ST0025/1.2

Draft end-point assessment plan for the Manufacturing engineer (degree) apprenticeship

Apprenticeship reference number	Level of this end-point assessment (EPA)	Integration
ST0025	6	Degree-apprenticeship

Contents

Hide menu

Key Fields

-

-
-
-
-
-
-
-

Introduction and overview

Edit introduction and overview form

This document explains the requirements for end-point assessment (EPA) for the manufacturing engineer (degree) degree-apprenticeship. End-point assessment organisations (EPAOs) must follow this when designing and delivering the EPA.

Manufacturing engineer (degree) apprentices, their employers and training provider should read this document.

A degree-apprenticeship awards a degree with the achievement of the apprenticeship. The degree learning outcomes must be aligned with the knowledge, skills and behaviours (KSBs) in the apprenticeship. The degree must be completed, passed and awarded alongside the manufacturing engineer (degree) degree-apprenticeship.

The apprentice must complete their training and meet the gateway requirements before starting their EPA. The EPA will assess occupational competence.

A degree-apprenticeship must be delivered by a Higher Education Provider (HEP) that is on the apprenticeship providers and assessment register (APAR). The selected HEP must be the training provider and the EPAO. The apprentice's employer must select a HEP from this register.

If the HEP is using a credit framework, the EPA must contribute to the total credit value, and must be delivered in line with this EPA plan. However, the number of credits devoted to EPA may vary across HEP's. The recommended EPA contribution is 10% of the total credit value.

A full-time manufacturing engineer (degree) apprentice typically spends 42 months on-programme. The apprentice must spend at least 12 months on-programme and complete the required amount of off-the-job training in line with the apprenticeship funding rules.

This EPA should be completed within an EPA period lasting typically 6 months.

Occupational competence is outlined by the EPA grade descriptors and determined, when assessed in line with this EPA plan, by an independent assessor who is an occupational expert and confirms the overall EPA grade.

This EPA has 2 assessment methods.

Assessment method 1 - project with report, presentation and questioning:

- fail
- pass

Assessment method 2 - professional discussion underpinned by a portfolio of evidence:

- fail

- pass
- distinction

The result from each assessment method is combined to decide the overall degree-apprenticeship grade. The following grades are available for the degree-apprenticeship:

- fail
- pass
- distinction

EPA summary table

Edit epa gateway formEdit available grades formEdit overall epa grading formEdit re-sits and re-takes form

On-programme - typically 42 months	The apprentice must: • complete training to develop the knowledge, skills and behaviours (KSBs) outlined in this degree-apprenticeship's standard • complete training towards English and mathematics qualifications in line with the apprenticeship funding rules • compile a portfolio of evidence • work towards all required elements of the manufacturing engineer (degree) degree-apprenticeship except undertaking the EPA. The qualification required is: BEng or BSc Honours Manufacturing Engineer degree that fully aligns with the KSBs
End-point assessment gateway	The apprentice's employer must be content that the apprentice is occupationally competent. The apprentice must: • confirm they are ready to take the EPA • have achieved English and mathematics qualifications in line with the apprenticeship funding rules

	• have completed and passed all required elements of the manufacturing engineer (degree) degree-apprenticeship except the EPA For the project with report, presentation and questioning, the apprentice must submit a project brief. To ensure the project allows the apprentice to meet the KSBs mapped to this assessment method to the highest available grade, the EPAO should sign-off the project's title and scope at the gateway to confirm it is suitable. A brief project summary must be submitted to the EPAO. It should be no more than 500 words. This needs to show that the project will provide the opportunity for the apprentice to cover the KSBs mapped to this assessment method. It is not assessed. For the professional discussion underpinned by a portfolio of evidence, the apprentice must submit a portfolio of evidence. Gateway evidence must be submitted to the EPAO, along with any organisation specific policies and procedures requested by the EPAO.
End-point assessment - typically 6 months	**The grades available for each assessment method are below** Project with report, presentation and questioning: • fail • pass Professional discussion underpinned by a portfolio of evidence: • fail • pass • distinction **Overall EPA and degree-apprenticeship can be graded:** ○ fail ○ pass ○ distinction
Professional recognition	This degree-apprenticeship aligns with:

	• Institute of Engineering and Technology (IET) for Incorporated Engineer (IEng) This degree-apprenticeship aligns with: • Institution of Mechanical Engineers (IMechE) for Incorporated Engineer (IEng)
Re-sits and re-takes	The details for re-sits and re-takes are below: • re-take and re-sit grade cap: pass • re-sit timeframe: typically 3 months • re-take timeframe: typically 6 months

Duration of end-point assessment period

Edit duration of end-point assessment period form

The EPA is taken in the EPA period. The EPA period starts when the EPAO confirms the gateway requirements have been met and is typically 6 months.

The EPAO should confirm the gateway requirements have been met and start the EPA as quickly as possible.

EPA gateway

Edit epa gateway form

The apprentice's employer must be content that the apprentice is occupationally competent. That is, they are deemed to be working at or above the level set out in the apprenticeship standard and ready to undertake the EPA. The employer may take advice from the apprentice's training provider, but the employer must make the decision. The apprentice will then enter the gateway.

The apprentice must meet the gateway requirements before starting their EPA.

They must:

- confirm they are ready to take the EPA
- have achieved English and mathematics qualifications in line with the apprenticeship funding rules
- have completed and passed all required elements of the BEng or BSc Honours Manufacturing Engineer degree that fully aligns with the KSBs degree-apprenticeship except the EPA
- submit a project brief for the project with report, presentation and questioning

- submit a portfolio of evidence for the professional discussion underpinned by a portfolio of evidence

Portfolio of evidence requirements:

The apprentice must compile a portfolio of evidence during the on-programme period of the apprenticeship. It should only contain evidence related to the KSBs that will be assessed by the professional discussion. It will typically contain 8 discrete pieces of evidence. Evidence must be mapped against the KSBs. Evidence may be used to demonstrate more than one KSB; a qualitative as opposed to quantitative approach is suggested.

Evidence sources may include workplace documentation and records, for example:

- workplace policies and procedures
- witness statements
- annotated photographs
- video clips with a maximum total duration 10 minutes; the apprentice must be in view and identifiable

This is not a definitive list; other evidence sources can be included.

The portfolio of evidence should not include reflective accounts or any methods of self-assessment. Any employer contributions should focus on direct observation of performance, for example, witness statements, rather than opinions. The evidence provided should be valid and attributable to the apprentice; the portfolio of evidence should contain a statement from the employer and apprentice confirming this.

The EPAO should not assess the portfolio of evidence directly as it underpins the discussion. The independent assessor should review the portfolio of evidence to prepare questions for the discussion. They are not required to provide feedback after this review.

Gateway evidence must be submitted to the EPAO, along with any organisation specific policies and procedures requested by the EPAO.

Order of assessment methods

Edit order of assessment methods form

The assessment methods can be delivered in any order.The result of one assessment method does not need to be known before starting the next.

Project with report, presentation and questioning

Edit project with report, presentation and questioning form

Overview

The project assessment method involves the apprentice completing a significant and defined piece of work that has a real business application and benefit. This process may include for example, research, analysis and the completion of tasks or activities to achieve the outcome. The assessment method will have an output at the end of the defined piece of work. The work completed for the project assessment method must meet the needs of the employer's business and be relevant to the apprentice's occupation and apprenticeship.

This assessment method has 2 components:

- completion of the defined piece of work for the project with a project output
- completion of the defined piece of work for the presentation with questions and answers

Together, these components give the apprentice the opportunity to demonstrate the KSBs mapped to this assessment method. They are assessed by an independent assessor.

Rationale

This assessment method is being used because:

- it allows for the assessment of KSBs that take place over a long period of time
- it allows for a broad set of KSBs to be evidenced during the post-gateway period
- it assesses KSBs holistically
- it can produce something that is of genuine business benefit to the apprentice's employer

Delivery

The apprentice must complete a project based on any of the following:

- a specific problem or recurring issue related to a product, or a research or development project, for example a continuous improvement project or product system update
- a new project such as the implementation of a product or technology (depending on size this may only cover a certain aspect of the project)
- a feasibility study such as investigating a new piece of equipment or technology

To ensure the project allows the apprentice to meet the KSBs mapped to this assessment method to the highest available grade, the EPAO must sign-off the project's

title and scope at the gateway to confirm it is suitable. The EPAO must refer to the grading descriptors to ensure that projects are pitched appropriately.

The project output must be in the form of a report and presentation.

The apprentice must start the project after the gateway. The employer should ensure the apprentice has the time and resources, within the project period, to plan and complete their project.

The apprentice may work as part of a team to complete the project, which could include internal colleagues or technical experts. The apprentice must however, complete their project report and presentation unaided and they must be reflective of their own role and contribution. The apprentice and their employer must confirm this when the report and any presentation materials are submitted.

Component 1: Project report

The report must include at least:

- an executive summary or abstract
- an introduction
- the scope of the project including key performance indicators, aims and objectives
- a project plan
- research outcomes
- data analysis outcomes
- project outcomes
- discussion of findings
- recommendations and conclusions
- references
- appendix containing mapping of KSBs to the report.

The project report must have a word count of 9000 words. A tolerance of 10% above or below is allowed at the apprentice's discretion. Appendices, references and diagrams are not included in this total. The apprentice must produce and include a mapping in an appendix, showing how the report evidences the KSBs mapped to this assessment method.

The apprentice must complete and submit the report and any presentation materials to the EPAO by the end of week 20 of the EPA period.

Component 2: Presentation with questions

The presentation with questions must be structured to give the apprentice the opportunity to demonstrate the KSBs mapped to this assessment method to the highest available grade.

The apprentice must prepare and deliver a presentation to an independent assessor. After the presentation, the independent assessor must ask the apprentice questions about their project, report and presentation.

The presentation should cover:

- an overview of the project
- the project scope (including key performance indicators)
- summary of actions undertaken by the apprentice
- project outcomes and how these were achieved

The presentation with questions must last 60 minutes. This will typically include a presentation of 20 minutes and questioning lasting 40 minutes. The independent assessor must use the full time available for questioning. The independent assessor can increase the time of the presentation and questioning by up to 10%. This time is to allow the apprentice to complete their last point or respond to a question if necessary.

The independent assessor must ask at least 5 questions. They must use the questions from the EPAO's question bank or create their own questions in line with the EPAO's training. Follow up questions are allowed where clarification is required.

The purpose of the independent assessor's questions is:

- to verify that the activity was completed by the apprentice
- to seek clarification where required
- to assess those KSBs that the apprentice did not have the opportunity to demonstrate with the report, although these should be kept to a minimum
- to assess level of competence against the grading descriptors

The apprentice must submit any presentation materials to the EPAO at the same time as the report - by the end of week 20 of the EPA period. The apprentice must notify the EPAO, at that point, of any technical requirements for the presentation.

During the presentation, the apprentice must have access to:

- audio-visual presentation equipment
- flip chart and writing and drawing materials

- computer

The independent assessor must have at least 2 weeks to review the project report and any presentation materials, to allow them to prepare questions.

The apprentice must be given at least 2 weeks' notice of the presentation with questions.

The apprentice may choose to end the presentation early. The apprentice must be confident they have demonstrated competence against the assessment requirements for the assessment method. The independent assessor or EPAO must ensure the apprentice is fully aware of all assessment requirements. The independent assessor or EPAO cannot suggest or choose to end the assessment methods early, unless in an emergency. The EPAO is responsible for ensuring the apprentice understands the implications of ending an assessment early if they choose to do so. The independent assessor may suggest the assessment continues. The independent assessor must document the apprentice's request to end the assessment early.

Assessment decision

The independent assessor must make the grading decision. They must assess the project components holistically when deciding the grade.

The independent assessor must keep accurate records of the assessment. They must record:

- the KSBs demonstrated in the report and presentation with questions
- the apprentice's answers to questions
- the grade achieved

Assessment location

The presentation with questions must take place in a suitable venue selected by the EPAO for example, the EPAO's or employer's premises. It should take place in a quiet room, free from distractions and influence.

The presentation with questions can be conducted by video conferencing. The EPAO must have processes in place to verify the identity of the apprentice and ensure the apprentice is not being aided.

Question and resource development

The EPAO must develop a purpose-built assessment specification and question bank. It is recommended this is done in consultation with employers of this occupation. The EPAO must maintain the security and confidentiality of EPA materials when consulting

with employers. The assessment specification and question bank must be reviewed at least once a year to ensure they remain fit-for-purpose.

The assessment specification must be relevant to the occupation and demonstrate how to assess the KSBs mapped to this assessment method. The EPAO must ensure that questions are refined and developed to a high standard. The questions must be unpredictable. A question bank of sufficient size will support this.

The EPAO must ensure that the apprentice has a different set of questions in the case of re-sits or re-takes.

EPAO must produce the following materials to support the project:

- independent assessor EPA materials which include:
    - training materials
    - administration materials
    - moderation and standardisation materials
    - guidance materials
    - grading guidance
    - question bank
- EPA guidance for the apprentice and the employer

The EPAO must ensure that the EPA materials are subject to quality assurance procedures including standardisation and moderation.

Professional discussion underpinned by a portfolio of evidence

Edit professional discussion underpinned by a portfolio of evidence form

Overview

In the professional discussion, an independent assessor and apprentice have a formal two-way conversation. It gives the apprentice the opportunity to demonstrate the KSBs mapped to this assessment method.

Rationale

This assessment method is being used because:

- it assesses KSBs holistically and objectively
- it allows for the assessment of KSBs that do not occur on a predictable or regular basis

- it allows for assessment of responses where there are a range of potential answers
- it can be conducted remotely, potentially reducing cost

Delivery

The professional discussion must be structured to give the apprentice the opportunity to demonstrate the KSBs mapped to this assessment method to the highest available grade.

An independent assessor must conduct and assess the professional discussion.

The purpose of the independent assessor's questions will be to assess the apprentice's competence against the following themes:

- maintenance
- problem solving and improvement
- values and professional behaviours

The EPAO must give an apprentice 2 weeks' notice of the professional discussion.

The independent assessor must have at least 2 weeks to review the supporting documentation.

The apprentice must have access to their portfolio of evidence during the professional discussion.

The apprentice can refer to and illustrate their answers with evidence from their portfolio of evidence however, the portfolio of evidence is not directly assessed.

The professional discussion must last for 60 minutes. The independent assessor can increase the time of the professional discussion by up to 10%. This time is to allow the apprentice to respond to a question if necessary.

The independent assessor must ask at least 5 questions. The independent assessor must use the questions from the EPAO's question bank or create their own questions in line with the EPAO's training. Follow-up questions are allowed where clarification is required.

The apprentice may choose to end the assessment method early. The apprentice must be confident they have demonstrated competence against the assessment requirements for the assessment method. The independent assessor or EPAO must ensure the apprentice is fully aware of all assessment requirements. The independent assessor or EPAO cannot suggest or choose to end the assessment methods early, unless in an emergency. The EPAO is responsible for ensuring the apprentice understands the implications of ending an assessment early if they choose to do so. The

independent assessor may suggest the assessment continues. The independent assessor must document the apprentice's request to end the assessment early.

The independent assessor must make the grading decision.

The independent assessor must keep accurate records of the assessment. They must record:

- the apprentice's answers to questions
- the KSBs demonstrated in answers to questions
- the grade achieved

Assessment location

The professional discussion must take place in a suitable venue selected by the EPAO for example, the EPAO's or employer's premises.

The professional discussion can be conducted by video conferencing. The EPAO must have processes in place to verify the identity of the apprentice and ensure the apprentice is not being aided.

The professional discussion should take place in a quiet room, free from distractions and influence.

Question and resource development

The EPAO must develop a purpose-built assessment specification and question bank. It is recommended this is done in consultation with employers of this occupation. The EPAO must maintain the security and confidentiality of EPA materials when consulting with employers. The assessment specification and question bank must be reviewed at least once a year to ensure they remain fit-for-purpose.

The assessment specification must be relevant to the occupation and demonstrate how to assess the KSBs mapped to this assessment method. The EPAO must ensure that questions are refined and developed to a high standard. The questions must be unpredictable. A question bank of sufficient size will support this.

The EPAO must ensure that the apprentice has a different set of questions in the case of re-sits or re-takes.

The EPAO must produce the following materials to support the professional discussion underpinned by a portfolio of evidence:

- independent assessor assessment materials which include:
    - training materials
    - administration materials

    - moderation and standardisation materials
    - guidance materials
    - grading guidance
    - question bank
- EPA guidance for the apprentice and the employer

The EPAO must ensure that the EPA materials are subject to quality assurance procedures including standardisation and moderation.

Grading

Edit add grade descriptor formEdit mapping of ksbs to grade themes formEdit available grades form

Project with report, presentation and questioning

Fail - does not meet pass criteria

Theme **KSBs**	**Pass** **Apprentices must demonstrate all of the pass descriptors**
Project delivery K3 K4 K6 K7 K8 K15 K16 K17 K22 K24 S1 S3 S4 S5 S9 S13 S15	Collates and uses a range of data and supporting documentation to meet the project brief. Observes, records and draws accurate and auditable conclusions from data evidence including simulation software. (K6, K8, K17, S3, S5) Interprets and produces technical documentation for the project that is required to achieve the project brief. (K24, S4, S15) Creates, maintains and reviews the required project documentation including management of change requirements. Records and actions any non-conformities. (K15, S13) Identifies and uses resources, including materials and components to complete the project as defined in the project brief. (K22, S9)

Theme **KSBs**	**Pass** **Apprentices must demonstrate all of the pass descriptors**
	Translates conceptual ideas or technical requirements into outcomes, designs, or specifications for systems or components to meet the project brief. (K3, K4, K7, K16, S1)
Safety and sustainability K1 K2 S8 B1 B7	Leads by example to promote a safe and sustainable working environment by complying with statutory and organisational standards and requirements, supporting safety risk assessments and mitigating any risks identified within the design, manufacture, development or test activity in line with the project brief. (K1, K2, S8, B1, B7)
Leadership and management K9 K18 S6 S7	Manages the project, taking into account factors such as planning, resource requirements, safety, quality, cost, performance and sustainability and applying processes such as escalation or risk management and mitigation, ensuring the project is delivered on time to the agreed project brief. (K9, K18, S6, S7)

Theme KSBs	Pass Apprentices must demonstrate all of the pass descriptors

Professional discussion underpinned by a portfolio of evidence

Fail - does not meet pass criteria

Theme KSBs	Pass Apprentices must demonstrate all of the pass descriptors	Distinction Apprentices must demonstrate all of the pass descriptors and all of the distinction descriptors
Manufacturing operations K20 S11	Articulates how they carry out pre operations checks of engineering manufacturing systems and equipment before use in line with organisational and manufacturer requirements. (K20, S11)	Critically evaluates their current processes for pre-operation checks of engineering manufacturing systems and equipment before use. (K20, S11)
Problem solving and improvement K10 K11 K13 K14 S2 S10 S12 B2 B3	Articulates how they are agile and resilient when dealing with new and changing situations when they select, use and apply approved problem-solving methods to solve problems and determine solutions or	Justifies their approach to problem-solving and critically evaluates its effectiveness. (K11, S2) Critically evaluates their management of

Theme KSBs	Pass Apprentices must demonstrate all of the pass descriptors	Distinction Apprentices must demonstrate all of the pass descriptors and all of the distinction descriptors
	actions in line with organisational procedures and manufacturer's requirements. (K11, S2, B3) Articulates how they manage continuous improvement activities to improve the safety, reliability, quality, performance and sustainability of manufactured products, systems or components in line with organisational procedures. (K10, K13, S12) Articulates how they take responsibility for the compliance and quality of work through applying quality management and assurance processes to identify and rectify faults, inaccuracies, discrepancies or unexpected results during the manufacturing engineering process. (K14, S10, B2)	continuous improvement activities. (K10, K13, S12) Evaluates their quality management and assurance processes to determine their effectiveness in a manufacturing environment. (K14, S10, B2)

Theme KSBs	Pass Apprentices must demonstrate all of the pass descriptors	Distinction Apprentices must demonstrate all of the pass descriptors and all of the distinction descriptors
Values and professional behaviours K5 K12 K19 K21 K23 K25 S14 S16 S17 S18 B4 B5 B6	Articulates how they communicate with others verbally in a manufacturing environments, and how they match style to audience and how they overcome barriers. (K5, S14) Articulates how they apply and promote policies and practices to support equity, diversity and inclusion and how they support the needs and concerns of others. (K25, S18, B4) Articulates how they identify and complete opportunities for personal and professional development, including in emerging technologies, and explains how they support the development of others in line with organisational	Justifies the benefits of a diverse workplace. (K25, S18, B4) Critically evaluates their approach to CPD and justifies how they keep up to date with emerging technologies. (K12, K19, S17, B5) Critically evaluates their stakeholder management techniques. (K21, K23, S16, B6)

Theme KSBs	Pass Apprentices must demonstrate all of the pass descriptors	Distinction Apprentices must demonstrate all of the pass descriptors and all of the distinction descriptors
	procedures. (K12, K19, S17, B5) Articulates how they collaborate with colleagues and stakeholders and how they strategically manage differing and competing interests with stakeholders whilst acting in an ethical and professional manner. (K21, K23, S16, B6)	

Overall EPA grading

Edit overall epa grading form

Performance in the EPA determines the overall grade of:

- fail
- pass
- distinction

An independent assessor must individually grade the project with report, presentation and questioning and professional discussion underpinned by a portfolio of evidence in line with this EPA plan.

An independent assessor must individually grade the

- Project with report, presentation and questioning An independent assessor must individually grade the
    - Professional discussion underpinned by a portfolio of evidence

The EPAO must combine the individual assessment method grades to determine the overall EPA grade.

If the apprentice fails one assessment method or more, they will be awarded an overall fail.

To achieve an overall pass, the apprentice must achieve at least a pass in all the assessment methods. To achieve an overall distinction, the apprentice must achieve at least a pass in the project and a distinction in the professional discussion.

Grades from individual assessment methods must be combined in the following way to determine the grade of the EPA overall.

Aggregation of the degree-apprenticeship

The outcome of the EPA must be aggregated with the degree to enable the degree-apprenticeship to be awarded. Once the overall EPA grade has been determined in accordance with this EPA plan, aggregation can be achieved in a variety of ways. This will be determined during the creation of the degree-apprenticeship. Examples of how this aggregation can work include:

- each assessment method grade, and therefore the overall EPA grade, can be converted to marks or percentages however these must be an absolute figure and not a range
- alternatively, the overall EPA grade can be used directly

HEPs can explore other ways of aggregating the EPA with the degree outcomes in-line with the latest IfATE degree-apprenticeship policy.

Project with report, presentation and questioning	Professional discussion underpinned by a portfolio of evidence	Overall Grading
Any grade	Fail	Fail
Fail	Any grade	Fail
Pass	Pass	Pass
Pass	Distinction	Distinction

EPA degree apprenticeship aggregation

Edit epa degree apprenticeship aggregation form

The outcome of the EPA must be aggregated with the degree to enable the degree-apprenticeship to be awarded.

Once the overall EPA grade has been determined, aggregation can be achieved in a variety of ways. This will be determined during the creation of the degree-apprenticeship. Examples of how this aggregation can work include:

- each assessment method grade, and therefore the overall EPA grade, can be converted to marks or percentages however these must be an absolute figure and not a range
- alternatively, the overall EPA grade can be used directly

HEPs can explore other ways of aggregating the EPA with the degree outcomes in line with the latest IfATE degree-apprenticeship policy

Re-sits and re-takes

Edit re-sits and re-takes form

If the apprentice fails one assessment method or more, they can take a re-sit or a re-take at their employer's discretion. The apprentice's employer needs to agree that a re-sit or re-take is appropriate. A re-sit does not need further learning, whereas a re-take does. The apprentice should have a supportive action plan to prepare for a re-sit or a re-take.

The employer and the EPAO should agree the timescale for a re-sit or re-take. A re-sit is typically taken within 3 months of the EPA outcome notification. The timescale for a re-take is dependent on how much re-training is required and is typically taken within 6 months of the EPA outcome notification.

If the apprentice fails the project assessment method, they must amend the project output in line with the independent assessor's feedback. The apprentice will be given 12 weeks to rework and submit the amended report.

Failed assessment methods must be re-sat or re-taken within a 6-month period from the EPA outcome notification, otherwise the entire EPA will need to be re-sat or re-taken in full.

Re-sits and re-takes are not offered to an apprentice wishing to move from pass to a higher grade.

The apprentice will get a maximum EPA grade of pass if they need to re-sit or re-take one or more assessment methods, unless the EPAO determines there are exceptional circumstances.

Roles and responsibilities

Edit roles and responsibilities form

Roles	Responsibilities
Apprentice	As a minimum, the apprentice should: • complete on-programme training to meet the KSBs as outlined in the apprenticeship standard for a minimum of 12 months • complete the required amount of off-the-job training specified by the apprenticeship funding rules as arranged by the employer and training provider • understand the purpose and importance of EPA • prepare for and undertake the EPA including meeting all gateway requirements • ensure that all supporting evidence required at the gateway is submitted in accordance with this EPA plan
Employer	As a minimum, the apprentice's employer must: • select the HEP (and therefore the training provider and EPAO) • work with the training provider (where applicable) to support the apprentice in the workplace and to provide the opportunities for the apprentice to develop the KSBs • arrange and support off-the-job training to be undertaken by the apprentice • decide when the apprentice is working at or above the apprenticeship standard and is ready for EPA • ensure the apprentice is prepared for the EPA • ensure that all supporting evidence required at the gateway is submitted in accordance with this EPA plan • confirm arrangements with the EPAO for the EPA (who, when, where) in a timely manner • provide access to any employer-specific documentation as required, for example company policies)

Roles	Responsibilities
	• ensure that the EPA is scheduled with the EPAO for a date and time which allows appropriate opportunity for the apprentice to meet the KSBs. • ensure the apprentice is given sufficient time away from regular duties to prepare for, and complete the EPA • ensure that any required supervision during the EPA period, as stated within this EPA plan, is in place • ensure the apprentice has access to the resources used to fulfil their role and carry out the EPA for workplace based assessments • remain independent from the delivery of the EPA • pass the certificate to the apprentice upon receipt from the EPAO
EPAO - HEP	As a minimum, the EPAO (HEP) must: • conform to the requirements of the apprenticeship provider and assessment register • conform to the requirements of this EPA plan and deliver its requirements in a timely manner • conform to the requirements of the external quality assurance provider (EQAP) • understand the degree-apprenticeship, including the apprenticeship standard, EPA plan and funding • make all necessary contractual arrangements, including agreeing the price of the EPA • develop and produce assessment materials including specifications and marking materials (for example mark schemes, practice materials, training material) • maintain and apply a policy for the declaration and management of conflict of interests and independence which ensures, as a minimum, no personal benefit or

Roles	Responsibilities
	detriment is received by those delivering the EPA or from the result of an assessment and covers: ○ apprentices ○ employers ○ assessors ○ the HEP's role as a training provider ○ any other roles involved in delivery or grading of the EPA • have quality assurance systems and procedures that ensure fair, reliable and consistent assessment and maintain records of IQA activity for external quality assurance (EQA) purposes • appoint independent, competent and suitably qualified assessors in line with the requirements of this EPA plan • where required to facilitate the EPA, appoint administrators, invigilators and any other roles • deliver induction, initial and on-going training for all assessors, and if used administrators and invigilators and any other roles involved in delivery or grading of the EPA specified within this EPA plan. This should include how to record the rationale and evidence for grading decisions where required • standardise all assessors, before allowing them to deliver EPAs and: ○ when the EPA is updated ○ at least once a year ○ moderate their decisions once EPAs have begun • monitor the performance of all assessors and provide re-training where necessary • develop and provide assessment recording documentation to ensure a clear and auditable process

Roles	Responsibilities
	is in place for providing assessment decisions and feedback to all relevant stakeholders • use language in the development and delivery of the EPA that is appropriate to the level of the degree-apprenticeship • arrange for the EPA to take place in a timely manner, in consultation with the employer • provide information, advice and guidance documentation to enable apprentices, employers and training providers to prepare for the EPA • confirm all gateway requirements have been met • host and facilitate the EPA or make suitable alternative arrangements • maintain the security of the EPA including, but not limited to, verifying the identity of the apprentice, invigilation, security of materials • where the EPA plan permits assessment away from the workplace, ensure that the apprentice has access to the required resources and liaise with the employer to agree this if necessary • confirm the overall EPA grade • arrange the certification of the degree-apprenticeship • conduct appeals where required, according to the EPAO's appeals procedure
Training provider - HEP	As a minimum, the training provider (HEP) must: • conform to the requirements of the apprenticeship provider and assessment register • ensure procedures are in place to mitigate against any conflict of interest • work with the employer and support the apprentice during the off-the-job training to provide the

Roles	Responsibilities
	opportunities to develop the knowledge, skills and behaviours as outlined in the apprenticeship standard • deliver training to apprentices as outlined in their learner agreement • monitor the apprentice's progress during any training provider led on-programme learning • ensure the apprentice is prepared for the EPA • advise the employer, upon request, on the apprentice's readiness for EPA • ensure that all supporting evidence required at the gateway is submitted in accordance with this EPA plan
Independent assessor	As a minimum, an independent assessor must: • be independent, with no conflict of interest with the apprentice, their employer or training provider, specifically, they must not receive a personal benefit or detriment from the result of the assessment • not be employed by the same organisation as the apprentice or employed by an organisation on IfATE's directory of professional and employer-led bodies (employer directory) that supports external quality assurance. • be current and active in the occupation, for example be sourced from the industry or a professional body • have, maintain and be able to evidence up-to-date knowledge and expertise of the occupation • have authority to represent the professional body where the EPA is acting as the professional body's assessment process (if necessary and permitted in the EPA plan) • have the competence to assess the EPA and meet the requirements of the IQA section of this EPA plan

Roles	Responsibilities
	• understand the degree-apprenticeship (occupational standard and EPA plan) • attend induction and standardisation events before they conduct an EPA for the first time, when the EPA is updated, and at least once a year • use language in the delivery of the EPA that is appropriate to the level of the degree-apprenticeship • work with other personnel, including additional assessors where used, in the preparation and delivery of assessment methods • conduct the EPA to assess the apprentice against the KSBs and in accordance with the EPA plan • make all final grading decisions on an apprentice's occupational competence in accordance with grading descriptors in this EPA plan • if an assessor panel is used, the independent assessor must chair and make final grading decisions • record and report all assessment outcome decisions for each apprentice • comply with the IQA requirements of the EPAO • comply with external quality assurance (EQA) requirements
External examiner	As a minimum, the external examiner must: • confirm the EPA has been delivered in accordance with the EPA plan • accept, and therefore not change, the EPA grading decisions made by the independent assessor • comply with the requirements of the EPA plan and IfATE policies • comply with the requirements, policies, and procedures of the EQA provider

Roles	Responsibilities
	• be independent of the apprentice, and the employing organisation who are involved in delivering the degree-apprenticeship • be independent of the delivery and awarding of the EPA • not have been involved in the teaching or on-programme assessment of the apprentice

Reasonable adjustments

Edit reasonable adjustments form

Reasonable adjustments

The EPAO must have reasonable adjustments arrangements for the EPA.

This should include:

- how an apprentice qualifies for a reasonable adjustment
- what reasonable adjustments may be made

Adjustments must maintain the validity, reliability and integrity of the EPA as outlined in this EPA plan.

Special considerations

The EPAO must have special consideration arrangements for the EPA.

This should include:

- how an apprentice qualifies for a special consideration
- what special considerations will be given

Special considerations must maintain the validity, reliability and integrity of the EPA as outlined in this EPA plan.

Internal quality assurance

Edit internal quality assurance form

They must also appoint independent assessors who:

- have recent relevant experience of the occupation or sector to at least occupational level 6 gained in the last 3 years or significant experience of the occupation or sector
- meet the following minimum requirements:

- will typically have professional recognition at incorporated engineer level or above by a professional body recognised by the engineering council

Value for money

Edit value for money form

Affordability of the EPA will be aided by using at least some of the following:

- utilising digital remote platforms to conduct applicable assessment methods
- using the employer's premises
- conducting assessment methods on the same day

Professional recognition

Unavailable professional recognition form

This degree-apprenticeship aligns with:

- Institute of Engineering and Technology (IET) for Incorporated Engineer (IEng)

This degree-apprenticeship aligns with:

- Institution of Mechanical Engineers (IMechE) for Incorporated Engineer (IEng)

Mapping of KSBs to assessment methods

Edit mapping of ksbs to assessment methods form

Knowledge	Assessment methods
K1 Safety, environmental, sustainability and security legislation, regulations and standards associated with the manufacturing engineering environment. Cyber security, statutory safety standards, carbon zero, recycling and reusability targets.	Project with report, presentation and questioning
K2 Hazards, risks and safe systems of work in a manufacturing engineering environment.	Project with report, presentation and questioning
K3 Principles and applications of mechanics in a manufacturing environment: motion, energy and force to ensure that systems and components function safely, efficiently and reliably.	Project with report, presentation and questioning

Knowledge	Assessment methods
K4 Factors that determine material selection relevant to the appropriate industry sector and manufacturing environment.	Project with report, presentation and questioning
K5 Verbal communication techniques. Giving and receiving information. Matching style to audience. Barriers in communication and ways to overcome them.	Professional discussion underpinned by a portfolio of evidence
K6 Principles of mathematics and scientific methods including analytical techniques. Evaluating statistical data, complex numbers and matrices required in a manufacturing environment.	Project with report, presentation and questioning
K7 Principles of electrical, electronic systems, components, control and digital engineering relevant to manufacturing environments.	Project with report, presentation and questioning
K8 Data collection, storage, and presentation: methods, benefits and risks.	Project with report, presentation and questioning
K9 Project commercials: delays, changes and impacts.	Project with report, presentation and questioning
K10 Techniques used for improving and enhancing the safety, reliability, quality, performance and sustainability of manufactured products, systems or components.	Professional discussion underpinned by a portfolio of evidence
K11	Professional discussion underpinned by a portfolio of evidence

Knowledge	Assessment methods
Troubleshooting methods for diagnosing problems, faults or establishing performance characteristics, supporting improvement opportunities.	
K12 Workplace training and development techniques: personal and professional development. Coaching and transfer of knowledge.	Professional discussion underpinned by a portfolio of evidence
K13 Manufacturing processes used to optimise safety, efficiency, performance, productivity and sustainability.	Professional discussion underpinned by a portfolio of evidence
K14 Quality management and assurance processes.	Professional discussion underpinned by a portfolio of evidence
K15 Management of change (MOC) processes: requesting change, determining viability, planning, implementing and evaluating changes to a product, system or component. Adherence to MOC, risks and limitations of MOC approval.	Project with report, presentation and questioning
K16 Principles of Computer Aided Design (CAD) and the application in a manufacturing environment.	Project with report, presentation and questioning
K17 Principles and applications of simulation software in a manufacturing environment.	Project with report, presentation and questioning
K18 Project management techniques for project delivery: planning, resource management, cost and budget control, risk, and quality.	Project with report, presentation and questioning

Knowledge	Assessment methods
K19 Current and emerging technology in a manufacturing environment: mechanical and electrical integration, digitalisation, artificial intelligence, Internet of Things, manufacturing systems, automation, robotics, 3D printing, awareness of cloud computing and cyber security.	Professional discussion underpinned by a portfolio of evidence
K20 Strategies for the management and maintenance of plant and equipment.	Professional discussion underpinned by a portfolio of evidence
K21 Collaboration working methods with stakeholders: best practice, quality and performance measures, issue resolution.	Professional discussion underpinned by a portfolio of evidence
K22 Manufacturing methods: turning products, materials, components or other commodities into finished products or systems.	Project with report, presentation and questioning
K23 Teamwork and leadership: negotiation techniques, conflict management and development techniques.	Professional discussion underpinned by a portfolio of evidence
K24 Written communication techniques. Plain English principles. Manufacturing engineering terminology. Report writing.	Project with report, presentation and questioning
K25 Equity, diversity, and inclusion in the workplace. Unconscious bias.	Professional discussion underpinned by a portfolio of evidence
Skill	**Assessment methods**

Knowledge	Assessment methods
S1 Translate conceptual ideas or technical requirements into developmental outcomes or operational designs, or specifications for systems or components.	Project with report, presentation and questioning
S2 Select, use and apply approved problem-solving methods to solve problems and determine solutions or actions such as Define, Measure, Analyse, Improve, and Control (DMAIC), Failure Mode Effects Analysis (FMEA), Plan-Do-Check-Act (PDCA) or fish bone diagrams.	Professional discussion underpinned by a portfolio of evidence
S3 Collate and use a range of data and supporting documentation.	Project with report, presentation and questioning
S4 Interpret and produce technical documentation such as schematic and circuit diagrams, engineering drawings or 3D CAD models, simulation models, project plans, engineering reports, test reports, fault reports or data analytics.	Project with report, presentation and questioning
S5 Observe, record and draw accurate and auditable conclusions from data evidence.	Project with report, presentation and questioning
S6 Manage assigned projects or programmes of work, taking into account factors such as planning, resource requirements, safety, quality, cost, performance and sustainability.	Project with report, presentation and questioning
S7 Apply processes for project or programme management such as escalation, audit or risk management and risk mitigation.	Project with report, presentation and questioning

Knowledge	Assessment methods
S8 Comply with statutory and organisational safety standards and requirements, supporting safety risk assessments and mitigate any risks identified within the design, manufacture, development or test activity.	Project with report, presentation and questioning
S9 Identify and use resources, such as digital tools or technologies, human, equipment, materials or data, to complete projects or programmes of work.	Project with report, presentation and questioning
S10 Apply quality management and assurance processes to identify and rectify faults, inaccuracies, discrepancies or unexpected results during the manufacturing engineering process.	Professional discussion underpinned by a portfolio of evidence
S11 Carry out pre operations checks of engineering manufacturing systems and equipment before use.	Professional discussion underpinned by a portfolio of evidence
S12 Manage continuous improvement activities using techniques such as such as Six Sigma, 5s, Kaizen, Lean, Kanban, Statistical Process Control or Value Stream Mapping.	Professional discussion underpinned by a portfolio of evidence
S13 Create, maintain and review project documentation. Record and action any non-conformities.	Project with report, presentation and questioning
S14 Communicate with others verbally for example, colleagues and stakeholders.	Professional discussion underpinned by a portfolio of evidence

Knowledge	Assessment methods
S15 Communicate in writing for example reports and presentations.	Project with report, presentation and questioning
S16 Collaborate with colleagues and stakeholders. Manage differing and competing interests with stakeholders.	Professional discussion underpinned by a portfolio of evidence
S17 Identify and complete opportunities for personal and professional development.	Professional discussion underpinned by a portfolio of evidence
S18 Apply and promote policies and practices to support equity, diversity and inclusion.	Professional discussion underpinned by a portfolio of evidence
Behaviour	**Assessment methods**
B1 Promotes a healthy and safe working environment.	Project with report, presentation and questioning
B2 Take responsibility for the compliance and quality of work in their area and enables others to meet these standards through effective communication, collaboration and teamwork.	Professional discussion underpinned by a portfolio of evidence
B3 Agile and resilient in dealing with new and changing situations.	Professional discussion underpinned by a portfolio of evidence
B4 Supportive of the needs and concerns of others, especially where this relates to diversity and inclusion.	Professional discussion underpinned by a portfolio of evidence

Behaviour	Assessment methods
B5 Committed to maintaining and enhancing competence of self and others through Continued Professional Development (CPD).	Professional discussion underpinned by a portfolio of evidence
B6 Acts in an ethical and professional manner.	Professional discussion underpinned by a portfolio of evidence
B7 Leads by example being an advocate for change and sustainable approaches.	Project with report, presentation and questioning

Mapping of KSBs to grade themes

Edit add grade themes formEdit mapping of ksbs to grade themes form

Project with report, presentation and questioning

KSBS GROUPED BY THEME	Knowledge	Skills	Behaviour
Project delivery K3 K4 K6 K7 K8 K15 K16 K17 K22 K24 S1 S3 S4 S5 S9 S13 S15	Principles and applications of mechanics in a manufacturing environment: motion, energy and force to ensure that systems and components function safely, efficiently and reliably. (K3) Factors that determine material selection relevant to the appropriate industry sector and manufacturing environment. (K4)	Translate conceptual ideas or technical requirements into developmental outcomes or operational designs, or specifications for systems or components. (S1) Collate and use a range of data and supporting documentation. (S3) Interpret and produce technical documentation such as schematic and circuit diagrams, engineering drawings or	None

KSBS GROUPED BY THEME	Knowledge	Skills	Behaviour
	Principles of mathematics and scientific methods including analytical techniques. Evaluating statistical data, complex numbers and matrices required in a manufacturing environment. (K6) Principles of electrical, electronic systems, components, control and digital engineering relevant to manufacturing environments. (K7) Data collection, storage, and presentation: methods, benefits and risks. (K8) Management of change (MOC) processes: requesting change, determining viability, planning, implementing and evaluating changes to a product, system or component. Adherence to MOC, risks and limitations of MOC approval. (K15) Principles of Computer Aided Design (CAD) and the application in a	3D CAD models, simulation models, project plans, engineering reports, test reports, fault reports or data analytics. (S4) Observe, record and draw accurate and auditable conclusions from data evidence. (S5) Identify and use resources, such as digital tools or technologies, human, equipment, materials or data, to complete projects or programmes of work. (S9) Create, maintain and review project documentation. Record and action any non-conformities. (S13) Communicate in writing for example reports and presentations. (S15)	

KSBS GROUPED BY THEME	Knowledge	Skills	Behaviour
	manufacturing environment. (K16) Principles and applications of simulation software in a manufacturing environment. (K17) Manufacturing methods: turning products, materials, components or other commodities into finished products or systems. (K22) Written communication techniques. Plain English principles. Manufacturing engineering terminology. Report writing. (K24)		
Safety and sustainability K1 K2 S8 B1 B7	Safety, environmental, sustainability and security legislation, regulations and standards associated with the manufacturing engineering environment. Cyber security, statutory safety standards, carbon zero, recycling and reusability targets. (K1) Hazards, risks and safe systems of work in a manufacturing	Comply with statutory and organisational safety standards and requirements, supporting safety risk assessments and mitigate any risks identified within the design, manufacture, development or test activity. (S8)	Promotes a healthy and safe working environment. (B1) Leads by example being an advocate for change and sustainable approaches. (B7)

KSBS GROUPED BY THEME	Knowledge	Skills	Behaviour
	engineering environment. (K2)		
Leadership and management K9 K18 S6 S7	Project commercials: delays, changes and impacts. (K9) Project management techniques for project delivery: planning, resource management, cost and budget control, risk, and quality. (K18)	Manage assigned projects or programmes of work, taking into account factors such as planning, resource requirements, safety, quality, cost, performance and sustainability. (S6) Apply processes for project or programme management such as escalation, audit or risk management and risk mitigation. (S7)	None

Professional discussion underpinned by a portfolio of evidence

KSBS GROUPED BY THEME	Knowledge	Skills	Behaviour
Manufacturing operations K20 S11	Strategies for the management and maintenance of plant and equipment. (K20)	Carry out pre operations checks of engineering manufacturing systems and equipment before use. (S11)	None
Problem solving and improvement K10 K11 K13	Techniques used for improving and enhancing the safety, reliability, quality,	Select, use and apply approved problem-solving methods to solve problems and	Take responsibility for the compliance and quality of work in their area and

KSBS GROUPED BY THEME	Knowledge	Skills	Behaviour
K14 S2 S10 S12 B2 B3	performance and sustainability of manufactured products, systems or components. (K10) Troubleshooting methods for diagnosing problems, faults or establishing performance characteristics, supporting improvement opportunities. (K11) Manufacturing processes used to optimise safety, efficiency, performance, productivity and sustainability. (K13) Quality management and assurance processes. (K14)	determine solutions or actions such as Define, Measure, Analyse, Improve, and Control (DMAIC), Failure Mode Effects Analysis (FMEA), Plan-Do-Check-Act (PDCA) or fish bone diagrams. (S2) Apply quality management and assurance processes to identify and rectify faults, inaccuracies, discrepancies or unexpected results during the manufacturing engineering process. (S10) Manage continuous improvement activities using techniques such as such as Six Sigma, 5s, Kaizen, Lean, Kanban, Statistical Process Control or Value Stream Mapping. (S12)	enables others to meet these standards through effective communication, collaboration and teamwork. (B2) Agile and resilient in dealing with new and changing situations. (B3)
Values and professional behaviours K5 K12 K19	Verbal communication techniques. Giving and receiving information. Matching style to	Communicate with others verbally for example, colleagues	Supportive of the needs and concerns of others, especially where this relates to

KSBS GROUPED BY THEME	Knowledge	Skills	Behaviour
K21 K23 K25 S14 S16 S17 S18 B4 B5 B6	audience. Barriers in communication and ways to overcome them. (K5) Workplace training and development techniques: personal and professional development. Coaching and transfer of knowledge. (K12) Current and emerging technology in a manufacturing environment: mechanical and electrical integration, digitalisation, artificial intelligence, Internet of Things, manufacturing systems, automation, robotics, 3D printing, awareness of cloud computing and cyber security. (K19) Collaboration working methods with stakeholders: best practice, quality and performance measures, issue resolution. (K21) Teamwork and leadership: negotiation techniques, conflict	and stakeholders. (S14) Collaborate with colleagues and stakeholders. Manage differing and competing interests with stakeholders. (S16) Identify and complete opportunities for personal and professional development. (S17) Apply and promote policies and practices to support equity, diversity and inclusion. (S18)	diversity and inclusion. (B4) Committed to maintaining and enhancing competence of self and others through Continued Professional Development (CPD). (B5) Acts in an ethical and professional manner. (B6)

KSBS GROUPED BY THEME	Knowledge	Skills	Behaviour
	management and development techniques. (K23) Equity, diversity, and inclusion in the workplace. Unconscious bias. (K25)		

Supporting information

External quality assurance

Edit external quality assurance - eqa form

Option selected: Office for Students (OfS)

Involved employers

Toyota Manufacturing (UK) Ltd, Jaguar Land Rover, SERTEC, Ford, BMW, JCB, Nissan Motor Manufacturing UK, Perkins, Honda, Caterpillar, Siemens, Bentley, AMTC, EEF, Confederation of British Metal Forming, Cast Metals Federation

EPA menu