Level 7 Materials Process Engineer (Degree) Apprenticeship (ST0659)

AM2: Professional Review Guidance

Version 1

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INTRODUCTION

This assessment will take the form of a professional review, which must be appropriately structured to draw out the best of the apprentice's competence and excellence and cover the knowledge, skills and behaviours (KSBs) assigned to this assessment method (see below).

The rationale for this assessment method is: This assessment method was selected as a valid way to draw out KSBs, in particular behaviours, which would be less likely to naturally occur in the project and presentation. It is commonplace for people in this occupation to engage in detailed technical discussions, so this assessment method mirrors their day-to-day work.

KNOWLEDGE, SKILLS AND BEHAVIOURS (KSBs)

The Level 7 Material Process Engineer apprenticeship standard states that all apprentices will need to develop specialist KSBs. These KSBs will be generic and/or technology specific, but the subject areas indicated below will provide a foundation for an apprentice development in materials process engineering.

The KSBs of the of the Level 7 Material Process Engineer apprenticeship standard are set out below for Assessment Method 2 (AM2):

Knowledge
A Material Process Engineer will require a thorough understanding of the industry in which they are employed. They will be able to understand and apply the following areas:

K3 Understanding the importance of conflict management
K5 Principles of Quality Management Systems and implementation in factory environments
K6 New product introduction and technology management - theory
K17 Principles of Lean Manufacturing
K18 Cost based engineering (including estimating, cost control, cost forecasting, investment appraisal and risk analysis)
K19 Principles of Operations Management
K20 Principles of Leadership in Operations Management
K21 Principles of Supply Chain Management
K22 Principles of Asset Management
K27 Fundamentals of the product life cycle

Skills
A Material Process Engineer will be asked to demonstrate skills in the following:

S4 Actively listen and explain clearly and appropriately to target audience
S9 Apply appropriate negotiation techniques effectively
S17 Correct use of product life cycle concepts*

Behaviours
A Material Process Engineer will be asked to demonstrate the following behaviours:

B2 Professional Commitment - Commitment to corporate values and behaviours through the demonstrating a personal, ethical, and professional commitment to society, their profession, and the environment, adopting a set of values and behaviours that will maintain and enhance the reputation of the profession as well as their organisation*

B4 Commitment to the profession contributing proactively to the continuing development of engineering within their domain*

* These KSBs are mapped to apprentice's specialist option (i.e. casting, coating, welding, brazing, heat treatment and surface treatment).

DELIVERY

The independent assessor will conduct and assess the professional discussion.

The professional review will last for 60 minutes. The independent assessor has the discretion to increase the time of the professional review by up to 10% to allow the apprentice to complete their last answer. Further time may be granted for apprentices with appropriate needs, in-line with PIABC Limited's *"Reasonable Adjustments Policy"*.

The professional review will be conducted as a 1:1 conversation in an appropriate environment (a quiet room free from distraction and influence).

The independent assessor will ask a minimum of 10 open questions from PIABC Limited's question bank to ensure consistency in approach. Follow up questions will then be used to draw out further evidence.

The questions will relate to the underpinning KSBs specified for this assessment method and will be varied to ensure that all KSBs are assessed.

The evidence will be captured using documentation produced by PIABC Limited by the independent assessor and the professional review will be recorded.

PROFESSIONAL REVIEW

A professional review is a structured conversation between the apprentice and independent assessor. It is an in-depth, planned, two-way discussion pitched at the relevant standard level.

It provides a holistic approach to assessing knowledge and understanding and is useful in determining not only what and how apprentice is performing, but also their analytical and decision-making abilities. It is used to test the validity and reliability of apprentice's evidence.

Typically, the professional review is an opportunity for apprentice to describe their apprenticeship journey and explain how the apprentice have applied their learning and developed their professional behaviours.

The independent assessor's role is to manage the process to allow apprentice to prove their KSBs in a supported environment, but without the independent assessor constantly directing and leading the conversation. During the discussion, the independent assessor may use several techniques to ensure the discussion remains focused and effective (i.e. periodically summarising points covered, questioning to probe for more information or to clarify certain points of the discussion).

At the beginning of the discussion the independent assessor is likely to be doing most of the talking (i.e. reiterating the reason for the discussion and agreeing how the main points of the discussion will be assessed and recorded etc.). However, as the discussion progresses, there should be a gradual 'handing over' to allow the apprentice to enter a full discussion where the apprentice have the opportunity of doing most of the talking.

The evidence presented by apprentice in the professional review must be valid, current, authentic, sufficient, and relevant to the relevant standard. By this PIABC Limited mean:

- **Valid:** Relevant and appropriate to meet the relevant KSBs criteria.
- **Current:** The evidence used has been produced during the time the apprentice has been on the apprenticeship.
- **Authentic:** The evidence can be identified as the individual apprentice's own work and not that of someone else or a group of people. If produced by the apprentice, if evidence is team-based it must be able to clearly identify the apprentice's contribution
- **Sufficient:** There is enough evidence to be certain that performance to the required standard is consistent and could be achieved on more than one occasion.
- **Relevant:** There is a clear match between the item of evidence and the required KSBs criteria.

ON THE DAY

- **Dress code**
  Apprentices are expected to look smart on the day of the professional review. This must be in accordance with health and safety requirements of the venue (e.g. no open toe shoes).

- **Identification confirmation**
  Apprentices must bring personal photographic identification (e.g. passport or driving licence), which will be checked before the professional review.

- **Mobile phones and tablets**
  The use of mobile phones and other electronic devices at the professional review by the apprentice is prohibited.

- **Punctuality and timing**
  All apprentices must be on time for the start of their professional review. It is recommended that apprentices arrive at least 30 minutes before its scheduled start. In instances where the apprentice may arrive late, the apprentice must inform their training provider as soon as possible so the panel is aware.

VENUE

PIABC Limited will ensure that the professional review is conducted in a suitable controlled environment in any of the following:

- Employer's premises
- Other suitable venue selected by PIABC Limited (e.g. at training provider location or PIABC Limited office)

The professional review may be conducted face-to-face or via an electronic platform (e.g. video-conferencing). If video conferencing is used to conduct the professional review, then it will be conducted to ensure that the apprentice is not being aided in any way during the discussion.

ASSESSMENT CRITERIA

Apprentices will only be assessed on KSBs mapped to the core and the ones mapped to their specialist choice (see apprentice occupational standard for details).

PIABC Limited will assess the apprentice against the higher order descriptors outlined in the Pass and Distinction columns rather than the lower order KSBs references in the second column. By showing competence against the higher order descriptors, then it will be assumed that the apprentice is working at or above the level outlined in the standard. The apprentice will be considered to have failed if they do not meet the criteria outlined in the pass descriptor.

Fail - The apprentice will be deemed to have failed if they do not meet the criteria outlined in the pass descriptor.

The following assessment criteria and full grading descriptors are for Assessment Method 2 (AM2):

Area of Assessment	**Method**	**Pass Criteria – The apprentice's project must demonstrate that they:**	**A successful contribution at distinction will meet the pass criteria in all areas and meet seven of the individual distinction descriptors from the criteria below:**
Manage the delivery of cost optimised innovative, stable, and robust solutions with integration into the product life cycle	**K6** New product introduction and technology management – theory	Demonstrates an understanding of the product life cycle concepts in a materials process environment, with reference to new products, and the business and cost benefits which result from adoption of such an approach. Listens carefully to questions and communicates clearly, using appropriate language for target audience. Overall approach demonstrates consideration of how best to present and communicate the key content and messages.	Demonstration of a leadership role in justifying the use of product life cycle concepts and clear evidence that the organisation in achieving business benefits from implementation.
	K18 Cost based engineering		
	K27 Fundamentals of the product life cycle		
	S4 Actively listen and explain clearly and appropriately to target audience		
	S17 Correct use of product life cycle concepts		
Demonstrate the use of lean manufacturing and operational techniques for continuous improvement	**K17** Principles of Lean Manufacturing	Discusses manufacturing operations techniques their understanding of these and how they are able to be selected, applied and critiqued.	Manufacturing operation techniques are compared, contrasted, and illustrated with examples given of applying to their discipline, whilst demonstrating critical appraisal, insight and reflection.
	K19 Principles of Operations management		
	K21 Principles of Supply Chain Management		
	K22 Principles of Asset Management		

Area of Assessment	Method	Pass Criteria – The apprentice's project must demonstrate that they:	A successful contribution at distinction will meet the pass criteria in all areas and meet seven of the individual distinction descriptors from the criteria below:
Demonstrate CPD	**B2**. Professional Commitment - Commitment to corporate values and behaviours through the demonstrating a personal, ethical, and professional commitment to society, their profession, and the environment, adopting a set of values and behaviours that will maintain and enhance the reputation of the profession as well as their organisation **B4** Commitment to the profession - Contributing proactively to the continuing development of engineering within their domain	Describes the importance of professionalism to the organisation, with examples of demonstrating an ethical approach and a commitment to the environment.	Demonstrates a positive mind-set and willingness to learn, displaying proactive approach to enhancing the profession with examples of the development of engineering beyond their immediate domain.
Demonstrate collaborative working techniques	**K3** Understanding the importance of conflict management **S9** Apply appropriate negotiation techniques effectively	Demonstrates an understanding of the importance of collaborative working techniques, and how they can be applied to manage conflict. Gives an example of this	Justifies their choice of techniques, explaining the risks and benefits and offers an alternative.
Manage the delivery of engineering/operational improvements in a regulated sector	**K5** Principles of quality management systems and implementation in factory environments **K20** Principles of leadership in operations management	Demonstrates leadership and insight in the way projects are selected and implemented with compliance to the appropriate quality management systems to enhance business performance in terms of cost, quality and delivery.	Explains why quality management is important within the discipline and demonstrates leadership theory and practice to deliver improvement solutions to the required standard, making informed critical judgements and defending their decision(s) to improve the business.

GRADING

The following grading is for Assessment Method 2:

KSBs	Fail	Pass	Distinction
K3 K5 K6 K17 K18 K19 K20 K21 K22 K27 S4 S9 S17 B2 B4	The apprentice will be deemed to have failed the assessment method if they do not meet the criteria outlined in the pass descriptor.	In order to achieve a "pass" all of the pass descriptors mapped to this assessment method must be met.	In order to achieve a "distinction", all of the pass criteria and 4 of the distinction criteria mapped against this assessment method must be met.

The independent assessor will make all grading decisions.

SUCCESSFUL COMPLETION OF THE END POINT ASSESSMENT

For an apprentice to pass the end point assessment (EPA) as a whole and be deemed to be competent, the apprentice must pass all assessment methods (AM1: Work-Based Project and Presentation, AM2: Professional Review and the AM3: Knowledge and Skills Test).

Should the apprentice fail either AM1, AM2 or AM3 they are required to re-sit/re-take that component. The number of times an apprentice is permitted to re-sit/re-take the end point assessment and the date at which they do so is determined by the employer.