Silver - Unit 1 - Additive Manufacture

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Overview

Additive Manufacture at Silver Level requires the candidate to plan and review their use of pre-defined or commonly used tools to produce and execute effective plans related to the manufacture of goods using additive technologies. As a result of reviewing their work, they will be able to identify and use automated methods or alternative ways of working to improve work productivity. Unfamiliar aspects will require support and advice from other people.

A work activity will typically be 'straightforward or routine' because:

The task or context will be familiar and involve few variable aspects. The techniques used will be familiar or commonly undertaken.

Example of context – Creating a design and associated plans to create a 3D product for a client need.

Assessor's guide to interpreting the criteria

General Information

QCF general description for Level 1 qualifications

- Achievement at QCF level 1 (EQF Level 2) reflects the ability to use relevant knowledge, skills and procedures to complete routine tasks. It includes responsibility for completing tasks and procedures subject to direction or guidance.
- Use knowledge of facts, procedures and ideas to complete well- defined, routine tasks. Be aware of information relevant to the area of study or work
- Complete well-defined routine tasks. Use relevant skills and procedures. Select and use relevant information. Identify whether actions have been effective.
- Take responsibility for completing tasks and procedures subject to direction or guidance as needed

Requirements

- Standards must be confirmed by a trained Level 1 Assessor or higher
- Assessors must at a minimum record assessment judgements as entries in the online mark book on the INGOTs.org certification site.
- Routine evidence of work used for judging assessment outcomes in the candidates' records of their day to day work will be available from their e-portfolios and online work. Assessors should ensure that relevant web pages are available to their Account Manager on request by supply of the URL.
- When the candidate provides evidence of matching all the criteria to the specification, subject to the guidance below, the assessor can request the award using the link on the

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certification site. The Account Manager will request a random sample of evidence from candidates' work that verifies the assessor's judgement.
- When the Account Manager is satisfied that the evidence is sufficient to safely make an award, the candidate's success will be confirmed and the unit certificate will be printable from the web site.
- Each unit at Level 1 has recommended 40 guided learning hours based on time required to complete by an average learner.

Assessment Method

Assessors can score each of the criteria N, L, S or H. N indicates no evidence and it is the default setting. L indicates some capability but some help still required to meet the standard. S indicates that the candidate can match the criterion to its required specification in keeping with the overall level descriptor. H indicates performance that goes beyond the expected in at least some aspects. Candidates are required to achieve at least S on all the criteria to achieve the full unit award. Once the candidate has satisfied all the criteria by demonstrating practical competence in realistic contexts they achieve the unit certificate.

Expansion of the assessment criteria

1. The candidate will Relate opportunities and constraints to a product design.

1.1 I can identify opportunities for a product or solution

Candidates should be able to make connections between the opportunities presented and the product proposal.

Evidence: Documentation in portfolios, assessor observations.
Additional information and guidance
At level 1, simple associations are good enough. This could be an opportunity to introduce some basic research methods to find out what demand there might be for a product of this type.

1.2 I can identify constraints on a product or solution

Candidates should be able to identify possible constraints on the proposed product
Evidence: Documentation in portfolios, assessor observations.

Additional information and guidance
The candidate should be able to appreciate that any proposal will have constraints. These could be classified e.g. materials, costs, safety, accessibility, precision, market groups etc. Level 1 candidates should be be guided in classifications but they should be able to identify the constraints within the classifications.

1.3 I can consider commercial sustainability of a product or solution

The candidate will consider the issues related to achieving commercial sustainability for a prototyped product.
Evidence: From portfolios, assessor observations.

Additional information and guidance

Candidates consider the issues involved in going from a prototype to a commercial product. Cost of materials, cost of manufacture, cost of distribution and advertising.

They should know some of the ways of raising finance for a project. Environmental issues such as disposal and energy generation in the manufacturing process, health and safety, intellectual property can all be important. How would they go about getting a patent? Would an open source

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hardware route be better? At level 1 it is enough to generate awareness of the issues and focus on a limited number of interests. Commercial sustainability is not necessarily with profit from direct sales margins. it simply means there is some way of sustaining a product one it is developed. It could be a service around the product, something that is increasingly the case with software.

1.4 I can gather information to support a design

Candidates should be able to demonstrate that they can use various tools, IT or otherwise, the get the information they need in order to make a good design.
Evidence: Documentation in portfolios, assessor observations.

Additional information and guidance
The candidate should be able to demonstrate a good enough understanding of their materials and the potential designs in order to gather all of the necessary information to ensure a good finished product. This could be based on analogue or digital research and should include first person information where possible, such as a visit to manufacturers or suppliers.

1.5 I can create a design, starting from a template, image trace or pre-existing object

Candidates should be able to demonstrate the basic skills needed to work with designs and templates.
Evidence: Documentation in portfolios, assessor observations.

Additional information and guidance
The candidate should be able to work with any pre-existing objects, templates or designs and be able to show how they will use these to inform or pre-generate their own products and ideas. A range of designs and media would show a good grasp of this criterion.

1.6 I can make checks to ensure the model will print

Candidates should be able to show their awareness of the basic checks and procedures required so as not to waste time and resources.
Evidence: Documentation in portfolios, assessor observations.

Additional information and guidance
The candidate should be able to show their procedures prior to production to make sure the process will not be interrupted or incomplete, therefore resulting in waste.

1.7 I can amend errors and ensure design quality

Candidates should be able to identify procedural and technical problems which make their designs less than their expectations and show how they will rectify this.
Evidence: Documentation in portfolios, assessor observations, candidate reflections.

Additional information and guidance
No process is ever perfect, but candidates should be able to show that they have some idea after the fact of what might have caused any problems and can show some methods and process to make sure these will be less or non-existent on subsequent products.

2. The candidate will visualise product solutions to meet identified needs.

2.1 I can identify key aspects in a design brief.

The candidate will be able to take a design brief and identify key aspects in order to consider their approach.

Evidence: From portfolios, local testing, assessor observations

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Additional information and guidance
Candidates should be familiar with the concept of a design brief. They should be presented with several design briefs and demonstrate the capacity to consider specific requirements that might be needed for each key aspect. At Level 1 the design briefs can be fairly structured. For example, what material is specified? How is it machined? What does it cost? Is it available? The key point of this criterion is getting candidates to focus on the priorities for research and planning in response to identified needs.

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