Level 6 Materials Science Technologist (Degree) Apprenticeship (ST0675)

AM1 (Component 2): Presentation of Work-Based Project Guidance

Version 2

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INTRODUCTION

Apprentices will prepare and deliver a presentation that appropriately covers the KSBs assigned to Assessment Method 1 (AM1). The presentation will be based on the project carried out and should reference to both the project plan and the project report. The presentation requires the apprentice to fully illustrate the KSBs that are mapped to AM1.

The rationale for this assessment method component is: In this occupation it is standard practice for fully occupationally competent employees to deliver presentations, therefore, this is a valid form of assessment. The project report contextualises the design, production environment, stakeholders and proposed outcomes of the project. The presentation and questioning complements this as it includes an analytical dimension. This assessment method enables SMEs to offer the apprentice a project suitable for their organisation and one that adds value, rather than one that is prescribed and therefore potentially difficult for the smaller employer to facilitate.

KNOWLEDGE, SKILLS AND BEHAVIOURS (KSBs)

The Level 6 Materials Science Technologist (Degree) apprenticeship standard states that all apprentices will need to develop specialist KSBs. These KSBs will provide the foundation for an apprentice development in materials science.

The EPA provides apprentice with a showcase opportunity to provide oral and documentary evidence of their KSBs developed throughout the apprenticeship in a synoptic way. It enables the EPA panel to test the KSBs acquired by the apprentice throughout the apprenticeship.

The KSBs of the of the Level 6 Materials Science Technologist (Degree) apprenticeship standard are set out below:

Knowledge
A Material Science Technologist 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 Systems and processes such as, but not limited to, CRM systems, client handling, profit and loss, and planning, in project management, business improvement, proof of concept, and scale up.
K9 Contemporary research and developments in the materials science community in terms of understanding different perspectives, methodologies, and schools of thought as well as the theoretical stances that underpin them.
K10 Materials applications including theories, techniques and relevant calculations to understand related disciplines and be able to work in a collaborative or cross-functional environment in more than one materials context.
K13 Systematic approaches to cost benefit analysis, including contextual financial understanding using industry standard metrics. Awareness of marketplace dynamics.
K15 Report writing techniques, including how to synthesise information and write concisely using a formal or neutral language register and vocabulary appropriate to the target reader.
K16 Management techniques and theories, including problem solving methodologies, effective decision making, delegation and planning methods, time management, organisational awareness, motivational techniques, and conflict resolution.

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Skills
A Material Science Technologist will be asked to demonstrate skills in the following:

S1 Utilise cognitive and practical skills in conjunction with adaptability and versatility in technical support both in-house and to clients to improve manufacturing processes, problem solving, innovation, and scale up formulations.
S2 Determine and use industry standard and emerging digital technologies and data analysis tools to complete work activities and address problems that are ill defined or involve numerous interacting factors.
S3 Critically evaluate actions, methodologies, and results and their implications in analysing materials against parameters in product specifications.
S5 Write clear and succinct technical and analytical reports.
S6 Research, adapt and test new technologies through materials characterisation feedback.
S8 Maintain a working knowledge of a range of project management and financial management techniques to complete projects relevant to their discipline.
S10 Communicate effectively with colleagues and stakeholders using the appropriate language register both verbally and in writing.

Behaviours
A Material Science Technologist will be asked to demonstrate the following behaviours:

B2 Clear and concise communicator – influence with integrity and exercise judgement.
B4 Demonstrate personal and professional commitment to enhance the reputation of employer and the profession through interaction with internal and external customers alike.
B5 Results orientated – thoughtful and methodical planner, delivering successful outcomes utilising results and feedback in future activities.
B7 Collaborative – team player, and leader when appropriate, who works with a range of stakeholders to achieve goals.
B9 Take personal responsibility to initiate and lead tasks, manage time and resources.
B10 Health and safety conscious at all times – strict adherence to regulations, incorporating up-to-date knowledge into planning.

OVERVIEW

The presentation assessment method will last for 90 minutes. The presentation will be 50 minutes with 40 minutes of questioning to be held following the presentation. This presentation requires the apprentice to fully illustrate the KSBs that are mapped to this assessment method.

The presentation must include:

1. Description of the scope of the presentation – which project is being presented.
2. Description of the role of the apprentice in these activities.
3. Summary of actions undertaken by the apprentice, including the project plan and outcomes of these activities.
4. Production processes used.
5. Use of resources, including personnel.
6. Variations/deviations from the initial planning stage.
7. Achievements, difficulties faced, and lessons learned.

The presentation will be completed and submitted after the gateway and will be presented to an independent assessor, either face-to-face or via online video conferencing. If using

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an online platform, EPAOs must ensure appropriate measures are in place to prevent misrepresentation.

The apprentice will typically have 24 weeks to prepare, complete and submit the presentation. The rationale for this assessment method component is:

- In this occupation it is standard practice for fully occupationally competent employees to deliver presentations, therefore, this is a valid form of assessment.
- The project report contextualises the design, production environment, stakeholders and proposed outcomes of the project. The presentation and questioning complements this as it includes an analytical dimension.
- This assessment method enables SMEs to offer the apprentice a project suitable for their organisation and one that adds value, rather than one that is prescribed and therefore potentially difficult for the smaller employer to facilitate.

DELIVERY

The presentation assessment method will last for 90 minutes. The presentation will be 50 minutes with 40 minutes of questioning to be held following the presentation.

The independent assessor has the discretion to increase the time of the presentation by up to 10% to allow the apprentice to complete their last point.

The independent assessor will ask a minimum of 8 questions at the end of the presentation. The questions will be based on the content of the summary report and presentation. PIABC Limited will have a question bank of sample questions for the independent assessor to draw from and adapt to individual circumstances.

To deliver the presentation, the apprentice will have access to:

- PowerPoint
- Flip Chart
- Computer
- Work products
- Videos
- Interactive demonstrations
- Notes

The presentation will take place on a one-to-one basis between the independent assessor and the apprentice, either face-to-face or via online video conferencing. The way in which the content of the presentation is made is not prescriptive.

If using an online platform, PIABC Limited will ensure appropriate measures are in place to prevent misrepresentation.

There may be a requirement for a second independent assessor/invigilator may be present to take notes in order to counter any technical breakdown in recording (or if the apprentice does not wish it to be recorded) and to increase confidence in, and validity of, the objectivity of the independent assessor in the event of any dispute or disagreement.

A copy of the project plan must have already been submitted by week 4 of the EPA and a hard copy or electronic copy of the presentation must be sent to the EPAO at least 10 days in advance of the date of the presentation. The presentation submission must be a hard

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copy and/or electronic slide deck comprising of no more than 15 slides. When submitted, this must outline details of any visual aids to be used and specify any equipment required. The EPAO must ensure these are available on the day of assessment.
The presentation must be formal in tone and be well-balanced in its use of visuals, text, and other supporting elements (e.g. audio, artefacts, documents, small scale demonstrations etc).

The independent assessor will make all grading decisions.

ON THE DAY

- **Dress code**
  Apprentices are expected to look smart on the day of the professional discussion. This must be in accordance with health and safety requirements of the venue.

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

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

- **Punctuality and timing**
  All apprentices must be on time for the start of their professional discussion. 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 presentation and questioning elements are 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 presentation may be conducted face-to-face or via an electronic platform (e.g. video-conferencing).

Should an electronic option be used, then PIABC Limited will ensure appropriate methods are used to prevent misrepresentation.

ASSESSMENT CRITERIA

Apprentices will only be assessed on KSBs mapped to this assessment method.

PIABC Limited will assess the apprentice against the higher order descriptors outlined in the Pass and Distinction columns rather than the lower order knowledge, skills, and behaviours 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

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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.

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The full grading descriptors for AM1 are on the following pages:

GROUPING	PASS CRITERIA To achieve a pass all of the pass criteria must be met:	DISTINCTION CRITERIA To achieve a distinction, all of the pass criteria must be met, plus at least 6 of the 8 distinction boxes must be fully achieved:
Systems and processes K3, S1, B5	Manages planning and delivery with regard to systems and processes in place, taking account of governance, implementation and relevant risk management procedures. Makes use of appropriate project management tools. Analyses and explains what they have learned during the project with specific reference to the project plan and whether this was implemented and how this learning can be applied in future projects.	Investigates innovative systems and processes and evaluates their suitability for use within the context of the project. Justifies the use of the tools and techniques, explaining how they support the organisation's aims.
Research K9, S6	Demonstrates evidence that the correct selection of the available research is aligned with the problem being addressed within the work-based project, with reference to the initial project plan. Well-structured approach to carrying out research and how this is integrated into the project, including evidence of adapting and testing new technologies.	Critiques the various research options as well as consider and justify their preferred selection.
Application of materials science K0, S3	Applies appropriate theories, techniques and calculations to materials problems and solutions in more than one materials context.	Appraises solutions and explains the risks and implications of the process, alternative approaches and ways to address them

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GROUPING	PASS CRITERIA To achieve a pass all of the pass criteria must be met:	DISTINCTION CRITERIA To achieve a distinction, all of the pass criteria must be met, plus at least 6 of the 8 distinction boxes must be fully achieved:
Cost benefits K13	Demonstrates a systematic approach to planning, analysing and achieving cost benefits for the business.	Justifies their analysis of the projects cost benefits for the business by comparing the costs benefits of their choice with alternative solutions that they considered but disregarded.
Communication K15, S5, S10, B2	Presents and communicates the key content and messages clearly. Defends plan and methods selected. Report and verbal communication takes account of the target audience, is grammatically correct and cohesive.	
Management and leadership B4, B7, B9	Demonstrates understanding of management techniques and theories and describes how they have applied this theory to interact with and lead individuals, stakeholders and teams to help them achieve their goals, treating them with respect and valuing their views.	Applies theory with insight and awareness of risks and rewards, describing how theory/technique was applied with clear analysis of the impact and risks.
Digital and data S2	Demonstrates evidence that the correct selection of industry standard and emerging digital technologies and data analysis tools have been applied to address ill-defined problems.	Justifies their choice of technology and tools, explaining the benefits and risks associated with them in comparison to at least one alternative approach.

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GROUPING	PASS CRITERIA To achieve a pass all of the pass criteria must be met:	DISTINCTION CRITERIA To achieve a distinction, all of the pass criteria must be met, plus at least 6 of the 8 distinction boxes must be fully achieved:
Health and safety B10	Clearly articulates the importance of safe working practices, with reference to appropriate regulation. Project outputs and initial planning make clear reference to health and safety factors.	Extends answers to include in-depth examples of applications of legislation in real-world situations and implications of implementation.
Project and financial management S8	Articulates a clear understanding of the financial methodological implications of their work and can show examples of how this can affect project completion.	Fluently describes the use of a comprehensive suite of methods and can assess the relative benefits of same.

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GRADING

The following grading are for Assessment Method 1 (AM1) covering both the work-based project and presentation:

KSBs	Fail	Pass	Distinction
K3 K9 K10 K13 K15 K16 **S1 S2 S3 S5 S6 S8 S10** **B2 B4 B5 B7 B9 B10**	Does not meet the pass criteria	The candidate must meet all of the pass grading criteria mapped to this assessment method	The candidate must meet at least 7 of the distinction criteria mapped to this assessment method

The independent assessor will make all grading decisions.

SUCCESSFUL COMPLETION OF THE END POINT ASSESSMENT

For an apprentice to pass the EPA as a whole and be deemed to be competent, the apprentice must pass all assessment methods (AM1, AM2 and AM3).

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.

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