Institute for Apprenticeships & Technical Education

HUMAN FACTORS SPECIALIST

Key information

Reference: ST0785
Version: 1.0
Level: 7
Degree: integrated degree
Typical duration to gateway: 36 months
Typical EPA period: 6 months
Maximum funding: £19000

Route: Engineering and manufacturing
Date updated: 11/05/2023
Approved for delivery: 11 May 2023
Lars code: 706
EQA provider: Office for Students
Review: This apprenticeship standard will be reviewed after three years

End-point assessment plan

V1.0

Introduction and overview

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

Human factors specialist apprentices, their employers and training providers should read this document.

An approved EPAO must conduct the EPA for this apprenticeship. Employers must select an approved EPAO from the register of end-point assessment organisations (RoEPAO).

A full-time apprentice typically spends 36 months on-programme (this means in training before the gateway) working towards competence as a human factors specialist. All apprentices must spend at least 12 months on-programme. All apprentices must complete the required amount of off-the-job training specified by the apprenticeship funding rules.

This EPA has 2 assessment methods.

The grades available for each assessment method are:

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

- fail
- pass

- distinction

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 apprenticeship grade. The following grades are available for the apprenticeship:

- fail
- pass
- distinction

EPA summary table

On-programme (typically 36 months)	The apprentice must complete training to develop the knowledge, skills and behaviours (KSBs) of the occupational standard. The apprentice must complete training towards English and maths qualifications in line with the apprenticeship funding rules. The apprentice must complete training towards any other qualifications listed in the occupational standard. The qualification(s) required are: completed and passed all credit carrying modules of the Masters degree in human factors apart from the final module which will form the EPA. The apprentice must compile a portfolio of evidence.
End-point assessment gateway	The apprentice's employer must be content that the apprentice has attained sufficient KSBs to complete the apprenticeship. The apprentice must: • confirm they are ready to take the EPA • have achieved English and mathematics qualifications in line with the apprenticeship funding rules • completed and passed all credit carrying modules of the Masters degree in human factors apart from the final module which will form the EPA. For the professional discussion underpinned by a portfolio of evidence, the apprentice must submit a portfolio of evidence. For the project with report, presentation and questioning, the apprentice must submit the following supporting material: project title and scope requirements. 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.

	The apprentice must submit the gateway evidence to their EPAO, including any organisation specific policies and procedures requested by the EPAO.
End-point assessment (typically 6 months)	**Grades available for each method:** Project with project report, presentation and questions • fail • pass • distinction Professional discussion underpinned by a portfolio of evidence • fail • pass • distinction **Overall EPA and apprenticeship can be graded:** • fail • pass • distinction
Professional recognition	This apprenticeship standard aligns with Graduate Member for Chartered Institute of Ergonomics and Human Factors (CIEHF). The experience gained and responsibility held by the apprentice on completion of the apprenticeship will either wholly or partially satisfy the requirements for registration at this level.
Re-sits and re-takes	• Re-take and re-sit grade cap: pass • Re-sit timeframe: typically 2 month(s) • Re-take timeframe: typically 4 month(s)

Duration of end-point assessment period

The EPA will be taken within the EPA period. The EPA period begins when the EPAO confirms the gateway requirements are met and is typically 6 months.

The expectation is that the EPAO will confirm the gateway requirements are met and the EPA begins as quickly as possible.

EPA gateway

The apprentice's employer must be content that the apprentice has attained sufficient KSBs to complete the apprenticeship. 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 maths qualifications in line with the apprenticeship funding rules
- completed and passed all credit carrying modules of the Masters degree in human factors apart from the final module which will form the EPA.

For the project with report, presentation and questioning apprentices must submit: project title and scopeTo ensure the project allows the apprentice to meet the KSBs mapped to this EPA 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 EPA method. It is not assessed.

- 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 this assessment method. It will typically contain 10 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, for example:
  - workplace policies, procedures and records
  - witness statements
  - annotated photographs
  - video clips (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.

The apprentice must submit the gateway evidence to their EPAO, including any organisation specific policies and procedures requested by the EPAO.

Order of assessment methods

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 project report, presentation and questions

Overview

A project involves the apprentice completing a significant and defined piece of work that has a real business application and benefit. The project 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:

- project with a project output
- 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 EPA method is being used for the following reasons:

- because it replicates the project-based approach adopted in the workplace
- this method can evidence a broad range of knowledge and skills
- the occupation requires individuals to produce and present project work on a frequent basis.

Delivery

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

the application of a Human Centered Design (HCD) process to include the development, evaluation, or improvement of a product, system or organisation. The application of the HCD process could occur at any point in the lifecycle from developing design concepts through to evaluating in-service equipment, systems or processes. For example, the project could be based upon:

- design, development and assessment of a prototype User Interface for a ship command and control system or medical device

- evaluation of an extant power plant or rail control room and development and assessment of recommendations for equipment, organisational and process improvements
- evaluation and iteration of a vehicle design using Computer Aided Design tools and/or physical prototypes to ensure physical accommodation of the intended user group.

In line with a HCD process the project should be underpinned by appropriate Human Factors principles, analysis and methodologies to:

- identify and understand the context of use including the intended users, tasks and environments.
- identify user needs and specify user requirements for the product, system or organisation
- develop design solutions or recommendations for design improvement
- conduct human centred evaluation of design solutions with quantitative and qualitative methods
- engage with users to inform each stage of the HCD process.

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. 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:

- the project aims and objectives
- the project plan
- a description of the processes and methods applied
- a description of the outputs of each project phase including rationale and results of any analysis, design or evaluation activities performed
- a conclusion and discussion of project outcomes and recommendations.

The project report must have a word count of 10000 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 25 minutes and questioning lasting 35 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 days' notice of the presentation with questions.

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 should 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

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.

The apprentice can refer to and illustrate their answers with evidence from their portfolio of evidence.

Rationale

This EPA method is being used because it can synoptically assess knowledge, skills and behaviours. This method also helps to assess their in-depth understanding of their work and covers aspects of the occupation that are difficult to observe and take place in restricted and confidential settings. This is a consistent method that applies across work settings in the industry. It is reflective of industry best practice for reporting orally on work and justifying decisions taken. It also replicates the approach taken to reviewing candidate performance used in industry. Furthermore:

- it allows the apprentice to be assessed against KSBs that do not naturally occur in the project
- it allows assessment of some KSBs which may not naturally occur in every workplace or may take too long to observe to be assessed.

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 is to ensure that the apprentice can evidence the KSBs assigned to the assessment method and to provide opportunity for them to show depth and breadth of coverage and, where they are able, to demonstrate the distinction criteria.

The themes of the professional discussion will cover the following:

- leadership and professional behaviours
- core technical knowledge
- human factors methodologies
- human factors practice

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 8 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 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 should 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 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

Project with project report, presentation and questions

Fail - does not meet pass criteria

THEME KSBS	PASS APPRENTICES MUST DEMONSTRATE ALL THE PASS DESCRIPTORS	DISTINCTION APPRENTICES MUST DEMONSTRATE ALL THE PASS DESCRIPTORS AND ALL OF THE DISTINCTION DESCRIPTORS
Project management K14 K16 S8 S13	Uses project and time management techniques to plan, manage and lead projects, including management of resources, risk and quality, and controlling cost and budgets in line with the project brief (K14, K16, S8, S13)	Critically analyses the impact on risk and quality outcomes with the project management techniques used (K14, S8)
Human centred design application and process K11 K12 K19 S1 S10 S12 B2 B3 B5	Selects and applies human factors methodologies and design principles and processes to meet the project brief (K12, S1) Leads by example to promote innovation and advocate human centred and inclusive design principles through developing accessible solutions which challenge existing practices in line with the project brief (K19, S12, B3, B5) Plans and undertakes research, with qualitative and quantitative approaches, in line with project requirements and occupational guidelines for professional and ethical conduct (K11, S10, B2)	Uses multiple human factors methodologies in parallel or combination and reconciles their inconsistencies to deliver practical results, justifying the benefit and limitations of the different methodologies (K12, S1, S12, B3) Evaluates the limitations of human factors research methodologies and findings and articulates how they apply to real-world problems (K11, S10)

Critical analysis and assessment K2 S6	Collects, analyses and interprets data using numerical, analytical and critical analysis techniques to meet the project brief (K2, S6)	Critically evaluates the limitations of techniques used in the project to collect, analyse and interpret data (K2, S6)

Professional discussion underpinned by a portfolio of evidence

Fail - does not meet pass criteria

THEME KSBS	PASS APPRENTICES MUST DEMONSTRATE ALL THE PASS DESCRIPTORS	DISTINCTION APPRENTICES MUST DEMONSTRATE ALL THE PASS DESCRIPTORS AND ALL OF THE DISTINCTION DESCRIPTORS
Leadership and professional behaviours K15 K17 K18 S7 S15 B1 B4 B6 B7	Evaluates their choice of communication techniques for oral, written and formal presentations when dealing with technical and non-technical audiences such as colleagues and stakeholders in multidisciplinary teams (K17, S7) Analyses their teamwork and leadership skills including negotiation techniques, conflict management development techniques and diversity, equality and inclusivity when collaborating and promoting teamwork across disciplines in line with organisational guidelines (K15, S15, B6) Evaluates their approach, adaptability and resilient to changing work tasks which gives priority to quality and continuous improvement practices in line with company policy (B1, B4) Evaluates the implications of human factors work in broader business and engineering contexts, including safety, ethics, environmental, sustainability, social inclusion, and advances in technology (K18) Evaluates their commitment to professional development in line with organisational or professional body guidelines (B7)	Critically evaluates the impact of their teamwork and leadership skills on organisational or business outcomes (K15, S15)
Core technical knowledge K1 K5 K6 K7	Summarises the theoretical applications of human sciences to the engineering and design of products processes and systems based on relevant links to psychology, physiology, human	

	biology, biomechanics and cognitive science (K1) Articulates different human factors principles that would be used during Human Machine Interface Design (HMI) (K5) Articulates physical ergonomics principles including human capabilities and limitations, and their application to design (K6) Articulates the characteristics of Robotic Intelligent and Autonomous Systems (RIAS) and evaluates their Human Factors considerations (K7)	
Human factors methodologies K3 K4 K8 K13 K20 S2 S3 S5 S9 S14	Evaluates their use of computer-based tools in the design, analysis and validation of jobs, interfaces, tasks and environments within sociotechnical systems, including the impact and limitations they faced (K4, S2) Critically evaluates the process of Human Factors Integration and Human Systems Integration. Articulates how they integrate Human Factors into product, service and system lifecycles including producing documentation (K8, K13, S9, S14) Justifies the production of Specific-Measurable-Appropriate-Realistic-Timebound (SMART) requirements to meet specified outcomes (S3) Evaluates how they use qualitative and quantitative approaches and techniques in the design and execution of user trials and experimentation (K3, K20, S5)	Critically evaluates the use of human factors and human system integration and articulates how they may be tailored for specific applications (K8, S14, S9, K13) Critically evaluates the factors that impact the validity, reliability and applicability of user experiments or trials and how they can be addressed in experiment or trial design (K3, K20, S5)
Human factors	Analyses the impact of their technical decision making within their area of delegated authority	Critically evaluates legal and statutory standards and guidance relevant to their sector and the

practice K9 K10 S4 S11	and the impact of these decisions on engineering projects (S11) Analyses product or system compliance with national and international legal, statutory, and regulatory standards and guidance which bound and inform design and engineering choices (K9, K10, S4)	impact they have on design and engineering choices (K9, K10, S4)

Overall EPA grading

The EPA methods contribute equally to the overall EPA grade.

Performance in the EPA will determine the apprenticeship grade of:

- fail
- pass
- distinction

Independent assessors must individually grade the: project with project report, presentation and questions and professional discussion underpinned by a portfolio of evidence according to the requirements set out in this EPA plan.

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

Apprentices who fail one or more assessment method will be awarded an overall EPA fail.

Apprentices must achieve at least a pass in all the EPA methods to get an overall pass. In order to achieve an overall EPA 'distinction', apprentices must achieve a distinction in both assessment methods.

Grades from individual assessment methods should be combined in the following way to determine the grade of the EPA as a whole.

PROJECT WITH PROJECT REPORT, PRESENTATION AND QUESTIONS	PROFESSIONAL DISCUSSION UNDERPINNED BY A PORTFOLIO OF EVIDENCE	OVERALL GRADING
Any grade	Fail	Fail
Fail	Any grade	Fail
Pass	Pass	Pass
Pass	Distinction	Pass
Distinction	Pass	Pass
Distinction	Distinction	Distinction

Re-sits and re-takes

Apprentices who fail one or more EPA method(s) can take a re-sit or a re-take at the 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.

Apprentices should have a supportive action plan to prepare for a re-sit or a re-take.

The employer and EPAO agree the timescale for a re-sit or re-take. A re-sit is typically taken within 2 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 4 months of the EPA outcome notification.

Failed EPA 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 apprentices wishing to move from pass to a higher grade.

An apprentice will get a maximum EPA grade of pass for a re-sit or re-take, unless the EPAO determines there are exceptional circumstances.

Roles and responsibilities

ROLES	RESPONSIBILITIES
Apprentice	As a minimum, the apprentice should: • complete on-programme training to meet the KSBs as outlined in the occupational standard for a minimum of 12 months • complete the required amount of off-the-job training specified by the apprenticeship funding rules and 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 line with this EPA plan
Employer	As a minimum, the apprentice's employer must: • select the EPAO and training provider • 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 occupational 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 line 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 • 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	As a minimum, the EPAO must:
	• conform to the requirements of this EPA plan and deliver its requirements in a timely manner
	• conform to the requirements of the RoEPAO
	• conform to the requirements of the external quality assurance provider (EQAP)
	• understand the apprenticeship including the occupational 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. This must ensure, as a minimum, there is no personal benefit or detriment for those delivering the EPA or from the result of an assessment. It must cover:
	  • apprentices
	  • employers
	  • independent assessors
	  • 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 internal quality assurance (IQA) activity for external quality assurance (EQA) purposes
	• appoint independent, competent, and suitably qualified assessors in line with the requirements of this EPA plan
	• appoint administrators, invigilators and any other roles where required to facilitate the EPA
	• deliver induction, initial and on-going training for all their assessors (independent and additional where used), and any other roles involved in the delivery or grading of the EPA as specified within this EPA plan. This should include how to record the rationale and evidence for grading decisions where required

	• conduct standardisation with all their assessors before allowing them to deliver an EPA, when the EPA is updated, and at least once a year • conduct moderation of all of their assessor's decisions once EPAs have started • monitor the performance of all their assessors and provide re-training where necessary • develop and provide assessment recording documentation to ensure a clear and auditable process 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 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 the gateway requirements have been met before they start the EPA for an apprentice • 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 and 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 overall grade awarded • arrange the certification of the apprenticeship • maintain and apply a policy for conducting appeals
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 • have, maintain and be able to evidence up-to-date knowledge and expertise of the occupation • have the competence to assess the EPA and meet the requirements of the IQA section of this EPA plan

	• understand the apprenticeship's 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 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 line with the EPA plan • make final grading decisions in line with this EPA plan • record and report assessment outcome decisions • comply with the IQA requirements of the EPAO • comply with external quality assurance (EQA) requirements
Training provider	As a minimum, the training provider must: • conform to the requirements of the register of apprenticeship training providers (RoATP) • 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 opportunities to develop the KSBs as outlined in the occupational standard • deliver training to the apprentice as outlined in their apprenticeship 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 line with this EPA plan • remain independent from the delivery of the EPA

Reasonable adjustments

The EPAO must have reasonable adjustments arrangements for the EPA.

This should include:

- how an apprentice qualifies for 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.

Internal quality assurance

Internal quality assurance refers to how EPAOs ensure valid, consistent and reliable EPA decisions. EPAOs must adhere to the requirements within the roles and responsibilities section and:

- have effective and rigorous quality assurance systems and procedures that ensure fair, reliable and consistent EPA regardless of employer, place, time or independent assessor
- appoint independent assessors who are competent to deliver the EPA and who:
  - have recent relevant experience of the occupation or sector to at least occupational level 7 gained in the last 3 years or significant experience of the occupation or sector
  - hold, or are working towards, an assessor qualification
  - have professional body membership with:
    Chartered Institute of Ergonomics and Human Factors (CIEHF)
  - meet the following minimum requirements:
    ensure appropriate security clearance is gained if required.
- operate induction training for anyone involved in the delivery and/or assessment of the EPA
- provide training for independent assessors in good assessment practice, operating the assessment tools and making grading decisions
- provide ongoing training for markers and invigilators
- provide standardisation activity for this apprenticeship standard for all independent assessors:
  - before they conduct an EPA for the first time
  - if the EPA is updated
  - periodically as appropriate (a minimum of annually)
- conduct effective moderation of EPA decisions and grades
- conduct appeals where required, according to the EPAO's appeals procedure, reviewing and making final decisions on EPA decisions and grades
- have no direct connection with the apprentice, their employer or training provider. In all instances, including when the EPAO is the training provider (for example a higher education institution)

Value for money

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

This apprenticeship standard is designed to prepare successful apprentices to meet the requirements for registration as a:

Chartered Institute of Ergonomics and Human Factors (CIEHF) with Graduate Member

Mapping of KSBs to assessment methods

KNOWLEDGE	ASSESSMENT METHODS
K1 The theoretical application of human sciences to the engineering and design of products, processes, and systems based on relevant parts of psychology, physiology, human biology, biomechanics and cognitive science.	Professional discussion underpinned by a portfolio of evidence
K2 Numerical, analytical and critical analysis techniques for Human-System Analysis & Assessment. The limitations of these techniques.	Project with project report, presentation and questions
K3 Qualitative and quantitative approaches and techniques for user engagement.	Professional discussion underpinned by a portfolio of evidence
K4 Design principles, methods and limitations for systems design and sociotechnical system design.	Professional discussion underpinned by a portfolio of evidence
K5 Human factors principles for Human Machine Interface (HMI) design.	Professional discussion underpinned by a portfolio of evidence
K6 Capability and limitations in the design and evaluation of physical ergonomics.	Professional discussion underpinned by a portfolio of evidence
K7 Robotic Intelligent and Autonomous Systems (RIAS) and their Human Factors considerations.	Professional discussion underpinned by a portfolio of evidence
K8 Principles of Human Factors Integration and Human System Integration.	Professional discussion underpinned by a portfolio of evidence
K9 National and international human factors standards and supporting guidance.	Professional discussion underpinned by a portfolio of evidence
K10 Legal requirements: statutory and national, international and sector specific legislation and regulation.	Professional discussion underpinned by a portfolio of evidence

K11 Research design; ethical and environmental practice in research and qualitative and quantitative approaches to research.	Project with project report, presentation and questions
K12 The principles and processes of Human Centred Design.	Project with project report, presentation and questions
K13 Product, service and system lifecycles: planning, developing, preparing, utilising and retirement.	Professional discussion underpinned by a portfolio of evidence
K14 Project management techniques for project delivery: planning, resource management, cost and budget control, risk, and quality.	Project with project report, presentation and questions
K15 Teamwork and leadership: negotiation techniques, conflict management, development techniques, and diversity, equality and inclusivity considerations.	Professional discussion underpinned by a portfolio of evidence
K16 Time management techniques.	Project with project report, presentation and questions
K17 Communication techniques: oral, written, and presentations.	Professional discussion underpinned by a portfolio of evidence
K18 The implication of the broader business and engineering context including safety, environmental protection and sustainability, ethics, economic responsibility, social responsibilities, and advances in technology on human factors.	Professional discussion underpinned by a portfolio of evidence
K19 Inclusive and accessible design principles and practice.	Project with project report, presentation and questions
K20 Techniques for user trials and experimentation appropriate to human factors design.	Professional discussion underpinned by a portfolio of evidence

SKILL	ASSESSMENT METHODS
S1 Select and apply human factors methodologies to project requirements.	Project with project report, presentation and questions
S2 Use computer-based tools to assist in the design, analysis, evaluation and validation of jobs, interfaces, tasks and environments such as: Computer Aided Design, Task Analysis, Anthropometric Modelling, Workload Analysis, HCI/User Interface Design and Prototyping.	Professional discussion underpinned by a portfolio of evidence
S3 Produce Specific-Measurable-Appropriate-Realistic-Timebound (SMART) requirements.	Professional discussion underpinned by a portfolio of evidence
S4 Identify and comply with legal, statutory and any other relevant legislation and standards to bound and inform design and engineering choices.	Professional discussion underpinned by a portfolio of evidence
S5 Design and execute trials and experimentation involving Users.	Professional discussion underpinned by a portfolio of evidence
S6 Collect, analyse and interpret data using numerical, analytical and critical analysis techniques.	Project with project report, presentation and questions
S7 Communicate with colleagues and stakeholders in multidisciplinary teams using different methods including oral, written, and presentation.	Professional discussion underpinned by a portfolio of evidence
S8 Plan, manage and lead projects.	Project with project report, presentation and questions
S9 Produce documentation such as assessments, risk registers, plans, specifications and assurance cases.	Professional discussion underpinned by a portfolio of evidence
S10 Plan and undertake research to meet the project requirement.	Project with project report, presentation and questions

S11 Technical decision making related to human factors engineering considering the impact on the project and area of delegated authority.	Professional discussion underpinned by a portfolio of evidence
S12 Use human factors design principles when developing solutions.	Project with project report, presentation and questions
S13 Plan and manage own time.	Project with project report, presentation and questions
S14 Integrate human factors programme of work within engineering programmes.	Professional discussion underpinned by a portfolio of evidence
S15 Teamwork and leadership skills including: negotiation techniques, conflict management, development techniques, and diversity, equality and inclusivity considerations.	Professional discussion underpinned by a portfolio of evidence

BEHAVIOUR	ASSESSMENT METHODS
B1 Adapt and is resilient to challenging or changing situations.	Professional discussion underpinned by a portfolio of evidence
B2 Act in a professional and ethical manner.	Project with project report, presentation and questions
B3 Lead by example and act as an advocate for human centred and inclusive design practices.	Project with project report, presentation and questions
B4 Prioritise quality and continuous improvement practices.	Professional discussion underpinned by a portfolio of evidence
B5 Lead by example to promote innovation and challenge existing practices.	Project with project report, presentation and questions
B6 Collaborate and promote teamwork across disciplines.	Professional discussion underpinned by a portfolio of evidence
B7 Commit to ongoing professional development.	Professional discussion underpinned by a portfolio of evidence

Mapping of KSBs to grade themes

Project with project report, presentation and questions - Project

KSBS GROUPED BY THEME	KNOWLEDGE	SKILLS	BEHAVIOUR
Project management K14 K16 S8 S13	Project management techniques for project delivery: planning, resource management, cost and budget control, risk, and quality. (K14) Time management techniques. (K16)	Plan, manage and lead projects. (S8) Plan and manage own time. (S13)	N/A
Human centred design application and process K11 K12 K19 S1 S10 S12 B2 B3 B5	Research design; ethical and environmental practice in research and qualitative and quantitative approaches to research. (K11) The principles and processes of Human Centred Design. (K12) Inclusive and accessible design principles and practice. (K19)	Select and apply human factors methodologies to project requirements. (S1) Plan and undertake research to meet the project requirement. (S10) Use human factors design principles when developing solutions. (S12)	Act in a professional and ethical manner. (B2) Lead by example and act as an advocate for human centred and inclusive design practices. (B3) Lead by example to promote innovation and challenge existing practices. (B5)
Critical analysis and assessment K2 S6	Numerical, analytical and critical analysis techniques for Human-System Analysis & Assessment. The limitations of these techniques. (K2)	Collect, analyse and interpret data using numerical, analytical and critical analysis techniques. (S6)	N/A

Professional discussion underpinned by a portfolio of evidence - Discussion

KSBS GROUPED BY THEME	KNOWLEDGE	SKILLS	BEHAVIOUR
Leadership and professional behaviours K15 K17 K18 S7 S15 B1 B4 B6 B7	Teamwork and leadership: negotiation techniques, conflict management, development techniques, and diversity, equality and inclusivity considerations. (K15) Communication techniques: oral, written, and presentations. (K17) The implication of the broader business and engineering context including safety, environmental protection and sustainability, ethics, economic responsibility, social responsibilities, and advances in technology on human factors. (K18)	Communicate with colleagues and stakeholders in multidisciplinary teams using different methods including oral, written, and presentation. (S7) Teamwork and leadership skills including: negotiation techniques, conflict management, development techniques, and diversity, equality and inclusivity considerations. (S15)	Adapt and is resilient to challenging or changing situations. (B1) Prioritise quality and continuous improvement practices. (B4) Collaborate and promote teamwork across disciplines. (B6) Commit to ongoing professional development. (B7)
Core technical knowledge K1 K5 K6 K7	The theoretical application of human sciences to the engineering and design of products, processes, and systems based on relevant parts of psychology, physiology, human biology, biomechanics and cognitive science. (K1)	N/A	N/A

	Human factors principles for Human Machine Interface (HMI) design. (K5) Capability and limitations in the design and evaluation of physical ergonomics. (K6) Robotic Intelligent and Autonomous Systems (RIAS) and their Human Factors considerations. (K7)		
Human factors methodologies K3 K4 K8 K13 K20 S2 S3 S5 S9 S14	Qualitative and quantitative approaches and techniques for user engagement. (K3) Design principles, methods and limitations for systems design and sociotechnical system design. (K4) Principles of Human Factors Integration and Human System Integration. (K8) Product, service and system lifecycles: planning, developing, preparing, utilising and retirement. (K13) Techniques for user trials and experimentation appropriate to human factors design. (K20)	Use computer-based tools to assist in the design, analysis, evaluation and validation of jobs, interfaces, tasks and environments such as: Computer Aided Design, Task Analysis, Anthropometric Modelling, Workload Analysis, HCI/User Interface Design and Prototyping. (S2) Produce Specific-Measurable-Appropriate-Realistic-Timebound (SMART) requirements. (S3) Design and execute trials and experimentation involving Users. (S5) Produce documentation such as assessments, risk registers, plans,	N/A

		specifications and assurance cases. (S9) Integrate human factors programme of work within engineering programmes. (S14)	
Human factors practice K9 K10 S4 S11	National and international human factors standards and supporting guidance. (K9) Legal requirements: statutory and national, international and sector specific legislation and regulation. (K10)	Identify and comply with legal, statutory and any other relevant legislation and standards to bound and inform design and engineering choices. (S4) Technical decision making related to human factors engineering considering the impact on the project and area of delegated authority. (S11)	N/A

Version log

Version	Change detail	Earliest start date	Latest start date	Latest end date
1.0	Approved for delivery	11/05/2023	Not set	Not set