TLM Level 2 Certificate in Human Factors in Emerging Technologies

The TLM Level 2 Certificate in Human Factors in Emerging Technologies introduces learners to the essential principles of how people interact with digital and connected technologies. Learners will explore the impact of design, culture, and ethics on the safe and effective use of smart systems, while developing an understanding of the responsibilities involved in shaping technology that supports trust, fairness, and accountability.

Throughout the course, learners will examine the role of human factors in everyday digital environments, including how errors arise, how organisations respond to them, and why openness and "Just Culture" approaches improve long-term reliability. They will also investigate ethical questions around data use, automation, and decision-making, considering how technology can both help and harm individuals, businesses, and wider society.

This qualification provides a strong foundation for those interested in progressing into further study in digital technologies, computing, or applied ethics, and is equally relevant to learners preparing for employment in technology support or operational roles. It forms part of TLM's broader digital learning pathway and is particularly well-suited to learners who want to understand not just *how* technology works, but *how it should work responsibly* in the real world.

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.

The Learning Machine Ltd (TLM) - Part of the TiftW group of companies

Table of 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 2 Certificate in Human Factors in Emerging Technologies introduces learners to the essential principles of how people interact with digital and connected technologies. Learners will explore the impact of design, culture, and ethics on the safe and effective use of smart systems, while developing an understanding of the responsibilities involved in shaping technology that supports trust, fairness, and accountability.

The Level 2 Certificate in Human Factors in Emerging Technologies will give learners the opportunity to:

- Engage in learning on the principles of how people interact with digital systems, exploring the impact of design, culture, and ethics on the safe and trustworthy use of technology.

- Achieve a nationally recognised Level 2 qualification

- Develop their own personal growth and engagement in learning.

2.1 TLM Level 2 Certificate in Human Factors in Emerging Technologies

The objective of the qualification is to provide learners with the knowledge and confidence to develop their own skills. This qualification includes optional units, and learners are required to complete a total of 15 credits in order to earn the qualification.

Unit Bank

- Unit 1 - Understanding Human Factors in AI and Smart Technology – (5 Credits)

- Unit 2 - Just Culture and Error Management Systems in Technology – (5 Credits)

- Unit 3 - Human Considerations and Ethics of AI – (5 Credits)

3. Summary of Qualification Specification

3.1	Level 2 Certificate (Annexe A)

The Level 2 Certificate in in Human Factors in Emerging Technologies

Qualification Title: TLM Level 2 Certificate **in Human Factors in Emerging Technologies**
Qualification Number: xxx/xxxx/x
Qualification Level: Level 2
Total Credits: 15
Guided Learning Hours: 120
Total Qualification Time: 150
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.

CASLO review is shown on Page 15

3.2	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

Unit Bank	
Unit 1 - Understanding Human Factors in AI and Smart Technology **Unit 2 - Just Culture and Error Management Systems in Technology** **Unit 3 - Human Considerations and Ethics of Ai**	

5. Support

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

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.

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 easily authenticated online by entering the certificate number or scanning the QR code printed on the certificate.

This service is free of charge and encourages routine verification, which helps strengthen overall security.

When authentication is not quick and accessible, the risk of certificate fraud increases significantly.

With the growing sophistication of technologies—especially AI-powered image generation—creating highly convincing forgeries is becoming easier and more common, making robust authentication methods more important than ever.

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.

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.

7.6 TLM does not require centres to use free and open-source software (FOSS), but it actively encourages its use, particularly in the context of embedded systems development and operations.

Most of the essential tools required to support the practical elements of these qualification, such as Linux distributions, code editors, compilers, network analysis tools, and system monitoring utilities, are freely available and widely used across industry.

By equipping learners with the skills and confidence to work with open-source technologies, we not only promote independence and digital resilience but also support the growing demand for professionals who can operate effectively in open, collaborative development environments.

The use of open-source resources also provides a cost-effective solution for schools, training providers, and learners, aligning with sustainable and inclusive approaches to digital education.

Level 2 Certificate in Human Factors in Emerging Technologies - Unit assessment - coursework guidance

The Level 2 learner reflects the ability to select and use relevant knowledge, ideas, skills and procedures to complete well-defined tasks and address straight-forward problems. It includes taking responsibility for completing tasks and procedures and exercising autonomy and judgment subject to overall direction or guidance. 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 re quired 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 2 qualification has the following characteristics for learners:

- Achievement at RQF level 2 (EQF Level 3) reflects the ability to select and use relevant knowledge, ideas, skills and procedures to complete well-defined tasks. It includes.
- Taking responsibility for completing tasks and procedures and exercising autonomy and judgement subject to overall direction or guidance.
- Using understanding of facts, procedures and ideas to complete well-defined tasks and address straightforward problems.
- Interpreting relevant information and ideas.
- Taking responsibility for completing tasks and procedures subject to direction or guidance as needed.

- The specification for the Level 2 award provides an outcome framework for assessment and is not intended to dictate any particular context for learning and so can be used with any age range of adults

Requirements

- Standards must be confirmed by a trained Level 3 Assessor
- Assessors must as a minimum record assessment judgement as entries in the on-line mark book on the TLM certification site.
- It is expected that there will be routine evidence of work used for judging assessment outcomes in the candidates' records of their day-to-day work. Samples, including related plans and schemes of work should be available at the annual visit and/or by video conference.
- Different approaches to learning will be required in order to match differing needs, for example, the needs of learners will be different from the needs of those with learning disabilities.
- When the candidate demonstrates secure capability against each of the criteria in the unit, they are entitled to a certificate for passing the unit and the overall award.
- We expect at least 120 hours of guided study to be under-taken for the award for complete beginners generally new to formal education, but discretion can be used to take account of prior learning where this is sensible in individual cases. In terms of making the certificate, what matters is outcomes. Can the candidate securely meet the criteria?

Level 2, Unit 1 – Understanding Human Factors in AI and Smart Technology

1. Understand human risks and ethical concerns in smart systems	2. Explore the impact of AI in homes, cities and businesses	3. Recognise the importance of safety, design, and user understanding
1.1 I can explain how smart devices collect and use personal data	2.1 I can describe how platforms like smart devices and AI might influence user choices	3.1 I can describe how people might change their behaviour because of smart tech and the potential consequences of that on businesses, customers and society
1.2 I can describe how always-on devices raise privacy concerns	2.2 I can explain how AI automates smart homes and the risks to personal data	3.2 I can describe how poor design can lead to mistakes or accidents in smart systems
1.3 I can identify risks of bias in AI systems and how that affects people	2.3 I can describe how AI and IoT are used in smart cities and why human factors matter	3.3: I can explain why smart systems must be secure in everyday settings
1.4 I can explain why transparency and trust are important in AI-powered systems	2.4 I can identify ways AI can improve or reduce business process quality	3.4 I can identify how over- reliance on AI can affect decision-making
1.5 I can describe the role of ethics in designing smart technology		3.5 I can describe features that make smart technologies safe and easy to use

Level 2, Unit 2 - Just Culture and Error Management Systems in Technology

1. Understand what Just Culture means in technology	2. Recognise different types of human error in tech	3. Learn how error management systems work	4. Understand the value of a learning culture in tech organisations
1.1 I can explain what a Just Culture is and how it applies to tech teams	2.1 I can explain the difference between errors, mistakes, and violations	3.1 I can describe what an error reporting system is and why it's useful	4.1 I can explain how learning from errors strengthens systems and teams
1.2 : I can describe the difference between blame and accountability	2.2 I can describe common causes of error in tech projects and systems	3.2 I can explain how anonymous reporting encourages openness	4.2 I can describe how leaders create a culture where people feel safe to report problems
1.3 I can explain why people hide errors and how that creates risk	2.3 I can identify how environment, tools, or pressure can cause errors	3.3 I can describe how organisations collect, track, and review errors	4.3 I can explain how team culture affects how people deal with mistakes
1.4 I can describe how Just Culture encourages openness and learning	2.4 I can explain how system design can reduce or increase human error	3.4 I can explain how feedback from errors leads to system improvements	4.4 I can describe how tracking errors over time shows patterns and risks
1.5 I can identify the benefits of Just Culture in tech environments	2.5 I can give examples of how human error led to real-world tech failures	3.5 I can describe how teams use regular reviews to learn from mistakes	4.5 I can give examples of how teams improved by changing how they responded to failure

Level 2, Unit 3 – Human Considerations and Ethics of AI

1. Understand the human impact of AI decisions	2. Explore key ethical questions in AI	3. Recognise the role of responsibility in AI development	4. Understand global perspectives and future challenges
1.1 I can explain how AI makes decisions and why that matters to people	2.1 I can explain what "ethics" means in the context of AI	3.1 I can describe who is responsible when AI systems go wrong	4.1 I can describe how different countries approach AI ethics
1.2: I can describe how AI can affect jobs, healthcare, education, or justice	2.2 I can describe what fairness, transparency, and accountability mean in AI	3.2 I can explain the importance of testing and reviewing AI systems	4.2 I can explain why AI needs to follow local laws, culture, and human rights
1.3 I can explain what it means when AI makes a biased or unfair decision	2.3 I can explain why some decisions should not be made by machines	3.3 I can describe what it means to be a responsible AI developer or company	4.3 I can describe the challenges of creating global rules for AI
1.4 I can give examples of real- world problems caused by AI	2.4 I can describe ethical issues with facial recognition and surveillance	3.4 I can explain why explainable AI is important	4.4 I can explore how AI might shape future societies
	2.5 I can discuss why it's important to include different people in AI design	3.5 I can describe the risks of over-relying on AI and the importance of human oversight	4.5 I can reflect on the kind of future we want with AI

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

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.