TLM Level 3 Certificate in Embedded Technology Engineering

The TLM Level 3 Certificate in Embedded Technology Engineering builds on prior study of embedded systems by developing deeper knowledge and practical skills in designing, testing, and maintaining connected technologies. Learners will extend their understanding of how software and hardware interact, exploring advanced topics such as system reliability, DevOps, triage, quality assurance, and the integration of emerging technologies including IoT, AI, and augmented reality.

Throughout the qualification, learners will gain practical experience in applying engineering practices to real-world scenarios, including the use of collaborative tools, incident investigation frameworks, and structured development pipelines. They will learn how to build, configure, and monitor embedded environments at scale, while understanding the importance of teamwork, documentation, and safe operational practices across the product lifecycle.

This qualification provides learners with the skills and confidence to contribute effectively in engineering and development roles within the embedded technology sector. It supports progression to higher education in fields such as software engineering, computer science, or electronics, and also prepares learners for direct entry into careers as embedded systems engineers, DevOps technicians, quality assurance specialists, or IoT developers. By combining technical rigour with collaborative and ethical approaches, the qualification equips learners for success in a fast-evolving digital landscape.

This qualification has been developed in consultation with Sparks, a company specialising in embedded systems, smart IoT technologies with Artificial Intelligence, and software development. Their insight into industry needs and current technical practices has helped ensure that the qualification content reflects the real-world skills, tools, and challenges learners are likely to encounter in operational and development roles within the embedded systems sector.

Contents

1. For those in a hurry!

1.1	TLM's assessment model is common to most of its qualifications. It is based on competence-based assessment of coursework using a portfolio of evidence and supported by a free optional cloud-based evidence management system.
1.2	Learners must demonstrate competence against the assessment criteria from their day-to-day work and the tutor assessor must verify that they are competent in relation to the general level descriptor using indicative assessment criteria. TLM's external moderator will check the judgements and the quality of the evidence and provide feedback. This process is not graded; the intention is that it is a flexible way of checking basic practical competence in the subject at the qualification's framework level.
Procedures	
1.3	The first thing to do is to arrange assessor training with TLM. TLM trains at least one assessor as Principal Assessor who must accept responsibility for standards within the Centre. The Principal Assessor can train and appoint assessors within the Centre as long as they are competent to take on the work and are willing to sign an agreement on the web site to uphold standards.
1.4	TLM will provide initial training in the pedagogical model, and using the supporting technologies to provide the evidence needed. The purpose is to get you started and then we provide on-going support to ensure you are confident and we can work as a professional partnership. We advise new Centres to do some coursework assessment early so that they can receive feedback and quickly become confident in doing routine coursework assessment. Our aim is to make this no more onerous than normal routine assessment that anyone would do as a normal part of the teaching job. This gives more time to focus on teaching and therefore to support raising attainment.

2. Introduction

The TLM Level 3 Certificate in Embedded Technology Engineering builds on prior study of embedded systems by developing deeper knowledge and practical skills in designing, testing, and maintaining connected technologies. Learners will extend their understanding of how software and hardware interact, exploring advanced topics such as system reliability, DevOps, triage, quality assurance, and the integration of emerging technologies including IoT, AI, and augmented reality.

The Level 3 Certificate will give learners the opportunity to:

- Engage in advanced study of embedded systems, focusing on their design, development, and reliability
- Achieve a nationally recognised Level 3 qualification
- Strengthen personal growth and confidence through structured, meaningful tasks that encourage deeper engagement with learning.

2.1 TLM Level 3 Certificate in Embedded Technology Engineering

The objective of the qualification is to equip learners with the knowledge, confidence, and transferable skills needed to support their continued personal and professional development.

Mandatory Unit

- **Unit 1 - System Reliability and Collaboration (6 credits)**

Optional Units

- Unit 2 - RDK-B Fundamentals for Engineers (6 credits)
- Unit 3 - Triaging Issues in Embedded Technology (6 credits)
- Unit 4 - DevOps in Embedded Technology (6 credits)
- Unit 5 - Software Testing in Embedded Development (6 credits)
- Unit 6 - Incident Investigation in Embedded Systems. (6 credits)
- Unit 7 – Review Group Management (6 credits)
- Unit 8 - Reporting Culture in Technology. (6 credits)
- Unit 9 – Internet of Things and Smart City Technology (6 credits)
- Unit 10 – Industrial Internet of Things – IIOT (6 credits)
- Unit 11 – AI for IoT Systems (6 credits)
- Unit 12 – Augmented Reality for IoT (6 credits)

3. Summary of Qualification Specification

3.1	**Level 3 Certificate (Annexe A)**
	The Level 3 Certificate in Embedded Technology Engineering
	Qualification Title: TLM Level 3 Certificate in Embedded Technology Engineering Qualification Number: XXXXXXX Qualification Level: Level 3 Total Credits: 18 Guided Learning Hours: 144 Total Qualification Time: 180 Assessment Methods: Coursework, E-assessment, Portfolio of Evidence
	Assessment Learners must demonstrate competence against the assessment criteria from their communication and involvement with the training materials and the trainer assessor must verify that they are competent in relation to the general level descriptor using indicative assessment criteria. TLM's external moderator will check the judgements and the quality of the evidence and provide feedback. This process is not graded; the intention is that it is a flexible way of checking basic practical competence in the subject at the qualification's framework level.
3.5	**Assessment**
	The internally assessed, externally moderated coursework for all qualifications is pass/fail but by submitting the evidence for external moderation, feedback can be given to the tutor on areas to improve for resubmission. Evidence must be provided against the unit assessment criteria from practical tasks related to the learners' everyday work supported by tutor observations, portfolio completed, and or activities in line with the learning materials The way evidence is gathered is up to the assessor, the only requirement is that it clearly supports the judgements against the assessment criteria and the relevant learning outcomes. If on formative assessment the account manager finds gaps in evidence relating to a particular candidate, they will request more evidence before approving the award or the unit certificate. Assessors must then adjust their work to ensure all their learners are providing the appropriate level and breadth of evidence. We encourage early submission of at least some evidence so that assessors are confident from the feedback that what they are providing is sufficient. In this way we can maintain standards while supporting improved efficiency. Centres will be subject to the TLM Centre Assessment Standards Scrutiny (CASS) and further details of this, including our centre guidance, is freely available on the TLM website in our Policy Download Centre. https://tlm.org.uk/policy-download-centre/

4. Qualification Content

Mandatory	Optional Unit Bank
None	
• **Unit 1 - System Reliability and Collaboration**	• **Unit 2 - RDK-B Fundamentals for Engineers** • **Unit 3 - Triaging Issues in Embedded Technology** • **Unit 4 - DevOps in Embedded Technology** • **Unit 5 - Software Testing in Embedded Development** • **Unit 6 - Incident Investigation in Embedded Systems.** • **Unit 7 – Review Group Management** • **Unit 8 - Reporting Culture in Technology.** • **Unit 9 – Internet of Things and Smart City Technology** • **Unit 10 – Industrial Internet of Things – IIOT** • **Unit 11 – AI for IoT Systems** • **Unit 12 – Augmented Reality for IoT**

5. Support

	Guidance and Assistance
5.1	There is further guidance for coursework assessment on the TLM web site. All centres have an assigned Account Manager who will be pleased to help at any time. Our aim is to give professional assessors, most of whom are qualified tutors, the confidence to make judgements with a minimum of bureaucracy so that they can focus their time on maintaining their professional knowledge, skills and supporting learning through effective teaching rather than "chasing paper". There is often a confusion between bureaucracy and rigour, since unnecessarily complex bureaucracy can actually detract from rigour by obscuring the importance of the outcomes.
5.2	**Web sites** - TLM provides support through cloud-based systems. Providing assessment grades and the management of certification through the TLM Centre management system is mandatory and all assessors are provided with training in its use. It is simply a matter of recording learner competence against the unit criteria as the evidence is collected and claiming a certificate on behalf of the learner when a unit has been fully assessed.
5.3	Use of the online community learning site is entirely optional. It offers a streamlined way for learners to submit evidence and for assessors and verifiers to manage feedback and tracking, reducing administrative workload for centres that choose to use it.
5.4	**Telephone** and e-mail support are available to all Centres. There is a general convention of firstname.secondname@tlm.org.uk for e-mail addresses.

6. Registration & Procedures

	Registration
6.1	TLM's registration model allows centres to enter learners at times convenient to them. There are no late entry fees and no additional fees should a learner fail to produce evidence at a level but can meet the criteria at a lower level. This can reduce costs to the centres when compared to other qualifications. There are no fees for replacement certificates or verification of certificates because all certificates can be directly authenticated against TLM's secure database. For details of current subscription costs please contact us or refer to the web site.
	Internal standardisation
6.2	The Principal Assessor has the ultimate responsibility for consistency in assessment standards within a centre. All assessors have signed a contract agreeing to uphold standards and should therefore co-operate with the Principal Assessor and Account Manager at TLM to ensure that standards across the centre are consistent. It is advisable to send work samples to TLM early to check that evidence is at the right standard so that there is time to make any adjustments necessary to the course and learner expectations. TLM will generally check a higher quantity of work from new assessors and feedback to ensure that they are confident to make appropriate judgements over time. This reduces risk and improves efficiency in the longer term.
	Authentication
6.3	All assessors must take reasonable steps to ensure that any coursework evidence submitted by candidates is a true reflection of the candidates' competence. This is in keeping with the assessor undertaking to uphold and maintain standards in the contract with TLM.
6.4	Certificates can be authenticated directly on-line using the certificate number or by scanning the QR code on the certificate. There is no charge and it makes it more likely that certificates will be checked and that in turn improves security. Certificate forgeries are a significant problem when authentication is not simple and straightforward because convincing forgeries are easy to achieve with recent technologies and will get easier as time goes on.

7. Other Considerations

	Access arrangements and special requirements
7.1	All TLM's qualifications are intended to be accessible, as widely as possible. Please refer to the Annex for further information. Centres should contact TLM if they have any questions related to accessibility issues.
	Language
7.2	The language for provision of this qualification is English only. This will only change if we have a significant demand in another language that is sufficient to cover the additional costs involved.
	Malpractice
7.3	TLM has comprehensive policies and procedures for dealing with malpractice. These are documented with links on the web site at https://tlm.org.uk/policy-download-centre/ Assessors should be familiar with these policies and make them clear to candidates. Assessors should inform their account manager if they suspect any instance of malpractice that could have a material effect on the outcome of any assessments, either for themselves or colleagues. This is part of the upholding of standards that is part of the contract with TLM.
	Equality of opportunity
7.4	TLM promotes equality of opportunity through policies and procedures. These are again documented in detail on the web site at https://tlm.org.uk/policy-download-centre/
	Resources, Support and Training
7.5	A clear goal is to enable learners to support all their IT user needs using resources freely and legally available from the internet. This is related directly to national policies for inclusion and equality of opportunity. The reality is that there is so much user dependence on proprietary applications that we can only support the transition to free and open resources through education and common sense.
7.6	TLM does not require centres to use Free and Open-Source applications but it certainly encourages them to do so. Most of the key software applications needed to support any of the assessed units are available freely from the web including office suites, graphics and sound editing. As a nation we could save hundreds of millions if not billions of pounds in software licensing fees by providing users with the skills, knowledge and confidence to migrate to free and open-source applications. You Tube, OpenClipart.org, Wikipedia and many other sites provide free content that supports learning and the number and range of such sites is increasing.

Annexe A

Level 3 Certificate- Unit assessment - coursework guidance

The **Level 3 learner** has knowledge and understanding of facts, procedures and ideas in an area of study or field of work to complete well-defined tasks and address straightforward problems. Holder can interpret relevant information and ideas. Holder is aware of a range of information that is relevant to the area of study or work. AND/OR Holder can select and use relevant cognitive and practical skills to complete well-defined, generally routine tasks and address straightforward problems. Holder can identify how effective actions have been. Holder can identify, gather and use relevant information to inform actions.	**Moderation/verification:** The assessor should keep a record of assessment judgements made for each candidate and make notes of any significant issues for any candidate. They must be prepared to enter into dialogue with their Account Manager and provide their assessment records to the Account Manager through the on-line mark book. They should be prepared to provide evidence as a basis for their judgements should it be required by the Principal Assessor or their Account Manager/external moderator. Before authorising certification, the Account Manager must be satisfied that the assessor's judgements are sound.

General Information

The Level 3 qualification has the following characteristics for learners:

- Apply well-developed knowledge and methods to solve non-routine problems.
- Exercise initiative, responsibility, and sound judgement in managing activities.
- Take ownership of their work and, where appropriate, support or guide others.
- Combine theoretical understanding with practical application to improve learning outcomes.
- Operate with increasing independence and accountability within defined parameters.
- These characteristics demonstrate the applied knowledge, autonomy, and evaluative skill expected of a UK Level 3 outcome, forming a solid foundation for progression to higher-level study or professional development.

Requirements

- All assessed work must demonstrably meet Level 3 standards as defined within the qualification specification and Ofqual's RQF level descriptors.
- Assessors must, as a minimum, record assessment judgements within the online mark book on the TLM certification site.
- Evidence supporting assessment outcomes should be drawn from the learner's day-to-day work and may include lesson plans, schemes of work, or other relevant artefacts.
- Learning approaches should be adapted to meet differing learner needs, including those requiring additional support.
- The Certificate normally requires around 144 guided learning hours for new learners, with recognition of prior learning permitted where appropriate.
- Certification is based on outcomes.
- The learner must securely meet all Level 3 criteria to achieve.

Mandatory Unit 1 – Level 3, Unit 1 – System Reliability and Collaboration

1. Understand the foundations of system reliability	2. Use shared tools and language across disciplines	3. Apply teamwork and escalation strategies
1.1 I can describe what reliability means in an embedded or connected system.	2.1 I can describe the stages of the development, deployment, and triage cycle.	3.1 I can describe when an issue should be solved directly and when it should be escalated.
1.2 I can explain the potential cost of downtime in an embedded environment.	2.2 I can explain how shared tools are used to support collaboration.	3.2 I can explain how to hand off an issue clearly across teams.
1.3 I can explain the risks caused by system failure in real-world contexts.	2.3 I can describe how to interpret logs to identify which team needs to take action.	3.3 I can describe how structured thinking supports collaboration.
1.4 I can describe common causes of instability in hardware and software.	2.4 I can explain the difference between build failures, configuration issues, and runtime bugs.	3.4 I can explain the role of retrospectives, stand-ups, and post-incident reviews in improving reliability.
1.5 I can explain how monitoring, logging, and alerting improve reliability.	2.5 I can describe how shared documentation supports faster problem solving.	3.5 I can describe how my role contributes to the overall stability of an embedded product.
1.6 I can describe how collaboration between teams supports overall system health.		

Optional Units

Level 3, Unit 2 – RDK-B Fundamentals for Engineers

1. Understand the architecture and purpose of RDK-B	2. Navigate and explore the RDK-B environment	3. Understand how RDK-B is developed and deployed	4. Understand how RDK-B is monitored and maintained
1.1 I can describe what RDK-B is and explain what it is used for.	2.1 I can log into a device running RDK-B and navigate the file system.	3.1 I can describe the image build and deployment process for RDK-B.	4.1 I can describe how system health is monitored in RDK-B.
1.2 I can describe the key software components in RDK-B.	2.2 I can use command-line tools to view system status and service activity.	3.2 I can explain the role of Yocto in building RDK-B firmware.	4.2 I can explain how logs are used to identify and diagnose problems.
1.3 I can explain how RDK-B supports broadband and Wi-Fi functionality.	2.3 I can locate and interpret RDK-B log files and configuration files.	3.3 I can describe how over-the-air updates are applied in RDK-B.	4.3 I can describe how remote diagnostic tools are used with RDK-B.
1.4 I can describe how RDK-B interacts with system hardware and Linux services.	2.4 I can describe how services communicate using message buses.	3.4 I can explain how bootloaders and system startup scripts are managed.	4.4 I can explain how services are restarted and managed in the live system.
1.5 I can explain the benefits of using RDK-B in embedded product development.	2.5 I can identify where key network and diagnostic tools are located in the RDK-B environment.	3.5 I can describe the steps involved in flashing and testing a new build.	4.5 I can describe how to validate that a device is running the correct firmware version.

Level 3, Unit 3 – Triaging Issues in Embedded Technology

1. Understand the triage process in embedded environments	2. Use tools and information to support triage	3. Apply triage in real-world scenarios
1.1 I can describe what triage means in embedded systems.	2.1 I can gather and review logs from embedded systems.	3.1 I can describe how to work with others to isolate and narrow down a problem.
1.2 I can explain why triage is important for managing complex systems.	2.2 I can use system commands to check services and processes.	3.2 I can explain how to suggest next steps for developers or testers based on triage findings.
1.3 I can describe the difference between a symptom and a root cause.	2.3 I can use past tickets, bug reports, or known issues to support diagnosis.	3.3 I can describe how to prioritise multiple issues in a live support environment.
1.4 I can explain how issue severity is assessed.	2.4 I can document findings clearly during triage.	3.4 I can explain what information should be included in a triage report.
1.5 I can describe when and how to escalate an issue.	2.5 I can recreate issues on test devices to confirm root causes.	3.5 I can describe how triage supports product stability and uptime.

Level 3, Unit 4 – DevOps in Embedded Technology

1. Understand DevOps principles in embedded systems	**2. Use DevOps tools in embedded workflows**	**3. Manage embedded deployments and environments**
1.1 I can describe what DevOps is and explain why it matters in embedded technology.	2.1 I can describe how Git is used to manage code in embedded projects.	3.1 I can describe how test, staging, and production environments are used in embedded projects.
1.2 I can explain how DevOps connects development and operations teams.	2.2 I can explain how continuous integration (CI) systems run automated builds.	3.2 I can explain how firmware is deployed to embedded devices.
1.3 I can describe the benefits of continuous integration and delivery.	2.3 I can describe how build scripts are used to automate compilation and testing.	3.3 I can describe the risks of live updates and explain how rollbacks are managed.
1.4 I can explain the stages of a DevOps pipeline.	2.4 I can explain how to handle build failures and track broken commits.	3.4 I can explain how logs and monitoring tools are used after deployment.
1.5 I can describe how DevOps supports faster and more reliable releases.	2.5 I can describe how build artefacts are versioned and deployed.	3.5 I can describe how DevOps reduces downtime and improves system stability.

Level 3, Unit 5 – Software Testing in Embedded Development

1. Understand different types of software testing	2. Design and run software tests	3. Use testing tools and automation in embedded environments
1.1 I can describe the main types of testing used in embedded systems	2.1 I can create test cases based on software requirements.	3.1 I can describe tools used to automate embedded software testing.
1.2 I can explain the purpose of each type of test and when it is used.	2.2 I can describe what makes a test case useful and reliable.	3.2 I can explain how test scripts are created and run.
1.3 I can describe the difference between manual and automated testing.	2.3 I can follow a test plan and accurately record results.	3.3 I can describe how test reports help track progress and spot trends.
1.4 I can explain black-box and white-box testing approaches.	2.4 I can explain how to identify a failed test and investigate why it failed.	3.4 I can explain the benefits and limits of test automation in embedded systems.
1.5 I can describe how testing fits into the overall development process.	2.5 I can describe how to report a bug clearly to developers.	3.5 I can describe how automated testing supports continuous delivery and DevOps.

Level 3, Unit 6 – Incident Investigation in Embedded Systems.

1. Understand the purpose of investigating occurrences in technology	2. Gather and analyse information	3. Support fair and useful outcomes
1.1 I can describe what an occurrence is in an embedded system.	2.1 I can collect logs, error messages, and user reports as part of an investigation.	3.1 I can describe how Just Culture principles affect the way investigations are carried out.
1.2 I can explain why occurrences should be investigated.	2.2 I can explain how structured questioning techniques support reliable information gathering.	3.2 I can explain how to write a fair and factual investigation report.
1.3 I can describe the difference between a technical fault, human error, and system failure.	2.3 I can identify factors that contributed to an incident (e.g. environment, process, communication).	3.3 I can identify opportunities for improvement instead of blame.
1.4 I can explain how incident investigations support learning and improvement.	2.4 I can use timelines to describe what happened and when.	3.4 I can describe follow-up actions that reduce future risk.
1.5 I can describe the impact of not investigating properly or fairly.	2.5 I can explain why it is important to avoid assumptions when analysing data.	3.5 I can explain the value of sharing findings across teams.

Level 3, Unit 7 – Review Group Management

1. Understand the role of review groups in safety and quality	2. Prepare for and run review meetings	3. Improve review culture and impact
1.1 I can describe what a review group is	2.1 I can gather relevant data, documents, and reports for review.	3.1 I can explain how review meetings support a learning culture.
1.2 I can describe the types of issues that should be brought to a review group.	2.2 I can prioritise issues for discussion based on urgency and risk.	3.2 I can identify signs of blame or bias and describe how to steer toward facts.
1.3 I can explain how review groups support learning from incidents and trends.	2.3 I can describe how to create a safe space for open and respectful discussion.	3.3 I can describe how trend analysis connects different cases for improvement.
1.4 I can describe the structure of an effective review meeting.	2.4 I can document review outcomes, decisions, and actions clearly.	3.4 I can explain how review groups contribute to improving products and systems.
1.5 I can explain the importance of having diverse roles represented in a review group.	2.5 I can explain how to follow up to ensure decisions are turned into action.	3.5 I can describe how to support consistency in how reviews are run across teams.

Level 3, Unit 8 – Reporting Culture in Technology.

1. Understand what makes a strong reporting culture	2. Support good reporting practices	3. Lead cultural change in teams and organisations
1.1 I can explain why reporting errors, issues, and risks is important.	2.1 I can describe how to encourage others to speak up about errors or near-misses.	3.1 I can explain how consistent action builds trust in reporting systems.
1.2 I can describe the barriers that prevent people from reporting.	2.2 I can explain how anonymity and trust support honest reporting.	3.2 I can describe how leaders can role-model good reporting behaviours.
1.3 I can explain how leadership influences reporting behaviour.	2.3 I can describe how reports should be triaged and responded to fairly.	3.3 I can explain how to track reporting trends and feed them into strategic improvements.
1.4 I can describe the difference between reporting systems and blame systems.	2.4 I can explain how feedback loops show people that their reports matter.	3.4 I can describe how strong reporting reduces long-term risk.
1.5 I can identify the features of a healthy, open reporting culture.	2.5 I can describe how reporting tools can be improved to remain simple and accessible.	3.5 I can explain how reporting culture can be integrated into onboarding and training.

Level 3, Unit 9 – Internet of Things and Smart City Technology

1. Understand how IoT works in smart cities	2. Explore challenges and risks in smart city systems	3. Contribute to smart city innovation
1.1 I can explain what IoT means and how it applies to smart cities.	2.1 I can identify privacy and data protection issues in smart cities.	3.1 I can research and describe emerging IoT use cases in urban environments.
1.2 I can describe how sensors, networks, and devices work together.	2.2 I can explain how downtime or faults can impact public safety.	3.2 I can explain the benefits and trade-offs of smart city systems.
1.3 I can explain the role of cloud platforms in smart city systems.	2.3 I can describe the challenges of maintaining large-scale IoT networks.	3.3 I can describe how community needs should shape smart city solutions.
1.4 I can describe how smart cities use data to support decision-making.	2.4 I can explain the risks of poorly secured or outdated devices.	3.4 I can explain how planning and testing support new connected infrastructure.
1.5 I can give examples of smart city technologies such as traffic, waste, or lighting.	2.5 I can describe how trust and transparency affect citizen use of smart systems.	3.5 I can identify opportunities for sustainability using IoT.

Level 3, Unit 10 – Industrial Internet of Things - IIOT

1. Understand IIoT and its industrial applications	2. Explore IIoT system integration and architecture	3. Manage security and risk in industrial settings
1.1 I can explain what IIoT is and how it differs from consumer IoT.	2.1 I can describe how IIoT devices connect to control systems such as SCADA.	3.1 I can identify common cyber risks in industrial control systems.
1.2 I can describe how IIoT is used in defence, manufacturing, and logistics.	2.2 I can explain how protocols like MQTT and Modbus are used in industry.	3.2 I can describe how air-gapping and segmentation protect IIoT systems.
1.3 I can explain how industrial sensors, actuators, and controllers work.	2.3 I can describe how IIoT systems are monitored and maintained.	3.3 I can explain how physical and digital security are combined in IIoT.
1.4 I can describe the role of real-time data in industrial environments.	2.4 I can explain the importance of uptime and system redundancy.	3.4 I can describe how updates are managed in secure industrial networks.
1.5 I can give examples of how IIoT improves safety and performance.	2.5 I can describe the role of predictive maintenance in IIoT.	3.5 I can explain the impact of supply chain risks on IIoT reliability.

Level 3, Unit 11 – AI for IoT Systems

1. Understand how AI enhances IoT systems	2. Design ethical and responsible AIoT systems	3. Plan and evaluate AIoT solutions
1.1 I can explain how AI is used to process data from IoT devices.	2.1 I can explain the risks of bias and misuse in AIoT systems.	3.1 I can describe how sensors and AI models work together in an AIoT system.
1.2 I can describe the benefits of combining AI and IoT, such as automation and prediction.	2.2 I can describe how AI-driven decisions affect people in real-world settings.	3.2 I can explain the types of data needed to train or support an AI model.
1.3 I can explain the role of edge computing in AIoT systems.	2.3 I can explain how privacy should be protected in data-driven systems.	3.3 I can describe how to plan and test an AIoT solution for effectiveness.
1.4 I can describe how AI enables real-time responses in IoT environments.	2.4 I can identify steps that improve transparency and accountability in AIoT.	3.4 I can explain how AIoT solutions can be evaluated for performance and reliability.
1.5 I can give examples of AI-powered IoT applications.	2.5 I can describe how ethical design improves user trust in AIoT solutions.	3.5 I can describe opportunities for using AIoT to support sustainability.

Level 3, Unit 12 – Augmented Reality for IoT

1. Understand how AI enhances IoT systems	2. Design ethical and responsible AIoT systems	3. Plan and evaluate AIoT solutions
1.1 I can describe what augmented reality is and explain how it differs from virtual reality.	2.1 I can describe the hardware required for AR in IoT systems.	3.1 I can describe how AR can be used to improve user interaction with IoT devices.
1.2 I can explain how AR is applied in IoT contexts such as smart homes, cities, or industry.	2.2 I can explain the role of software platforms and SDKs in AR development.	3.2 I can explain how AR visualisation supports troubleshooting or maintenance tasks.
1.3 I can describe how AR visualisation supports monitoring of connected devices.	2.3 I can describe how AR interfaces connect to IoT devices and sensors.	3.3 I can describe how AR can enhance training and safety in IoT contexts.
1.4 I can explain the benefits and limitations of AR in IoT environments.	2.4 I can explain the challenges of integrating AR tools with IoT systems.	3.4 I can explain how AR applications are tested for usability in IoT environments.
1.5 I can give examples of current AR applications linked to IoT.	2.5 I can identify emerging tools or frameworks that support AR/IoT development.	3.5 I can describe how AR/IoT solutions could be adapted for accessibility and inclusion.

Accessibility Policies

TLM firmly believes that every learner should have an equal chance to excel in their studies and assessments, regardless of any disabilities they may have. To achieve this goal, TLM has developed a comprehensive and well-structured reasonable adjustment policy that is specifically tailored to cater to the needs of learners with disabilities. This policy is not only an essential aspect of TLM's commitment to inclusivity but also an integral part of creating a diverse and accessible learning environment.

The reasonable adjustment policy is designed to support learners with disabilities in various ways. It encompasses a range of accommodations, such as providing additional time for examinations, offering alternative formats for study materials, permitting the use of assistive technology, arranging for sign language interpreters, and ensuring accessible physical facilities. The implementation of these reasonable adjustments is meticulously carried out to ensure that they meet the individual needs of each learner, acknowledging the unique challenges they may face.

TLM is dedicated to making the reasonable adjustment process transparent and easily accessible for all stakeholders. Thus, the details of the policy are made readily available to all, including learners, educators, and TLM Centres. These details can be found on TLM's official website, ensuring that everyone is well-informed about the support and accommodations available to learners with disabilities.

Additionally, TLM Centres play a crucial role in facilitating this process. They are empowered to submit requests for other reasonable adjustments on behalf of learners, based on their specific requirements and circumstances.
TLM firmly believes that promoting a culture of inclusivity and understanding is fundamental to fostering an environment where learners can thrive, irrespective of their abilities or disabilities. By continuously evaluating and refining its reasonable adjustment policy, TLM ensures that it remains up to date with the best practices in the field of inclusive education.

TLM Qualifications is deeply committed to its duty as an awarding organisation to provide reasonable adjustments for learners with disabilities in accordance with the Equality Act 2010. By adhering to its comprehensive reasonable adjustment policy and collaborating closely with TLM Centres, TLM strives to create a learning landscape that supports and empowers all learners, ensuring they can reach their full potential and achieve academic success

TLM Accessibility Policy: https://tlm.org.uk/policies/general-requirements-for-regulated-qualifications/#3

TLM reasonable adjustment policy: https://tlm.org.uk/reasonable-adjustments-and-special-considerations-policy-2/

TLM reasonable adjustments request form: https://tlm.org.uk/wp-content/uploads/2022/03/TLM-RASC-form-1.docx

TLM reasonable adjustments request form: https://tlm.org.uk/wp-content/uploads/2022/03/TLM-RASC-form-1.docx

Alignment with the CASLO Approach

This qualification has been designed in line with the principles of the CASLO approach, ensuring each unit is clearly defined in terms of learning outcomes and assessment criteria, with outcomes structured around observable knowledge, skills, and behaviours. In doing so, we embrace CASLO's strengths in transparency, clarity, and learner-centred planning for curriculum, teaching, and assessment.

While we recognise that CASLO qualifications are typically characterised by a mastery model, whereby all outcomes must be met to achieve a pass, we have chosen to adopt a holistic approach to evidence collection and assessment. This means learners may demonstrate their achievement of outcomes across multiple pieces of evidence, and assessors may consider a broader context of performance, rather than requiring separate, isolated confirmation for each criterion.

This approach supports:

- flexibility in delivery and learner pacing
- the integration of learning across units
- and better accommodates diverse learner journeys, particularly for adults returning to education or learners with mixed prior experience.

We are aware of the potential limitations of the CASLO model—such as the risk of learner failure due to narrowly missing a single outcome—and have mitigated this by embedding formative assessment opportunities and maintaining strong internal quality assurance to support valid, reliable, and fair judgements.

By doing so, this qualification respects the CASLO model's intent—to confirm specified learning outcomes—while avoiding overly rigid application of the mastery principle that could undermine learner success or the demonstration of real-world competence.