T Level in Engineering and Manufacturing for Maintenance, Installation and Repair

8712-312 Mechatronic Occupational Specialism Report (Summer 2024)

Version 1.0

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1.0 08/08/24		

Contents

Foreword

Summer 2024 Results

The occupational specialism qualification is made up of one component, which need to be successfully achieved to attain the T Level Mechatronic Occupational Specialism. We discussed the approach to standard setting/maintaining with Ofqual and the other awarding organisations before awarding this year. We have agreed to take account of the newness of qualifications in how we award this year to recognise that students and teachers are less familiar with the assessments (grading-arrangements-for-vtqsand-technical-qualifications-within-t-levels-in-the-academic-year-2023-to-2024), whilst also recognising the standards required for these qualifications.

Introduction

This document has been prepared to be used as a feedback tool for providers in order to support and enhance teaching and preparation for assessment. It is advised that this document is referred to when planning delivery and when preparing candidates for the T Level Technical Qualification (TQ) in Engineering and Manufacturing **Occupational Specialisms.**

This report provides general commentary on candidate performance in the occupational specialism assignment. It highlights common themes in relation to the technical aspects explored within the assessment, giving areas of strengths and weakness demonstrated by the cohort of candidates who sat assessments in the summer 2024 assessment series.

The grade boundaries that were used to determine candidate's final summer 2024 results are also provided. **For summer 2024, as per Ofqual guidance, the approach to grading recognises that these are new qualifications.**

8712-312 Occupational Specialism

Task 1 Plan the maintenance activities:

Candidates were required to produce several key documents for marking: a list of requirements and resources, including justifications for their selections; a completed risk assessment; and a method statement.

Lower performing candidates did not include risk ratings and were not able to demonstrate how control measures are used to reduce risk ratings. Methods statements were quite superficial but covered the key aspects of the maintenance activity in most cases. Tool selections and resources were mostly appropriate for maintenance activities, but some candidates did not include testing equipment and justifications for selection were basic, with a focus on what the tool is, rather than what is will be used for in regard to the context of the assessment.

Higher performing candidates, method statement, materials lists, and risk assessments have comprehensive and detailed lists using the correct technical terms and they have been set out in a logical order with comprehensive justifications on tool selection and methodology.

Actions providers can take to support assessment preparation for future series:

To support candidates with assessment preparation, providers should supply detailed examples and templates of exemplary risk assessments, method statements, and resource lists. A clearer focus on key assessment components like risk assessment techniques, including creation of templates, method statement development, and resource selection are essential. Further support and formative assessment tasks where justification of processes and procedures are required to develop the necessary skills for assessment purposes.

Task 2 Perform the maintenance activities:

Candidates were tasked with performing maintenance activities, identifying and repairing one mandatory fault and three optional faults on a designated system.

Most candidates were able to demonstrate their skills in preparation and reinstatement of the work area and correct wearing of PPE to maintain Health and Safety during tasks. Most candidates completed calibration on their tools and testing equipment and utilised some technical documentation to inform practice.

Lower performing candidates showed a more inconsistent approach to their fault diagnosis and rectification activity, with disassembly and reassembly completed in an illogical manner which did not demonstrate knowledge or understanding of mechatronic processes and procedures relating to maintenance, installation, and repair. Higher performing candidates shown a logical approach to fault finding, demonstration of tool and component fitting demonstrating a stronger understanding of processes and procedures, they also utilised technical documentation to inform the process.

Actions providers can take to support assessment preparation for future series:

Providers should ensure that candidates practice fault detection using systematic techniques aligned with best practices. Candidates should be encouraged to consult relevant technical documentation pertinent to the maintenance activities. Further support on testing techniques and recording results during the activity would improve candidate performance and ensure a logical industry approach to maintenance activities.

Task 3A Review and report the maintenance activities:

Candidates were required to produce a technical report and a revised maintenance schedule, accompanied by justifications.

Generally, the structure of the reports was good, lower performing candidates lacked a formal reporting format although content was mostly appropriate but superficial in areas. Many candidates missed the opportunity to relate to manufacturers specification and lacked any form of testing evidence.

Actions providers can take to support assessment preparation for future series:

Enhance guidance on technical report writing. Also, include formative assessment opportunities that require candidates to apply fault detection and diagnosis methods effectively, referencing relevant technical documentation throughout and how to complete functional test and record test outcomes.

Task 3B Peer review:

Candidates were required to conduct a peer review of two annotated method statements provided by the assessor, write detailed feedback for each, and subsequently update their own annotated method statements based on the peer feedback received.

Generally, candidates demonstrated adequate skills in this task. They were able to provide and apply peer feedback to update their own documentation. However, many candidates did not demonstrate the ability to justify the modifications made to their method statements based on the received feedback, indicating a need for stronger analytical reasoning.

Actions providers can take to support assessment preparation for future series:

Enhance peer review training, focusing on developing skills in constructive and specific feedback. Emphasize the importance of analytical reasoning for justifying modifications based on feedback. Provide comprehensive examples of annotated method statements and other technical documentation e.g. risk assessments and maintenance schedules, demonstrating effective incorporation of feedback. Organise mock peer review sessions for practice and use Performance Observation (PO) forms consistently to offer detailed feedback on strengths and areas for improvement.

Task 4 Complete Handover:

Candidates are required to conduct a formal meeting with their supervisor to facilitate the return to service and complete the handover procedures. This included demonstrating system

functionality and confirming the completion of assigned tasks. Video evidence was captured to document the candidates' execution of tasks and amendments to their method statements.

The majority of candidates provided adequate handover meetings sharing relevant documentation. Lower performing candidates lacked confidence in their handover and demonstrated gaps in knowledge and understanding of principals and procedures relating to fault diagnosis and rectification, with more limited use of technical terminology. Higher performing candidates were able to provide a more confident handover, using technical terminology more consistently, sharing details of the faults and rectification methods used with justification for amendments to documentation evident.

Actions providers can take to support assessment preparation for future series:

Improve candidates' presentation skills and confidence in using technical terminology, ensuring their work is structured and coherent.

Best practice and guidance to providers on potential areas for improving performance in assessment

It is recommended that providers utilise and deliver the sample assessments as formative assessment to support candidates in preparation for summative assessment. This will not only help prepare candidates but will be an ideal opportunity for marker training and standardisation.

The centre staff and candidates must thoroughly read the assessment to ensure the work is carried out to the design criteria required. Moderators will be working to the assessment brief and marking grids and making judgments accordingly.

Appropriate PPE should be worn at all times and assessors should ensure that candidates are working safely and should not come to harm or risks to health from the materials, tools or equipment used in the assessment.

Where photographic evidence is requested ensure all stages of maintenance and testing is included.

Photographs do not need to be great in number but do need to show everything a moderator would require to be able to perform the remote moderation work. Photos need to be of sufficient resolution to enable "zooming in" to determine quality. Photographs should be collated into one document, and well labelled, and with commentary if possible.

Videos need to show specific and important points of the assessment, for instance the candidate completing prototype testing/functionality. In addition, candidates need to show and comment on the documentation required for handover and testing of functionality.

Utilisation of the Photographic Evidence Guidance Document would support providers to capture relevant and valuable information for marking and moderation purposes to support practical observation feedback.

Providers should ensure that practical observation forms are detailed, covering all aspects of the activity being observed. The practical observation records should contain accurate information, specific to the candidate being observed and offer differentiating commentary between individual candidate's performance utilising the marking grid terminology. They should also identify areas of strength and weakness to distinguish between the different qualities of performance and to facilitate accurate allocation of marks once all evidence has been submitted.

Support materials

Sample and Past Occupational Specialism (OS) Assessments:
It is recommended that Providers utilise and deliver the **sample OS** as well as **past OS** (if available) as formative assessment to support candidates in preparation for summative assessment.

Sample and past OS (if available): Microsoft Word - MIR_Practical_Assignment_Mechatronic_Sample_Assessor_Pack_v0.3 (cityandguilds.com)

Guide Standard Exemplification Material (GSEM) Assessments:
It is also recommended that Providers utilise the **GSEMs** to help understand the standard required to achieve a Distinction and Pass grade.

8712-312 OS Distinction GSEM: T Level Technical Qualification in Maintenance, Installation and Repair – Mechatronic – Guide Standard Exemplification Material – Distinction (cityandguilds.com)

8712-312 OS Pass GSEM: T Level Technical Qualification in Maintenance, Installation and Repair – Mechatronic – Guide Standard Exemplification Material – Threshold Competency (cityandguilds.com)

TQ Occupational Specialism Assessment Process Guide:
The guide gives support to Providers in preparing for and delivering T Level Occupational Specialism assessments.

Link: TQ Occupational Specialism Assessment process guide (cityandguilds.com)

Events and Webinars:
City & Guilds run free webinars and events throughout the year on preparing for and delivering the T Level Occupational Specialisms. The below link provides details on upcoming in person events, live webinars, on-demand webinars and preparation for the Occupational specialism assessment.

Link: Events and webinars - T Levels | City & Guilds (cityandguilds.com)

Grade boundaries

The table below shows the grade mark ranges for the Occupational Specialism **for the summer 2024 series.**

Grade	Mark range 8712-312
Distinction	66-90
Merit	50-65
Pass	35-49
Unclassified (U)	0-34

Get in touch

The City & Guilds Quality team are here to answer any queries you may have regarding your T Level Technical Qualification delivery.

Should you require assistance, please contact us using the details below:

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Web chat available **here**.