TLM Level 3 Diploma in Life Systems and Scientific Understanding

The Level 3 Diploma in Life Systems and Scientific Understanding builds on key principles of inclusive, accessible education, providing a structured pathway for learners seeking to develop applied knowledge in biological systems, health, and the environment. Designed to support progression from Level 2 study, this qualification offers meaningful opportunities for learners to deepen their understanding of key concepts in physiology, genetics, ecosystems, and scientific practice.

Each unit within the suite focuses on the real-world application of biological understanding, supporting both academic development and practical competence. From analysing human health and nutrition, to investigating ecosystems, cellular biology, and field-based research, the qualification is built around a flexible structure that meets a wide range of learner needs and institutional contexts.

This qualification is suitable for post-16 learners, adult returners, and those preparing for further or higher study in areas such as public health, education, sustainability, or applied life sciences. It supports varied learning styles and assessment approaches, incorporating coursework and applied tasks that enable learners to demonstrate both subject understanding and transferable skills in observation, evaluation, ethical decision-making, and scientific reporting.

The Regulated Qualifications Framework (RQF) was designed by the UK government's Qualifications and Curriculum Development Agency now replaced by Ofqual. The RQF is referenced to the European Qualifications Framework devised by the European Union

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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 Diploma in Life Systems and Scientific Understanding offers a progression pathway from prior study by developing advanced skills in biological analysis, observational practice, and systems thinking across a range of real-world contexts. Covering themes such as human physiology, ecosystems, genetics, and scientific enquiry, the qualification supports learners in building both subject-specific competence and broader transferable skills.

The Level 3 Diploma in Life Systems and Scientific Understanding will give learners the opportunity to:

- Engage in applied learning that is relevant to real-world contexts, developing a range of biological, investigative, and critical thinking techniques essential for vocational and technical progression
- Achieve a nationally recognised Level 3 qualification

Strengthen personal growth and confidence through structured, meaningful tasks that encourage deeper engagement with scientific understanding and ethical responsibility

2.1 TLM The Level 3 Diploma in Life Systems and Scientific Understanding

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 Units

- Unit 1 - Human Body Systems, Nutrition, and Transport Mechanisms (7 Credits)
- Unit 2 - Cells, Growth, Classification, and Ecosystem Interactions (7Credits)
- Unit 3 - Scientific Investigation and Laboratory Practice (6 Credits)
- Unit 4 - Energy Release, Environmental Factors, and Defence Mechanisms (7 Credits)
- Unit 5 - Exchange, Control Systems, and Genetic Inheritance (7 Credits)
- Unit 6 - Observation, Investigation, and Field Study (8 Credits)

Optional Units

- Unit 7 – Quantum Thinking in Natural and Complex Systems (4 Credits)
- Unit 8 - Scientific Communication and Critical Thinking (4 Credits)

3. Summary of Qualification Specification

3.1 The Level 3 Diploma in Life Systems and Scientific Understanding (Annexe A)

The Level 3 Diploma in Life Systems and Scientific Understanding builds on key principles of inclusive, accessible education, providing a structured pathway for learners seeking to develop applied knowledge in biological systems, health, and the environment. Designed to support progression from Level 2 study, this qualification offers meaningful opportunities for learners to deepen their understanding of key concepts in physiology, genetics, ecosystems, and scientific practice.

Qualification Title: TLM The Level 3 Diploma in Life Systems and Scientific Understanding
Qualification Number: XXXXXXX
Qualification Level: Level 3
Total Credits: 46
Guided Learning Hours: 322
Total Qualification Time: 460
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 - Human Body Systems, Nutrition, and Transport Mechanisms** • **Unit 2 - Cells, Growth, Classification, and Ecosystem Interactions** • **Unit 3 - Scientific Investigation and Laboratory Practice** • **Unit 4 - Energy Release, Environmental Factors, and Defence Mechanisms** • **Unit 5 - Exchange, Control Systems, and Genetic Inheritance** • **Unit 6 - Observation, Investigation, and Field Study**	• **Unit 7 – Quantum Thinking in Natural and Complex Systems (4 Credits)** • **Unit 8 - Scientific Communication and Critical Thinking (4 Credits)**

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 Centre Management Site 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	The **community learning site** provides free optional facilities for learners to submit their evidence on-line, linking it to the assessment criteria across single or multiple units. The assessor can accept or reject this evidence and comment on it providing a full audit trail for evidence. Moderator/verifiers can get immediate access to this evidence and so it is potentially a lot more efficient than alternative methods. No paper, no e-mails with file attachments necessary. There are facilities for progress tracking that can be based on criteria and/or units. The system can be linked as an extension to any standards compliant VLE/e-portfolio system for centres that are already committed to a specific VLE product. Training can be provided, and free support is available from your Account Manager. The aim is to eliminate all paper-based bureaucracy, all screen-shots and referencing that draws time away from teaching.
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. It is usually best to e-mail your account manager in the first instance. Google hangouts can be arranged for video conferencing support.

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

The Level 3 Diploma in Life Systems and Scientific Understanding - 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:

- Achievement at RQF level 3 (EQF Level 4) reflects the ability to select and use relevant knowledge, ideas, skills and procedures to complete well-defined tasks and address straightforward problems. It includes taking responsibility for completing tasks and procedures and exercising autonomy and judgement subject to overall direction or guidance.
- Use understanding of facts, procedures and ideas to complete well-defined tasks and address straightforward problems. Interpret relevant information and ideas. Be aware of the types of information that are relevant to the area of study or work.
- Complete well-defined, generally routine tasks and address straightforward problems. Select and use relevant skills and procedures. Identify, gather and use relevant information to inform actions. Identify how effective actions have been.
- Take responsibility for completing tasks and procedures subject to direction or guidance as needed.

- The specification for the Level 3 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 4 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.

Unit 1: Human Body Systems, Nutrition, and Transport Mechanisms

1. Understand the structure and functions of body systems	1.1 Identify key structural features of the skeletal, muscular, and organ systems in the human body. 1.2 Explain how these systems interact to enable movement, stability, and internal function.
2. Understand the role of nutrients in maintaining body functions	2.1 Describe the main types of nutrients and their roles in maintaining health and energy balance. 2.2 Explain how nutrient deficiencies affect body systems and overall health.
3. Understand transport and circulation within the body	3.1 Describe the pathways for the movement of oxygen, nutrients, and waste products in the circulatory system. 3.2 Explain how the circulatory system maintains balance during rest and activity.
4. Understand how dietary practices affect health at a population level	4.1 Analyse strategies used to promote healthy eating and prevent nutritional disorders in communities. 4.2 Describe the impact of common dietary trends and habits on long-term health outcomes.
5. Understand the impact of technology and innovation on health and nutrition	5.1 Explain how modern technologies support health monitoring, diagnosis, and nutritional planning. 5.2 Describe the role of emerging innovations in disease prevention and personalised healthcare.

Unit 2: Cells, Growth, Classification, and Ecosystem Interactions

1. Understand cell structures and internal communication	1.1 Describe the structure and function of key components in animal and plant cells. 1.2 Explain how cells communicate and coordinate activities within tissues and organs.
2. Understand cell reproduction and growth processes	2.1 Explain the stages of cell division and how they contribute to growth and repair. 2.2 Describe the changes that occur during cell differentiation and early development.
3. Understand biological classification and adaptation	3.1 Describe the main levels of biological classification and naming conventions. 3.2 Compare characteristics of organisms to explain evolutionary similarities and differences.
4. Understand interactions and sustainability in ecosystems	4.1 Describe how organisms interact within ecosystems through food chains, competition, and cooperation. 4.2 Identify the impact of environmental changes and human activities on biodiversity and sustainability.

Unit 3: Scientific Investigation and Laboratory Practice

1. Understand the use of scientific equipment and observation tools	1.1 Describe how microscopes and other visual tools are used to observe biological samples. 1.2 Prepare and examine biological specimens using appropriate methods.
2. Understand how to design and carry out scientific investigations	2.1 Plan simple investigations with defined variables and fair testing methods. 2.2 Collect and present results using tables, charts, and graphs.
3. Understand how to use laboratory instruments and ensure safety	3.1 Identify how to use measurement tools accurately and record results using correct units. 3.2 Identify how to follow health and safety procedures when conducting practical activities.
4. Understand ethics and responsibility in scientific work	4.1 Describe appropriate conduct and shared responsibilities in laboratory settings. 4.2 Explain ethical considerations when collecting data or working with living materials.

Unit 4: Energy Release, Environmental Factors, and Defence Mechanisms

1. Understand how organisms obtain and release energy	1.1 Describe how photosynthesis and respiration convert energy for biological use. 1.2 Compare aerobic and anaerobic respiration in terms of reactants, products, and efficiency.
2. Understand the effect of environmental factors on biological performance	*2.1:* Explain how temperature, pH, and substrate concentration influence enzyme activity 2.2 Analyse experimental data to assess the impact of environmental changes on organism growth or activity.
3. Understand non-specific and specific defence mechanisms	3.1 Describe physical and chemical barriers that provide general protection against pathogens. 3.2 Explain the roles of white blood cells, antibodies, and memory cells in the immune response
4 Understand how vaccination and technology support disease prevention	4.1 Explain how vaccination induces immunity at an individual and community level. 4.2 Evaluate recent technological and their contributions to global health.

Unit 5: Exchange, Control Systems, and Genetic Inheritance

1. Understand exchange surfaces and internal transport in organisms	*1.1:* Describe how specialised structures support effective exchange of substances. *1.2*: Explain how transport systems support distribution of materials in the body.
2. Understand homeostasis and internal regulation	2.1 Describe how the body maintains internal balance using negative feedback systems. *2.2:* Explain how hormones and the nervous system coordinate responses to changes in internal or external conditions. 2.3 identify how to interpret examples of how the body responds to specific changes
3. Understand DNA, genetic coding, and inherited traits	3.1 Describe the structure of DNA and how it codes for proteins. 3.2 Explain how genetic variation arises through inheritance, mutation, and meiosis. 3.3 Evaluate ethical and practical considerations in genetic testing and modification.

Unit 6: Observation, Investigation, and Field Study

1. Understand how to observe and assess biological environments	1.1 Use fieldwork techniques to record observations of species, populations, and habitats. 1.2 Analyse environmental data to identify patterns, trends, or potential ecological issues.
2. Understand how structure relates to function in living organisms	2.1 Compare structural features of different organisms and relate these to their survival or function. 2.2 Explain how variations in structure reflect adaptation to different environments.
3. Understand how to investigate materials and biological samples	3.*1* Use basic techniques to collect and prepare biological samples for examination. 3.2 Apply appropriate tools to identify structures or components.
4. Understand how to report scientific findings	4.1 Present investigation results using tables, graphs, and written reports. 4.2 Follow ethical and professional standards when sharing findings or observations.

Unit 7: Quantum Thinking in Natural and Complex Systems

1. Understand key ideas in quantum theory relevant to natural systems	1.1 Describe core concepts such as coherence, superposition, and entanglement. 1.2 Explain how quantum effects may influence biological processes.
2. Understand how uncertainty and probability affect observation in science	2.1 Explain how measurement uncertainty affects interpretation in biological systems. 2.2 Analyse probabilistic models used in complex biological environments.
3. Understand how quantum theory contributes to innovation and future applications	3.1 Review examples of applied quantum theory in science and technology 3.2 Discuss how developments in quantum science may influence future interdisciplinary work
4. Understand ethical and interdisciplinary considerations	4.1 Describe ethical concerns linked to new scientific interpretations. 4.2 Explain how collaboration across disciplines supports responsible innovation.

Unit 8: Scientific Communication and Critical Thinking

1. Understand how to evaluate scientific information	1.1 Apply logical reasoning to assess scientific claims. 1.2 Distinguish between evidence-based conclusions and unsupported assumptions.
2. Understand how to provide and respond to peer feedback	2.1 Use structured criteria to evaluate the quality of scientific work. 2.2 Apply feedback to refine and improve scientific communication.
3. Understand how to present scientific information effectively	3.1 Adapt content and language to suit different audiences. 3.2 Use visual aids and structured formats to improve clarity and understanding.
4 Understand the importance of integrity in science communication	4.1 Describe the principles of accuracy, transparency, and accountability. 4.2 Identify and address bias, exaggeration, or misrepresentation in communication.

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