pass criteria must to be achieved.

End Point Method	Distinction	Pass Criteria	Fail Criteria
Knowledge Test	Score 33 to 40 out of 40 questions.	Correctly answers all 15 'threshold questions' and between 10 and 17 other questions. = 25-32	Score ≤ 25 out of 40 questions, including correctly answering all 15 'threshold questions'.
Interview	Provides answers/evidence to at least 4 out of 10 questions which demonstrate a detailed knowledge of the subject matter.	Satisfactorily answers each question.	Fails to satisfactorily answer any one question.
Interview	In addition, building on the pass criteria the apprentice is able to:	Apprentice is able to:	The Apprentice:
Question	<p>Identify who can conduct tasks in accordance with statutory regulations and explains the impact of not complying with statutory regulations.</p> <p>Explain how to positively encourage colleagues to follow safe working practices.</p>	<p>Describe the statutory regulations, organisational procedures to meet regulations and/or their role in adhering to statutory regulations, including safe working practices, in the Entertainment and Leisure Sector.</p> <p>Explain how to ensure customers, colleagues and self are safe and how to report any identified risks.</p> <p>Explain own role in adhering to statutory regulations.</p>	<p>Can't describe statutory regulations, organisational procedures to meet regulations and/or their role in adhering to statutory regulations, including safe working practices, in the Entertainment and Leisure Sector.</p> <p>Is not able to describe how to ensure customers, colleagues and self are safe.</p> <p>Can't explain company procedures to comply with statutory regulations.</p>

			Is not able to explain how to report any identified risks.
Competencies	K2, S1, S3, S14, S15, B1, B2		
Question	<p>Give two or more examples of how and where body language can affect communication and impact on the customer experience.</p> <p>Explain how the Equality Act impacts on the employer's environment and can give at least one example.</p> <p>Explain how to communicate using verbal and non-verbal communication skills to instil confidence in customers and colleagues.</p>	<p>Explain how positive and negative body language and own attitude impacts on the ability to communicate effectively with colleagues and customers</p> <p>Explain what it means to be culturally aware and able to communicate in warm and professional manner with ride/attraction customers and colleagues.</p>	Can't explain the impact of positive and negative body language and own attitude on customers and colleagues.
Competencies	K14, B5, B6, B7, B8		
Question	Explain the implications of not taking a disciplined and responsible approach to managing and mitigating risk.	<p>Explain how you demonstrate a disciplined and responsible approach to manage, mitigate and avoid risk to self, colleagues or the public.</p> <p>Explain own roles and responsibilities in managing risk.</p>	Can't describe how to manage, mitigate and avoid risk to self, colleagues or the public.
Competencies	K9, S1, S3, S14, B1, B2, B5		

Question	Describe how to use key performance indicators to improve efficiency and effectiveness of machinery and equipment.	Describe how to how to create and maintain concise attraction documentation to support key processes such as maintenance logs and use of computerised management systems.	Can't describe how to create and maintain concise attraction documentation to support key processes such as maintenance logs and use of computerised management systems.
Competencies	K3, K4, K5, K13, S2, S3, S4, B4		
Question	<p>Explain the impact of not using the appropriate resources, techniques and obtained facts to undertake mechanical and operational procedures.</p> <p>Describe the impact of not carrying out preventative maintenance on machinery/equipment downtime.</p>	<p>Describe the resources, techniques and obtained facts required to undertake mechanical and operational procedures.</p> <p>Explain how to minimise attraction/ride machinery and equipment downtime by carrying out preventative maintenance.</p>	<p>Can't describe the resource techniques and obtained facts required to undertake mechanical and operational procedures.</p> <p>Can't explain how preventative maintenance can minimise attraction/ride machinery/equipment downtime.</p>
Competencies	K2, K4, K6, S5, B4		
Question	Explain the circumstances when producing replacement components using manual and machine equipment is acceptable.	Explain how to research and source parts for repairs and maintenance.	Can't explain how to research and source parts for repairs and maintenance.
Competencies	K9, K10, S10 B4, B1, B2		
Question	Describe the impact of not planning and preparing maintenance activities in a structured and logical process.	Describe how to plan and prepare for daily, weekly, monthly, annual maintenance of rides and attractions.	Can't describe how to plan and prepare for daily, weekly, monthly, annual maintenance of rides and attractions.

	Describes how they have adapted to changing environments and demands.		
Competencies	K2, K7, K9, K11, S7, B1, B2, B3, B4, B5, B8		
Question	Describe how they act as an ambassador for their employer and their occupation.	Explain how they contribute to the business.	Can't explain how they contribute to the business.
Competencies	K1, S15, B3, B6		

Observation	In addition, building on the pass criteria the apprentice:	The Apprentice:	The Apprentice:
Task	<p>Completes observed task taking into account best practice and within tolerances in respect of speed/accuracy; meaning tasks are completed in the most efficient order without the need to re-do work, with no/minimal errors.</p> <p>Explains the implications of not completing tasks in line with statutory legislation and organisational requirements.</p>	<p>Completes tasks and/or explains task completion in accordance with their organisation's standard operating procedures; in doing so works at or above the level outlines in the standard and complies with task requirements, health and safety, recording requirements and timescale/tolerance requirements.</p>	<p>Does not complete tasks and/or explain task completion in accordance with their organisation's standard operating procedures/below the levels outlined in the Standard.</p>
Competencies	K2, K6, K7, K11, K12, S1, S2, S3, S4, S5, S6, S7, S8, S11, S12, S13, S14, S15, B6		
Task	Demonstrates a capability to assist colleagues and/or use their own initiative to solve work related problems.	Demonstrates and/or explains safe operational and maintenance practices with machinery and equipment.	Does not demonstrate and/or explain safe operational maintenance practices with machinery and equipment.

Competencies	K2, S2, S14, B1, B2		
Task	Explains the benefits of using one tool over another.	Identifies and correctly use tools and resources relevant to the equipment.	Can't identify and/or use tools and resources relevant to the equipment.
Competencies	K6, K8, K11, S10, S11, B4		
Task	Finds all indications using the visual technique and accurately document and explain the next steps for each indication.	Finds at least two indications using the visual technique, accurately document and explain the next steps for each indication.	Can't find any indications using the visual technique and/or accurately document and/or explain the next steps for each indication.
Competencies	K4, K7, K12, S2, S5, S6, S7		
Task	Demonstrates/or explains how to positively encourage colleagues to follow safe working practices.	Demonstrates working practices that ensure the health & safety of self and others	Does not demonstrate working practices that ensure the health and safety of self and others.
Competencies	K2, S1, S14, B1, B2		
Task		Refers to the technical manuals/log book for the ride/attraction to demonstrate what actions need to be taken next.	Does not refer to the technical manual/log books for the ride/attraction.
Competencies	K11, S5, S2, B4		