Course Specification

T Level Foundation Course in Health and Science

Version V1

Training Qualifications UK

Contents

Summary of changes 4

Welcome to TQUK 5
Our commitment to you 5
What you need before you can deliver a T Level Foundation Course 5
About this specification 5
Using the TQUK name and logo 6
Advertising rules 6
Accessibility 6

T Level Foundation Year 7
Overview 7
How will a T Level Foundation Course benefit your students? 7
Diagnostic assessment 8
The Foundation Year 8
Entry requirements 9
Key areas of learning 9
Course structure 9
English, maths, and digital skills in the T Level Foundation Course 11

Assessment 11
Assessment approach 11
Establishing consistency in assessment writing 12
Achievement and progression 12
Health and safety considerations 13

Course Delivery 13
Monitoring student progress 13
Adapted learning 13
Resources 14
Personal development opportunities 14
Student pastoral support 14
Work preparation 15
Student registration 15
Progression after this course 15

Staffing and Quality Assurance 16
Tutor Requirements 16
Assessors 16
Quality Assurance 17

Useful Websites 17

Teaching Content 18
Course structure 18
Outcome 1 (O1): Apply knowledge and understanding of scientific theories, concepts, and principles to health and science contexts 19
Outcome 2A (O2A): Provide person-centred care to support the health and wellbeing of individuals 23
Outcome 2B (O2B): Follow standard operating procedures to perform laboratory analysis 34
Outcome 3 (O3): Analyse information and data to highlight health and science issues 43

Appendix 1 50
Level 2 Command Verbs 50

Summary of changes

The following table provides a summary of the changes that have been made to the course specification since the publication of the previous version.

Version number	Summary of changes

Welcome to TQUK

Our commitment to you

At Training Qualifications UK (TQUK), we believe learning should be meaningful, flexible, and of an exceptional quality, whether it's a regulated qualification or part of our non-regulated course provision.

TQUK is a recognised Awarding Organisation regulated by Ofqual in England and CCEA Regulation in Northern Ireland. We apply the same high-quality standards to our non-regulated courses, ensuring they are well-designed, purposeful, and aligned with the skills, behaviours, and knowledge to support students on their learning journey.

This endorsed, unregulated **T Level Foundation Course in Health and Science** is part of that commitment. It provides a supportive, structured route for students who would benefit from a preparatory year before progressing to a full T Level qualification.

What you need before you can deliver a T Level Foundation Course

To deliver a T Level Foundation course, your organisation must be recognised by TQUK.

Our **endorsed course requirements** check that your policies, systems, and staffing are in place to deliver high-quality learning. Centres must show they have:

- appropriate resources
- qualified and occupationally competent staff
- clear systems in place to deliver and assess the course.

Approval must be confirmed by TQUK before any teaching takes place.

Full guidance on centre recognition and approval is available in the TQUK Endorsed Course Customer Requirements accessible from the TQUK website.

About this specification

This course specification sets out everything centres need to plan, deliver, and assess the T Level Foundation Course in Health and Science. Inside you will find:

- a clear statement of the course purpose
- the three outcomes with the underpinning knowledge and skills
- practical guidance for delivery.

Using the TQUK name and logo

We're proud of the TQUK brand, and we know our centres are too. That's why we allow recognised centres to use the TQUK logo and name to promote approved courses, with a few simple rules:

- logos must not be altered in colour, shape, size, or design
- use only on approved materials: e.g., course brochures, web pages, or promotional flyers relating to TQUK courses
- centres must monitor how the logo is used — both by themselves and any third parties they work with.

If your centre is no longer recognised, or if your marketing relationships change, you must inform TQUK and remove any use of the logo or name.

More details about logo use and brand guidelines can be found in our full brand policy on the TQUK website.

Advertising rules

As an Awarding Organisation, TQUK and its registered centres are subject to the Conditions of Recognition defined by the regulator, Ofqual. Two of these conditions (B5.1 and B5.2) stipulate that TQUK and its centres must take steps to ensure that non-regulated products are not advertised or promoted to students as regulated qualifications.

To guarantee these conditions are met, we have provided the following requirements that all centres must follow when marketing this course:

- marketing materials should not mislead a student into believing they will gain a regulated qualification
- all marketing materials must not describe this course as "regulated" or "nationally recognised"
- all marketing materials must not describe this course as equivalent to a regulated qualification
- all marketing must not state that this course meets industry standards for employment.

Accessibility

As an Awarding Organisation, TQUK is committed to ensuring that all our products are accessible, inclusive, and non-discriminatory. We ensure that no aspect of this course disadvantages any group of students who share a protected characteristic or introduces unjustifiable barriers to entry, other than those essential to the course's intended purpose. Where such features are necessary, they will be clearly stated and justified.

TQUK monitors and reviews the nine protected characteristics (age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex, and sexual orientation) throughout qualification development to maintain accessibility and inclusivity. This approach promotes positive attitudes and fosters good relations among all students.

More information can be found in our Equality and Diversity Policy.

T Level Foundation Year

Overview

A T Level Foundation Year is a preparatory study programme designed to support students who have the potential to progress to a T Level.

The programme comprises 5 key components:

- industry-relevant technical knowledge and skills
- skills for successful study
- English, maths, and digital skills
- knowledge and skills for the workplace
- positive attitudes and behaviours.

The primary purpose of this T Level Foundation Course in Health and Science is to provide the foundational technical knowledge and skills relevant to the student's preferred T Level route.

The course is designed for students who would benefit from additional preparation and study time before starting a T Level. It supports progression to their chosen subject route by developing the knowledge, skills, and behaviours needed for level 3 study.

A Foundation Year should support students in making informed decisions about their next steps. This may include progressing to a T Level or pursuing an alternative pathway, with guidance provided to ensure each student chooses the route that is right for them.

It is designed to meet the requirements outlined by the Department for Education (DfE) in its T Level Foundation Year: framework for delivery guidance.

The TQUK T Level Foundation Course in Health and Science is a non-regulated, accredited course.

How will a T Level Foundation Course benefit your students?

This T Level Foundation Course provides a tailored year of learning to help students prepare for the demands of level 3 study. It focuses on developing the core knowledge, skills, and behaviours needed to succeed on a T Level, providing a clear and supportive transition into level 3 study. It helps students build confidence and independence while gaining a clear understanding of what is expected within their chosen T Level route.

Students will have opportunities to engage with employers and make meaningful links between their learning and the world of work. The course also supports personal development by encouraging students to take ownership of their progress, with time built in to meet individual learning needs and provide appropriate pastoral support.

By the end of the course, students should have a clear understanding of what is required to succeed on their chosen T Level, or feel confident in making an informed decision about an alternative progression route or career path.

The course is intended for students identified through diagnostic assessment as not yet ready to meet the demands of a T Level. It provides targeted preparation and structured study to support progression to level 3 study.

Diagnostic assessment

Centres must ensure that all students complete an initial diagnostic assessment before the start of a foundation year. This may take different forms depending on centre practice, but should be used to identify each student's learning, development, and pastoral support needs.

The findings should inform how a foundation year is tailored, including any support for students with SEND. It will also assist in determining whether a T Level Foundation Course or direct entry to a T Level is the most appropriate route for each student. Diagnostic activities may include a taster sessions, one-to-one discussions, self-assessments, assignments or reflective tasks, and may be supported by knowledge, skills and behaviour matrices.

This stage should help students make informed decisions about their next steps. Students who have identified a preferred T Level route should be supported to confirm that it is the most suitable option for them, while those who are undecided should be given opportunities to explore alternative options.

The Foundation Year

A T Level Foundation Year is designed to support students in building a strong basis for further study. It is structured around 5 areas that provide students with the essential academic, practical, and personal skills needed to successfully progress to a T Level qualification. The 5 areas that make up a foundation year are listed below:

Technical knowledge	Skills for successful study	English, maths, and digital skills development	Knowledge and skills for the workplace	Positive attitude and behaviours
Students are introduced to key concepts and practical skills relevant to their intended T Level. This builds early technical understanding and prepares them for level 3 learning.	This area focuses on essential study skills development to include time management and independent learning. Students will also develop techniques in formal writing, research, referencing, and critical thinking.	Students who have not yet attained a GCSE grade 4 in English and/or maths (or equivalent qualification) are required to continue working towards this achievement through GCSE resits, or by completing a Functional Skills qualification.	This component introduces students to professional workplace behaviours and the expectations of a T Level industry placement. It covers key areas such as professionalism, communication, teamwork, understanding organisational policies, and effective travel planning.	This component helps students build confidence, manage stress, and cultivate a positive mindset. It focuses on goal-setting, self-reflection, and using feedback to support their personal growth and enhance their wellbeing.

Entry requirements

There are no specific entry requirements for this TQUK T Level Foundation Course.

The course is primarily aimed at students aged 16-19 years, but may be suitable for students up to the age of 24 who have an Education, Health, and Care (EHC) plan.

NOTE: The T Level Foundation Year is designed to support students who may not yet have achieved a GCSE grade 4 or equivalent qualification in English and maths by providing targeted teaching and additional time to build their confidence and ability. Students who have not achieved the minimum requirement in English and maths will be expected to work towards achieving a GCSE grade 4 or a level 2 Functional Skills qualification during the course to meet the entry requirements for their chosen T Level route.

Key areas of learning

This T Level Foundation Course offers a balanced programme that helps students develop the essential technical knowledge, skills, and behaviours needed to progress onto a T Level in **Health or Science**.

This includes an introduction to the core principles and industry-relevant practices drawn from the National Technical Outcome (NTO) for the T Level route.

Students will explore areas such as:

- core science topics including cells, microbiology and particles
- human anatomy, physiology and vital signs
- person-centred care and personal care activities
- health and safety in care and laboratory settings
- using equipment and following standard procedures
- recording, analysing and presenting information and data.

These topics are designed to give students a strong foundation for the more advanced technical learning they will encounter on the T Level and will support their understanding of how technical knowledge is applied in real workplace settings.

English, maths, and digital skills, relevant to health and science and transferable skills, such as communication, problem-solving, and teamwork, will also be developed during the course.

There are opportunities for employer engagement, personal development, and work experience linked to health and healthcare science, helping students build confidence, gain industry insight, and prepare for the expectations of the workplace.

Course structure

Students must complete the 3 Outcomes to achieve this T Level Foundation Course.

We have devised a simple, clear structure to showcase the knowledge and skills that students must be able to evidence to ensure they can successfully demonstrate each of the 3 outcomes. The layout comprises:

- technical knowledge and skills

- blended delivery (through a combination of theoretical and engaging, practical learning)
- supplementary delivery information for student stretch and challenge
- positive behaviours that may be demonstrated (such as professionalism, resilience).

The course provides the knowledge students must develop and the skills they are expected to demonstrate to fulfil the expectations of each outcome.

Each topic includes the essential knowledge, and the skills section details what students must be able to do in practice, ensuring that learning is applied and demonstrable within relevant contexts.

To support effective teaching and learning, each topic includes some suggestions on how the content can be taught.

Supplementary information is also provided to extend learning and encourage stretch and challenge for those who are ready to progress beyond the core requirements.

Important: Outcome 2 requires students to choose between two pathways:
2A is focused on providing person-centred care to support the wellbeing of individuals and is aimed at students intending to progress to the T Level in Health.
2B is focused on performing laboratory analysis and is aimed at students who intend to progress to the T Level in Science. Students must select either 2A or 2B based on their intended progression route.

Outcome title – 2A pathway combination	**Guided learning hours (GLH)**
01: Apply knowledge and understanding of scientific theories, concepts and principles to health and science contexts	50
02A: Apply knowledge and understanding of scientific theories, concepts and principles to health and science contexts	50
03: Analyse information and data to highlight health and science issues	50
Total (GLH) contact time, guidance, and supervision of a student for this course	150*
Outcome title – 2B pathway combination	**Guided learning hours (GLH)**
01: Apply knowledge and understanding of scientific theories, concepts and principles to health and science contexts	50
02b: Follow Standard Operating Procedures to perform laboratory analysis	50
03: Analyse information and data to highlight health and science issues	50
Total (GLH) contact time, guidance, and supervision of a student for this course	150*

* **The Guided Learning Hours (GLH)** for this course are set at 150 hours to ensure appropriate provision for students with varying needs and to accommodate opportunities for stretch and challenge in each of the 3 outcomes.

English, maths, and digital skills in the T Level Foundation Course

English (communication), maths (numeracy), and digital skills are essential components of the T Level Foundation Course, with specific areas outlined in the National Technical Outcome (NTO). Some of these areas will be explicitly taught, while others will naturally occur during the delivery of the course.

- **English (Communication)**: Communication skills will be developed through tasks that require students to articulate their ideas and present information clearly. These skills will be embedded within the context of the course, ensuring they are relevant to industry and student learning.
- **Maths (Numeracy)**: Numeracy skills are integrated into the qualification, particularly when students need to apply mathematical principles in real-world contexts. This includes tasks involving measurement, calculations, and data interpretation.
- **Digital Skills**: Digital skills will be embedded through the use of relevant software and tools that students will need in Health and Science. These skills will be developed and applied in context, ensuring students understand their practical applications.

The supplementary information provided will map the specific English, maths, and digital content to the course outcomes, offering guidance on where and how these skills are applied. This will support students in seeing the real-world relevance of these skills and reinforce their importance in a work environment.

Assessment

Assessment approach

All students must be assessed in English.

Centres are expected to create their own assessments that reflect the aims of this T Level Foundation Course, ensuring alignment with the National Technical Outcome (NTO) for the subject area. When designing them, tutors must consider the depth and breadth of knowledge allowed by each task.

The assessments may be carried out on an individual outcome basis or designed holistically for the whole course across all 3 outcomes. Whichever approach is used, assessments should also reflect and align with the embedded English, maths, and digital skills.

Assessment might include a mix of:

- examinations
- assignments
- case studies
- projects
- observations
- role play.

Assessment activities should enable students to demonstrate the knowledge, skills, and behaviours outlined across all outcomes, showing how these can be applied in realistic, work-related contexts to support progression to T Level study or employment.

The specification does not prescribe a fixed approach, as this allows centres the flexibility to adapt delivery to their own context and to respond to the individual needs of students. Tutors should use their professional judgement to select methods that provide students with meaningful opportunities to apply and develop the required skills, whether in classroom, simulated, or workplace settings.

All assessments should be supported by appropriate internal quality assurance activities to make sure they are consistent, purposeful and support each student's progression, particularly when holistic assessment is used.

All assessments must be designed to ensure that students are appropriately prepared for the demands of the T Level route and reflect real-world applications.

Establishing consistency in assessment writing

Centres must implement appropriate and consistent assessment approaches to ensure student work is marked fairly and in line with TQUK expectations.

All delivery staff must be familiar with the mandatory teaching content and assessment expectations and apply the same interpretation of knowledge and skills topics when designing and marking their assessments.

Assessments should follow a standardised format to ensure consistency in language, structure, and level of demand.

Tutors must use clear marking criteria and participate in regular standardisation activities to agree on the pass standard. Processes must be in place to confirm the authenticity of student work, and centres should ensure a transparent, accessible procedure is available for students to appeal a fail decision.

Achievement and progression

This is an unregulated course, and assessment will take place throughout the academic year. The assessment model is based on a pass/fail outcome, with no grading.

To pass the course, tutors must be satisfied that the students have met the 3 outcomes.

It is essential that tutors actively monitor student progress and provide timely and constructive feedback, highlighting areas for improvement and reinforcing their achievements. This ongoing feedback will ensure that students are given every opportunity to address any challenges and stay on track to successfully demonstrate the outcomes by the end of the course.

Achievement of the course will result in certification. Centres should ensure that the Student Certification Form, available in the T Level Foundation Course resources section on the website, is completed when claiming learner certificates. Certificates will not be issued without the submission of the completed form. Centres are required to submit the form via email to operations@tquk.org

The course is designed to provide targeted preparation and structured study to support progression. Completion of this course alone does not constitute achievement of the full T Level Foundation Year, which will be determined by the centre.

Health and safety considerations

Centres must ensure that all activities and tasks undertaken as part of this T Level Foundation Course are carried out with due regard to health and safety.

Students should only engage in activities within a supervised environment, or where appropriate, in a suitably controlled simulated setting. Centres are responsible for ensuring that all delivery and assessment activities comply with relevant health and safety requirements and safeguarding considerations.

Course Delivery

Monitoring student progress

Centres are expected to monitor students' progress throughout the course through regular tutor and student review points. Ongoing reviews should be used to identify each student's strengths and development needs, track progress in English, maths and digital skills, and monitor competency in employability skills and behaviours.

A range of methods should be used to review their progress, including regular feedback, formative assessments, and observations, with all activities documented to inform decisions about any additional support or interventions.

Students should be supported to take ownership of their learning and development by having a clear understanding of their goals and working with their tutors to agree on an individual development plan that sets out key objectives and milestones.

TQUK has devised a number of templates to support the administration and delivery of this course. They can be accessed on the TQUK website.

Adapted learning

Centres should take reasonable steps to ensure that all students are given fair access to learning and assessment opportunities. This includes anticipating potential barriers, adapting delivery methods where appropriate, and offering flexible arrangements that enable participation. Centres are encouraged to adopt a student-centred approach that reflects best practice in supporting diverse needs.

For more information, please refer to TQUK's Reasonable Adjustments and Special Considerations Policy on our website.

Resources

All teaching materials and additional resources used to support the delivery of this foundation course must be age-appropriate. Centres should carefully consider student safeguarding and wellbeing when developing or sourcing materials in line with the centre's policies and procedures.

TQUK has produced a Centre Resources Pack that includes a range of useful templates to support the assessment, ongoing monitoring, and pastoral support of your students.

This is a free, optional resource to support the administration of the T Level Foundation Course and may be accessed via the TQUK website.

Personal development opportunities

Centres should include meaningful personal development and enrichment opportunities that help students to build the study skills, behaviours, and transferable skills needed for success on a T Level and in the workplace.

Additional enrichment opportunities, ideally aligned with students' intended T Level route or career goals, might include trips or volunteering activities, or participation in programmes such as The King's Trust.

Student pastoral support

Pastoral support is a vital part of any T Level Foundation Year and plays a key role in preparing students for progression to the demands of a T Level. Many students who register on a foundation year need encouragement, structure, and clear guidance to help them move forward.

A T Level Foundation Year should offer students tailored support to help them build confidence, resilience, and independence as they make the transition from GCSEs to level 3 study. This includes helping students to develop personal skills and support their wellbeing.

Centres should provide regular mentoring sessions as part of the pastoral support offer. These meetings will allow students to reflect on their progress, set goals, and address any issues at early stage. Pastoral support should also monitor engagement, attendance, and personal development.

Safeguarding and mental health support are essential. Centres must have clear procedures in place to identify and respond to any wellbeing concerns, and students should have access to mental health services or signposting where needed. This is particularly important for students who are unsure of their next steps.

Support for students with special educational needs or disabilities (SEND) must be personalised, with appropriate adjustments made both in the classroom and during work experience activities. Centres should work closely with employers to ensure that any specific needs are understood and met. Overall, pastoral support should help ensure that every student feels supported, understood, and ready to progress confidently to their T Level.

Work preparation

Work experience is a key element of a T Level Foundation Year, supporting students to prepare for their T Level industry placement. Wherever possible, placements should align with the student's intended T Level route; however, alternative opportunities may be offered where employer availability is limited. All students should participate in meaningful, work-related activities and tailored workplace preparation, informed by an assessment of their individual work readiness.

Where a formal work placement is not possible, centres are encouraged to provide alternative forms of industry engagement to ensure students gain relevant and practical exposure to the workplace.

Preparation activities should cover core workplace knowledge and skills and may include:

- employer-led talks
- presenting projects to employers
- industry visits
- pre-placement site visits
- site visits
- mock interviews
- industry mentoring
- travel planning.

Centres must work closely with employers to ensure support and accessibility, safeguarding and health and safety considerations, including reasonable adjustments under the Equality Act 2010.

Student registration

Once approved to offer this T Level Foundation Course, centres must follow TQUK's procedures for registering students. Student registration is at the centre's discretion, in line with equality legislation and health and safety requirements.

Centres must register students before any assessment can take place.

Progression after this course

This T Level Foundation Course aims to prepare students to progress onto a T Level. Successful students can progress to:

- T Level Technical Qualification in Health
- T Level Technical Qualification in Science.

Students will need to apply for entry to the T Level via a centre's standard enrolment processes.

Where progression to a T Level is not appropriate for a student, centres will need to provide support to determine next steps that may include:

- a level 2 or level 3 study programme
- an apprenticeship
- direct entry into employment.

Centres must provide appropriate careers guidance to help students plan their next steps and ensure the completion of any qualifications, including English and maths.

Staffing and Quality Assurance

All members of staff involved with the delivery of this T Level Foundation Course (tutors or internal quality assurance staff) will need to be occupationally competent in the subject area. This could be evidenced by a combination of:

- a higher-level qualification in the same subject area.
- experience in the delivery/assessment/IQA of the course.
- work experience in the subject area.

Staff members will also be expected to have a working knowledge of the requirements of the foundation course and a thorough knowledge and understanding of the role of tutors/assessors and internal quality assurance. They are also expected to undertake continuous professional development (CPD) to ensure they remain up to date with work practices and developments associated with the courses they assess or quality assure.

Tutor Requirements

Tutors who deliver this foundation course must possess a teaching qualification appropriate for the level. This can include:

- Further and Adult Education Teacher's Certificate
- Cert Ed/PGCE/Bed/MEd
- PTLLS/CTLLS/DTLLS
- Level 3 Award/Level 4 Certificate/Level 5 Diploma in Education and Training.

Assessors

Staff who assess this foundation course must possess an assessing qualification appropriate for the level or be working towards a relevant qualification and have their assessment decisions countersigned by a qualified assessor. This can include:

- Level 3 Award in Assessing Competence in the Work Environment.
- Level 3 Award in Assessing Vocationally Related Achievement.
- Level 3 Award in Understanding the Principles and Practices of Assessment.
- Level 3 Certificate in Assessing Vocational Achievement.
- A1 or D32/D33.

Quality Assurance

Quality assurance for this TQUK T Level Foundation course should be carried out by experienced professionals within the centre to ensure it meets learning standards.

Centres should implement regular checks on student progress, provide constructive feedback, and maintain a supportive environment. Centres should also ensure that staff delivering the course are suitably qualified and experienced.

Additionally, centres will receive an annual request to provide samples of student work and confirmation of the qualifications of those involved in delivery.

Useful Websites

- Department for Education
- T Levels
- T Level Foundation Year Framework for Delivery
- The Skills Builder
- Barclays Life Skills
- Skills England

You may also find the following websites useful:

- National technical outcomes: health and science
- https://www.hse.gov.uk/healthservices/sensible-risk-assessment-care-settings.htm
- https://www.cqc.org.uk/guidance-providers/registration/personal-care
- https://www.england.nhs.uk/wp-content/uploads/2022/09/nipc-manual-appendix-1-handwashing.pdf

Teaching Content

Course structure

The structure of the T Level Foundation Course is informed by the National Technical Outcome (NTO) to ensure a comprehensive and cohesive learning experience for the students.

Each outcome is underpinned by a clear rationale, providing context for its relevance to support progression to a T Level.

The content is divided into **knowledge** and **skills** to support a focused and progressive approach to learning.

We provide **supplementary information** to deepen understanding and offer opportunities for stretch and challenge, ensuring students are encouraged to reach their full potential and support progression to level 3 study.

Additionally, English, maths, and digital skills are embedded throughout the course, with guidance on how these competencies may be integrated into learning activities.

The course also includes a strong emphasis on **transferable skills** and **behaviours**, preparing students for successful progression in both their further studies to a T Level and to future employment.

Outcome 1 (O1): Apply knowledge and understanding of scientific theories, concepts, and principles to health and science contexts

This outcome focuses solely on knowledge. It centres on underpinning scientific knowledge that forms the foundation for understanding various health and science contexts. The outcome introduces theories, concepts, and principles relevant to the core content of all three T Levels in the Health and Science route. It covers fundamental knowledge of cells, microbiology, particles, acids and bases, waves, and ionising radiation. This knowledge is important in all occupations encompassed by the three T Levels in the Health and Science route, such as laboratory technician, pharmacy technician, or nursing. The outcome introduces students to specific topic areas that are linked to a scientific concept. Students will gain knowledge and understanding of these concepts and apply them within health, healthcare science, and science sector contexts.

The knowledge topics in this section are mandatory and must be covered in full. Tutors have the discretion to deliver these topics at their discretion using the teaching approaches, examples, and activities that best suit their students' needs.

<table>
<tr><th colspan="2">Knowledge Topic 1: Cells</th></tr>
<tr><td colspan="2">The student must understand:</td></tr>
<tr><td>K1</td><td>Components in animal cells: structure, function, and the relationship between these</td></tr>
<tr><td>K2</td><td>Transport of substances in and out of cells: types of substances transported, processes for transport, similarities and differences of these processes</td></tr>
<tr><td>K3</td><td>Specialised cells: types, functions and adaptations for specific roles</td></tr>
<tr><td colspan="2">Tutor guidance:</td></tr>
<tr><td colspan="2">K1 Components in animal cells:
The tutor should introduce components in animal cells: nucleus, cytoplasm, cell membrane, mitochondria, and ribosomes, and examine the function and relationship between these.

K2 Transport of substances in and out of cells:
The tutor should provide an overview of the types of substances transported into and out of cells. Explain the transport processes, for example, diffusion, osmosis, and active transport, and highlight the similarities and differences between these processes.

K3 Specialised cells:
Students should explore different types of specialised cells (for example, red blood cells, white blood cells, and nerve cells), explain their functions, and explore the adaptations that make these cells suitable for their specific roles.</td></tr>
<tr><td colspan="2">Supplementary information to support stretch and challenge:</td></tr>
<tr><td colspan="2">The tutor could introduce:
additional components of plant cells: vacuole, cell wall, and chloroplast
similarities and differences between animal and plant cells
similarities and differences between different specialised cells (for example, muscle cells, sperm cells, egg cells).</td></tr>
</table>

Knowledge Topic 2: Microbiology	
The student must understand:	
K4	Microorganisms: types and characteristics
K5	Pathogens: definition, specific examples, and the diseases they cause, transmission, and how this spread can be reduced or prevented

Tutor guidance:

K4 Microorganisms:
The tutor should introduce students to different types of microorganisms: **bacteria, fungi (yeast** and **moulds),** and **viruses,** and state their **characteristics**.

K5 Pathogens:
Outline the **definition** of a pathogen, and use the examples provided in the table to explore the different ways in which pathogens can be transmitted: **direct contact, water, air, unhygienic food preparation,** and **vector**. Explore how the **spread** of pathogenic disease can be **reduced** or **prevented**

Pathogens:	Diseases:
Streptococcus pneumoniae	Pneumonia
Norovirus	Vomiting/diarrhoea
Human Immunodeficiency Virus (HIV)	Acquired Immune Deficiency Syndrome (AIDS)

Supplementary information to support stretch and challenge:

The tutor could introduce:

- how treatments for diseases caused by bacteria work.

Knowledge Topic 3: Particles	
The student must understand:	
K6	Particles: types of particles, states of matter, and particle arrangement in different states of matter
K7	Particle movement: relationship between energy and movement in different states of matter, and how temperature and pressure can affect the energy of particles

Tutor guidance:

K6 Particles:
The tutor should introduce students to the different **types of particles** (atoms, molecules and ions). Explain the three different **states of matter** and how **particles behave** in each state.

K7 Particle movement:
The tutors should outline the **relationship between energy** and **particle movement** in different states of matter. Explore how **temperature** and **pressure** can affect the **energy** and **movement** of particles in different states of matter.

The tutor may then wish to explore **changes** in particle arrangements during **chemical reactions**.

Knowledge Topic 4: Acids/bases	
The student must understand:	
K8	Acids, alkalis, bases, and neutral solutions: definitions and properties
K9	Indicators and pH scale, purpose, applications, and ways to measure the acidity or alkalinity of a solution
K10	Neutralisation reactions: characteristics and uses

Tutor guidance:

K8 Acids, alkalis, bases, and neutral solutions:
The tutor should introduce students to the **definitions** and **properties** of **acids, alkalis, bases**, and **neutral solutions**.

K9 Indicators and pH scale:
Students should be introduced to the **pH scale** and its **purpose**, and the **application** of **indicators**. Explain how indicators are used to measure the acidity or alkalinity of a solution by changing colour depending on the pH**.**

K10 Neutralisation reactions:
Introduce students to the characteristics and uses of neutralisation reactions.

Knowledge Topic 5: Waves	
The student must understand:	
K11	Waves: types, characteristics and properties, and transfer of energy
K12	Electromagnetic waves: types and applications

Tutor guidance:

K11 Waves:
The tutor should introduce students to the **types** of waves (transverse waves and longitudinal waves), explaining their **characteristics** and **properties, and explore** how **energy is transferred** through waves.

K12 Electromagnetic waves:
Introduce students to the electromagnetic spectrum (**radio waves, microwaves, infrared radiation, visible light, ultraviolet light, X-rays, and Gamma rays**) and explore their **applications**.

Supplementary information to support stretch and challenge:

The tutor could introduce:

- how properties of waves affect their suitability for use within medical diagnosis and treatment

Knowledge Topic 6: Ionising radiation	
The student must understand:	
K13	Ionising radiation: types, properties, applications, and concept of half-life
K14	Hazards of using ionising radiation: effects on the human body and protection measures required
Tutor guidance:	
K13 Ionising radiation: The tutor should introduce students to the **types** of ionising radiation, explaining their **properties**. Discuss the applications of ionising radiation and explain the concept of half-life**.** **K14 Hazards of using ionising radiation:** Students should consider the **hazards** of ionising radiation, explaining its potential **effects** on the human body, for example, DNA damage, cell mutations, and increased cancer risk. Discuss the importance of **protection measures** when working with ionising radiation, for example, shielding, distance, time limits, and protective clothing.	
Supplementary information to support stretch and challenge:	
The tutor could introduce: • how properties of ionising radiation affect its suitability for use within medical	

Outcome 2A (O2A): Provide person-centred care to support the health and wellbeing of individuals

This outcome focuses on providing person-centred care, which is a fundamental concept for all occupations in the health and healthcare science sectors when working with individuals, patients, and service users. The outcome provides an opportunity for students to develop technical knowledge relating to anatomy and physiological systems, and how physiological measurements support health and wellbeing. Students will learn about personal care activities and how these are delivered to meet individual needs. Students will learn how physiological measurements outside normal parameters are identified. This technical knowledge, drawn from the core and pathway content of the Health and Science T Levels, should be applied to practical contexts, enabling students to provide care that supports the health and wellbeing of individuals.

Knowledge Topic 1: Anatomy and physiology	
The student must understand:	
K1	Physiological systems, including cardiovascular and respiratory: components, structure, function, and organisation
K2	Expected normal physiological parameters for blood pressure, pulse rate, temperature, and respiratory rate
K3	Recognised indicators of good physical health
Tutor guidance:	
K1 Physiological systems: The tutor should introduce students to key physiological systems. Start with the c**ardiovascular** and **respiratory systems,** guiding students through the main **components**, their **structure**, **function**, and **organisation**. Once students are confident with those two systems, to develop breadth, tutors may wish to explore the **renal** and **integumentary systems**, again focusing on components, structure, function, and organisation. **K2: Expected normal physiological parameters:** Students should be introduced to key vital signs: **blood pressure, pulse rate, temperature, and respiratory rate,** and the **expected normal parameters.** Then, cover **respiratory volume, oxygen saturation levels,** and **Body Mass Index (BMI),** explaining their expected **normal parameters** **K3 Recognised indicators of good physical health:** Explore the recognised indicators of good physical health: s**kin colour, skin condition, body language, mobility,** and **reactions.**	

Knowledge Topic 2: Health and wellbeing	
The student must understand:	
K4	Physiological measurements, including blood pressure, pulse rate, temperature, and respiratory rate: purpose, step-by-step procedures as outlined in Standard Operating Procedures (SOPs)
K5	Personal care: types, purpose, and step-by-step procedures

Tutor guidance:

K4 Physiological measurements:
The tutor should explore with students the key physiological measurements (**blood pressure, pulse rate**, t**emperature**, and **respiratory rate)**. Explain the purpose of the measurement and guide students through the step-by-step procedures as outlined in Standard Operating Procedures (SOPs). Once the key physiological measurements have been covered, move on to additional physiological measurements (**pulse oximetry, BMI, and respiratory volume/peak flow**).

**Each NHS Trust will have its own SOPs to follow for the above routine procedures. Tutors may want to use their local area NHS Trust SOPs to guide their students.*

K5 Personal care:
Students should explore the **types** and **purpose** of personal care. The tutor should guide students through the **step-by-step procedures** for **applying** or **replacing a simple dressing**, **personal hygiene** (including washing, dressing, bathing, and toileting), **feeding** and **drinking support,** and **mobility** (getting in or out of bed, bathing, sitting, standing, and walking).

Supplementary information to support stretch and challenge

The tutor could introduce:

- taking account of situations which may affect the result of physiological measurements
- extraneous factors that can affect the results obtained from physiological measurements, for example, 'white coat syndrome'.

Knowledge Topic 3: Person centred care	
The student must understand:	
K6	Concept: care, compassion, communication, courage, commitment, and competence (6Cs)
K7	Implementation of care, compassion, communication, courage, commitment, and competence (6Cs): gaining consent, ensuring privacy and dignity, respecting individuals, follow duty of care, and escalating concerns

Tutor guidance:

K6 Concept:
The tutor should introduce students to the concept of the 6Cs (**care, compassion, communication, courage, commitment,** and **competence**). Explain how these values are essential in delivering effective and supportive care in health and science settings.

K7 Implementation of care, compassion, communication, courage, commitment, and competence (6C's):
Explore with students how the 6Cs are applied in practice. Outline **gaining consent**, **ensuring privacy** and **dignity**, **respecting individuals**, **following** the **duty of care,** and **escalating concerns**.

Supplementary information to support stretch and challenge:

The tutor could introduce:

- providing person-centred care to individuals with complex needs

Knowledge Topic 4: Health and safety	
The student must understand:	
K8	Typical health and safety hazards that individuals can create and encounter when providing person-centred care
K9	Likelihood and severity of health and safety risks associated with typical hazards
K10	Risk assessment: purpose, use, and content
K11	Controls used to minimise risks
K12	Organisational health and safety policies, their role in meeting legal requirements, and typical employee responsibilities
K13	Cleaning procedures used to maintain safe and hygienic environments: 'clean as you go', pre-cleaning, sanitising, disinfecting, rinsing, drying, and handwashing
K14	Techniques used to support healthy and safe working practices, including manual handling

Tutor guidance:

K8 Typical health and safety hazards:
The tutor should introduce students to the typical health and safety hazards **individuals** can **create** and **encounter** when providing person-centred care.

K9 Likelihood and severity:
Explain to students how likelihood refers to the probability of a hazard occurring, and severity refers to the potential harm it could cause. Students should then explore the **likelihood** and **severity of health and safety risks** in person-centred care. For example, **typical hazards** may include physical hazards, such as slips, trips, and falls, and biological hazards like blood and body fluids. Hazardous substances, such as cleaning fluids or equipment-related hazards, like faulty wiring.

K10 Risk assessment:
The tutor should explain the **purpose** of risk assessments, which is to identify potential hazards, assess the risks they pose, and take appropriate actions to reduce or eliminate them. Students should explore the **use** and **content** of risk assessments.

K11 Controls to minimise risks:
Students should explore the **controls** used to **minimise risks**. The tutor may wish to discuss the importance of preventative measures such as using appropriate personal protective equipment (PPE), ensuring safe working practices, regularly inspecting equipment, and following health and safety procedures. Emphasise the use of policies and procedures.

K12 Organisational health and safety policies:
Outline **organisational health and safety policies** in their **role** in **meeting legal requirements**, such as compliance with the Health and Safety at Work Act and other relevant regulations. Explain how these policies set clear guidelines for safe working practices, ensuring the safety and wellbeing of carers, patients, and service users, and explore **typical employee responsibilities**.

K13 Cleaning procedures used to maintain safe and hygienic environments:
Students should be introduced to the cleaning procedures used to maintain safe and hygienic environments. Explain the principle of **'clean as you go'**, where cleaning is done continuously throughout a task to prevent contamination. Discuss the stages involved, including **pre-cleaning**,

sanitising, **disinfecting**, **rinsing**, **drying**, and **handwashing**. Emphasise the importance of following these steps to reduce the risk of infection and maintain cleanliness.

K14 Healthy and safe working practices:
Students should explore the **techniques** used to **support healthy and safe working practices**. Discuss correct manual handling techniques, such as bending the knees, keeping the back straight.

Knowledge Topic 5: Equipment	
The student must understand:	
K15	Equipment used to take physiological measurements: characteristics, purpose, safety (including infection control), security, storage, maintenance, operation (including calibration), and applications
K16	Equipment used to provide personal care: characteristics, purpose, safety (including infection control), security, storage, maintenance, operation, and applications

Tutor guidance:

K15 Equipment used to take physiological measurements:
The tutor should introduce students to the equipment used to take physiological measurements (**digital blood pressure monitors, thermometers, watches with second hands, pulse oximeters, weighing scales, tape measures, and peak flow monitors)**. Explore the **characteristics** of each piece of equipment and its **purpose** in measuring vital signs. Explain the **safety** considerations (**infection control, security, storage, and maintenance**). Highlight each piece of equipment's **operation**, including **calibration**, and its **application** in both clinical and home settings for monitoring health.

K16 Equipment used for personal care:
Students should explore equipment used for personal care (**wheelchairs, walking aids/frames, hoists, and slide sheets**), looking at the **characteristics** and **purpose** of each item. And explore **safety (including infection control), security**, **storage, maintenance**, **operation,** and **applications** of each**.**

Knowledge Topic 6: Materials and reagents	
The student must understand:	
K17	Materials, reagents, and consumables: types, characteristics, purpose, applications and quantities required when taking physiological measurements and providing personal care
K18	Material, reagent, and consumable quantities required to ensure minimum wastage

Tutor guidance:

K17 Materials, reagents, and consumables:
The tutor should introduce students to the **types**, **characteristics, purpose, applications**, and **quantities** of **materials, reagents**, and **consumables** used when taking **physiological measurements** and **providing personal care**.

K18 Quantities required to ensure minimum wastage:
Students should examine the **required quantities** of materials, reagents, and consumables to **minimise wastage** while still ensuring safe and effective care.

Knowledge Topic 7: Sustainability	
The student must understand:	
K19	Waste management: principles, techniques (refuse, reduce, reuse, repurpose, recycle), procedures, and impact on materials, reagents, and consumables used when providing person-centred care
K20	Sustainable materials: characteristics, purpose, and applications

Tutor guidance:

K19 Waste management:
The tutor should explore with students the **principles** of waste management, focusing on the **techniques (**refuse, reduce, reuse, repurpose, and recycle) and **procedures** used to minimise waste in health and healthcare science care contexts. Explore the **impact** this has on materials, reagents, and consumables used when providing person-centred care.

K20 Sustainable materials:
Students should be introduced to **sustainable materials** and explain their **characteristics**. Discuss the **purpose** and **applications** of sustainable materials in a health and healthcare science context.

Knowledge Topic 8: Information and data	
The student must understand:	
K21	Sources of data and information used when providing person-centred care: purpose, typical content, format, terminology, and the differences between
K22	Types of information and data created when taking physiological measurements and providing personal care
K23	Factors to consider when using information and data: confidentiality, privacy, intellectual property, and security

Tutor guidance:

K21 Sources of data and information:
The tutor should introduce students to the sources of data and information used in person-centred care (**care plans, Standard Operating Procedures (SOPs), and equipment manuals**). Explore the **purpose, typical content, format,** and **terminology** of each and the **differences** between these sources.

K22 Types of Information and Data:
Students should explore the types of **information** and **data** created during physiological measurements and personal care. Investigate **physiological measurement results** and **observations**, and **personal care data** such as the patient's daily water intake.

K23 Factors to consider when using information and data:
Students will explore **factors** to be considered (**confidentiality, privacy, intellectual property, and security**) when using information and data in a health and healthcare science context.

Knowledge Topic 9: Communication	
The student must understand:	
K24	Principles of effective communication: two-way process (send and receive messages), methods (verbal, non-verbal), styles (formal, informal), conventions of different types of written communication, suitability for different purposes and audiences
K25	Reading: principles, reading for comprehension, identifying salient points, summarising key points and synthesising information from different sources
K26	Listening techniques: active and deep
K27	Non-verbal communication: meaning of different types of body language, types and value of images and support materials as visual aids,, and impact of non-verbal communication to support comprehension of key messages
K28	Oral communication: pitch, tone, and intonation, and their impact on how a message is received
K29	Positive communication: techniques and their application to supporting health and wellbeing of individuals
K30	Engaging with an audience: techniques for establishing rapport, in conversation, in discussion, in debate, obtaining and clarifying information, and presenting proposals

Tutor guidance:

K24 Principles of effective communication:
The tutor should introduce students to the principles of effective communication, explaining that it is a **two-way process** where messages are both sent and received. Explore **verbal** and **non-verbal methods** of communication, and the differences between **formal** and **informal styles** of communication. Discuss the conventions of **different types** of **written communication**, such as reports, emails, and care plans, and their **suitability** for different **purposes** and **audiences**.

K25 Reading:
Students should investigate the **principles of reading**, focusing on **reading for comprehension** to understand the text, and **identifying salient points** (key details). Explore how to **summarise key points** and **synthesise** information from different sources within a health and healthcare science context to create a full understanding.

K26 Listening techniques:
Students should explore **active listening**, which is where the listener gives their full attention, makes eye contact, and provides feedback through nodding or short verbal cues. Explain **deep listening**, where the listener focuses not only on the words but also on the emotions and intentions behind the message, paying attention to tone and body language. The tutor may wish to link the importance of these techniques when providing person centred care to individuals.

K27 Non-verbal communication:
Introduce students to different **types** of body language and how this can convey messages without words. Explore the **value of images** and **support materials as visual aids**, and the **impact of non-verbal communication** to support understanding of key messages. The tutor may wish to link this to person-centred care when supporting the health and wellbeing of individuals in a health and healthcare science context.

K28 Oral communication:
Students should explore the concepts of **pitch**, **tone**, and **intonation** in oral communication. Investigate how pitch (the highness or lowness of the voice), tone (the emotional quality of speech), and intonation (the rise and fall of voice) all affect **how a message is received** by the listener.

K29 Positive communication:
Introduce students to positive communication techniques. Explain how positive techniques help build rapport, reduce misunderstandings, and promote trust. Emphasise their application in supporting the health and wellbeing of individuals, where effective communication can lead to better care outcomes, emotional support, and improved patient satisfaction.

K30 Engaging with an audience:
Students should explore **techniques** used for **establishing rapport**, for example, active listening and respectful body language. Consider how to effectively engage and build a rapport during a **conversation,** a **discussion,** and **in debate**. Discuss the importance of **obtaining** and **clarifying information**, and how to **effectively present proposals that may** relate to person-centred care to support the health and wellbeing of individuals.

Knowledge Topic 10: Numeracy	
The student must understand:	
K31	Standard units of measurement: time, temperature, mass, weight, capacity, and conversion between units
K32	Measurement: principles, standards, terminology, and volume quantities

Tutor guidance:

K31 Standard units of measurement:
The tutor should introduce students to standard units of measurement (**time, temperature, mass, weight, and capacity**). Explore how to convert between units of measurement, for example, temperature from degrees Celsius (°C) to Fahrenheit (°F).

K32 Measurement:
Students should explore the **principles** of measurement. Explain the standards used in the health and healthcare science context. Explore the **terminology** used in measurement, for example, precision, tolerance, and calibration, and how these relate to the reliability and the **volume quantities**.

Knowledge Topic 11: Digital	
The student must understand:	
K33	Software: features, functions, applications for recording and presenting data and information in relation to an individual's health and wellbeing
K34	Management of digital information and data: classification and organisation, naming conventions, storage systems, protection methods, accessibility, and formats
Tutor guidance:	
K33 Software: The tutor should introduce students to the **features, functions,** and **applications** of software used to **record** and **present** data related to an individual's health and wellbeing. **K34 Management of digital information and data:** Students should explore the **classification** and **organisation** of **digital information** and **data.** Explore **naming conventions, storage,** and **protection methods**. Finally, cover **accessibility** and the **formats** in which data may be stored within a health and healthcare science context.	

Outcome 2A (O2A): Provide person-centred care to support the health and wellbeing of individuals

Students will develop transferable skills in planning, observing, and communication through interpreting care plans and Standard Operating Procedures (SOPs). They will apply numeracy when recording and interpreting physiological measurements and documenting personal care activities, such as fluid intake. These skills will support progression to T Level 3 study and prepare students for the technical and practical demands of working in the health and healthcare science sectors.

Skill Topic 1: Provide Person centred care	
	Students must be able to:
S1	Prepare self and environment
S2	Practice care, compassion, communication, courage, commitment and competence (6C's)
S3	Follow Standard Operating Procedures (SOPs) with attention to detail
S4	Take physiological measurements
S5	Provide personal care
S6	Record information
Skill Topic 2: Health and safety skills	
	Students must be able to:
S7	Assess a situation for potential adverse effects
S8	Assess an area for potential health and safety risks
S9	Establish a safe working area
S10	Apply Personal Protective Equipment (PPE) appropriately following agreed procedures
S11	Apply manual handling techniques when lifting, carrying, handling, moving equipment or individuals
S12	Apply handwashing techniques
S13	Apply cleaning techniques
Skill Topic 3: Use of Equipment	
	Students must be able to:
S14	Apply techniques to effectively use equipment to meet requirements of a task and situation

Skill Topic 4: Sustainability skills	
	Students must be able to:
S15	Use materials, consumables and reagents to minimise waste when providing person centred care
S16	Dispose of waste sustainably when providing person centred care
Skill Topic 5: Planning	
	Students must be able to:
S17	Identify discrete steps required to achieve an outcome
S18	Estimate time and resources required to achieve an outcome
S19	Prioritise activities required to achieve an outcome
S20	Sequence activities required to achieve an outcome
S21	Coordinate activities required to achieve an outcome
Skill Topic 6: Physical dexterity skills	
	Students must be able to:
S22	Apply precise and controlled movements when assisting with the health and wellbeing of an individual
Skill Topic 7: Observing	
	Students must be able to:
S23	Identify relevant details of an individual to recognise issues with physical health
Skill Topic 8: Communicating	
	Students must be able to:
S24	Synthesise information and data from different sources
S25	Engage an audience
S26	Summarise information and data
S27	Apply technical language in relevant contexts
S28	Apply active listening techniques to provide person centred care
S29	Apply oral communication techniques to obtain and clarify information and data
S30	Apply oral communication skills to clearly articulate a message
S31	Apply non-verbal communication techniques to support communication
S32	Create documents appropriate to purpose and audience
S33	Engage in discussion, debate or conversation, listening to and responding to questions and feedback

S34	Show respect for others' views and opinions
S35	Apply an inclusive approach to engaging with others
S36	Apply communication techniques to secure audience understanding
S37	Interpret information and data presented in different formats
S38	Apply appropriate vocabulary, grammar, form, structural and organisational features to reflect audience, purpose and context
Skill Topic 9: Recording	
	Students must be able to:
S39	Transcribe information from one source to another
S40	Capture physiological measurement data and data related to personal care accurately
Skill Topic 10: Numeracy skills	
	Students must be able to:
S41	Calculate resource requirements to provide person centred care
S42	Apply standard units of measure when taking physiological measurements and recording information and data related to providing personal care
Skill Topic 11: Digital skills	
	Students must be able to:
S43	Organise digital information
S44	Store digital information securely
S45	Retrieve digital information
S46	Apply software functions to input and display data in relation to an individual's health and wellbeing

Behaviours	
B1 Professional	**B2** Focused

Outcome 2B (O2B): Follow standard operating procedures to perform laboratory analysis

This outcome focuses on developing technical knowledge of laboratory analysis techniques, scientific equipment, and health and safety requirements when working in a laboratory environment.

Students will learn how materials, reagents, and consumables are managed, and how Standard Operating Procedures (SOPs) guide safe and accurate analysis. This knowledge, drawn from the Health and Science T Levels, will be applied through practical laboratory activities that reflect routine professional investigations.

Knowledge Topic 1: Laboratory analysis techniques	
The student must understand:	
K1	Techniques: types, purpose, suitability, and application
K2	Procedure: steps and stages as outlined in Standard Operating Procedures (SOPs), time and resource requirements
Tutor guidance:	
K1 Techniques: The tutor should introduce students to the types of laboratory analysis techniques (**simple tests, instrumental techniques**, and **titration)**. Explore the **purpose, suitability**, and **application** of each technique, focusing on how they are used accurately in health and science contexts. **K2Procedure:** Students should explore the **steps** and **stages** as outlined in Standard Operating Procedures (SOPs). Explore the **time** and **resource** requirements, emphasising the importance of following SOPs to ensure accuracy, consistency, and safety in laboratory and health science work. **Each NHS Trust will have its own SOPs to follow. Tutors may want to use their local area NHS Trust SOPs to guide their students.*	
Supplementary information to support stretch and challenge:	
Tutors could introduce: • Take account of factors that may affect the result of laboratory analysis activities • Relationship between results obtained outside of 'expected range' and possible sources of error in analysis techniques • Use of more complex instrumentation to perform laboratory analysis activities	

Knowledge Topic 2: Health and safety	
The student must understand:	
K3	Typical health and safety hazards that individuals can create and encounter when performing laboratory analysis activities
K4	Likelihood and severity of health and safety risks associated with typical hazards
K5	Risk assessment: purpose, use and content
K6	Controls used to minimise risks
K7	Techniques used to support healthy and safe working practices, including manual handling

Tutor guidance:

K3 Typical health and safety hazards:
The tutor should introduce students to the **typical health and safety hazards** that individuals can **create** and **encounter** when performing laboratory analysis activities.

K4 Likelihood and severity:
Introduce students to the **likelihood** and **severity** of health and safety **risks** associated with typical hazards in a lab setting.

K5 Risk assessment:
Students should explore the **purpose, use**, and **content** of risk assessments. Explore how risk assessments are conducted to identify hazards (**sharp objects, broken tools,** and **equipment)** and evaluate potential risks (**slips, trips**, and **falls**)

K6 Controls:
Students should investigate the **controls** used to minimise risks in laboratory environments, including the **inspection of equipment**, **housekeeping practices**, and the use **of Personal Protective Equipment (PPE).** Emphasise the importance of these controls in maintaining a safe and compliant workspace.

K7 Techniques:
Students will be introduced to **techniques** that support healthy and safe working practices, including correct manual handling techniques.

Knowledge Topic 3: Tools and equipment	
The student must understand:	
K8	Tools: characteristics, purpose, safety, security, storage, maintenance and operation of different types of tools when performing laboratory analysis activities
K9	Equipment: characteristics, purpose, safety, security, storage, maintenance and operation of different types of equipment when performing laboratory analysis activities

Tutor guidance:

K8 Tools:
The tutor should introduce students to the **characteristics, purpose, safety, security, storage, maintenance**, and **operation** of different **types** of **tools** used in laboratory analysis activities. The tutor could emphasise the importance of proper handling, care, and maintenance to ensure safety, accuracy, and reliability in laboratory work.

K9 Equipment:
Students to explore the **characteristics, purpose, safety, security, storage, maintenance,** and **operation** of different **types** of **equipment** used in laboratory analysis activities. The tutor could emphasise the importance of proper handling, regular maintenance, and secure storage to ensure safety and the accurate functioning of equipment in laboratory settings.

Knowledge Topic 4: Materials, consumables, and reagents	
The student must understand:	
K10	Materials, consumables, and reagents: types, characteristics, purpose, applications, and quantities required when performing laboratory analysis activities
K11	Materials, consumables and reagents: quantities required to ensure minimum wastage

Tutor guidance:

K10 Materials, consumables, and reagents:
The tutor should introduce students to the **types, characteristics, purpose, applications**, and **quantities** of **materials, consumables**, and **reagents** used in laboratory analysis activities.

K11 Materials, consumables, and reagents:
Students should consider the **quantities** required to **ensure minimum wastage** in laboratory analysis activities. Emphasise the importance of accurate measurement and resource management to reduce waste and support sustainability in laboratory work.

Knowledge Topic 5: Sustainability	
The student must understand:	
K12	Waste management: principles, techniques (refuse, reduce, reuse, repurpose, recycle), procedures, and impact on materials, reagents, and consumables used when performing laboratory analysis activities
K13	Sustainable materials: characteristics, purpose, and applications
Tutor guidance:	

K12 Waste management:
The tutor should introduce students to the **principles** and **techniques** of waste management (**refuse, reduce, reuse, repurpose, and recycle**). Explore the **procedures** and **impact** on **materials, reagents**, and **consumables** used in laboratory analysis activities.

K13 Sustainable materials:
Students should explore **sustainable materials**, examining their **characteristics, purpose**, and **applications,** and how these materials contribute to supporting sustainable practices in laboratory analysis activities.

Knowledge Topic 6: People	
The student must understand:	
K14	Professional behaviours: definitions, how behaviours are demonstrated in a scientific laboratory
Tutor guidance:	

K14 Professional behaviours:
The tutor should introduce students to the **definition** of professional behaviours and how **professional behaviours** are **demonstrated** in a scientific laboratory.

Knowledge Topic 7: Information and data	
The student must understand:	
K15	Sources of information required when performing laboratory analysis activities: purpose, typical content, format, and terminology
K16	Types of information and data created and recorded when performing laboratory analysis activities
K17	Factors to consider when using information and data: confidentiality, privacy, intellectual property, and security
K18	Types of documents used to record primary data
Tutor guidance:	

K15 Sources of information:
The tutor should introduce students to the sources of information required when performing laboratory analysis activities (**Standard Operating Procedures (SOPs)** and **equipment manuals)**. Explore their **purpose, typical content, format**, and **terminology.** The tutor could emphasise how these documents guide accurate and safe laboratory practices.

K16 Types of information and data created and recorded:

Students should explore the types of information and data **created** (**laboratory analysis results** and **observations**) and how this is **recorded** during laboratory analysis activities.

K17 Factors to consider:
Students should explore how to consider factors when using information and data (**confidentiality, privacy, intellectual property,** and **security**). Tutors could explore the importance of safeguarding sensitive information and adhering to legal and ethical standards in laboratory and scientific work.

K18 Types of documents:
Introduce students to the **types** of documents used to record **primary** data in laboratory settings.

Knowledge Topic 8: Communication	
The student must understand:	
K19	Principles of effective communication: conventions of different types of written communication and suitability for different purposes and audiences
K20	Reading: principles, reading for comprehension, identifying salient points, summarising key points, and synthesising information from different sources

Tutor guidance:

K19 Principles of effective communication:
The tutor should introduce students to the conventions of different types of written communication. Explore how to tailor each type of communication to suit different purposes and audiences, ensuring clarity and appropriateness in scientific and laboratory contexts.

K20 Reading:
Students should investigate the **principles of reading**, focusing on **reading for comprehension** to understand the text, and **identifying salient points** (key details). Explore how to **summarise key points** and **synthesise** information from different sources. The tutor could emphasise how these principles are essential for understanding and applying technical data in laboratory analysis and scientific research.

Knowledge Topic 9: Numeracy	
The student must understand:	
K21	Numbers and the number system: techniques for the application of the four operations (addition, division, multiplication, subtraction)
K22	Standard units of measurement: time, temperature, mass, weight, capacity and conversion between units
K23	Measurement: principles, standards, terminology and volume quantities

Tutor guidance:

K21 Numbers and the number system:
Introduce students to numbers and the number system, and the techniques used for applying the four basic operations: addition, subtraction, multiplication, and division.

K22 Standard units of measurement:
Introduce students to standard units of measurement for time, temperature, mass, weight, and capacity. Explore how to convert between units and apply these measurements in laboratory context.
K23 Measurement:

Students should explore the **principles** of measurement. Explain the standards used in the health and healthcare science context. Explore the **terminology** used in measurement, for example, precision, tolerance, and calibration, and how these relate to the reliability and the **volume quantities**. Explore how accurate measurement and the use of appropriate standards are essential for reliable results in laboratory analysis and scientific work.

Knowledge Topic 10: Digital	
The student must understand:	
K24	Software: features, functions, applications for recording results from laboratory analysis
K25	Management of digital information and data: classification and organisation, naming conventions, storage systems, protection methods, accessibility and formats
K26	Protection of organisational and client data: legal framework, risks, software and procedures

Tutor guidance:

K24 Software:
The tutor should introduce students to the **features, functions**, and **applications** of software used for recording **results** from laboratory analysis. Explore how these tools help ensure accurate data entry, analysis, and reporting, supporting efficiency and reliability in scientific research.

K25 Management of digital information and data:
Students should explore the **classification** and **organisation** of **digital information** and **data**. Explore **naming conventions, storage** and **protection methods**. Finally, cover **accessibility** and the **formats** in which data may be stored within laboratory and scientific work.

K26 Protection of organisational and client data:
Students will consider **legal frameworks** surrounding the **protection** of **organisational** and **client data**. Explore the **risks** associated and discuss the **software** and **procedures** used to safeguard sensitive information, ensuring compliance with data protection regulations in laboratory and scientific environments.

Outcome (O2B): Follow Standard Operating Procedures to perform laboratory analysis

Students will develop transferable skills in planning, communication, and digital recording when carrying out laboratory analysis tasks. They will follow SOPs, interpret technical information, and use equipment instruction manuals to complete investigations. Numeracy will be applied to measure and record data accurately, while digital skills will support secure recording and storage of results. These skills will prepare students for further study and for technical demands in scientific and healthcare laboratory roles.

Skill Topic 1: Laboratory analysis skills	
	Students must be able to:
S1	Prepare environments
S2	Set up equipment
S3	Prepare sample to be analysed
S4	Analyse sample
S5	Record results
Skill Topic 2: Health and safety skills	
	Students must be able to:
S6	Assess a situation for potential adverse effects
S7	Assess an area for potential health and safety risks
S8	Establish a safe working area
S9	Apply Personal Protective Equipment (PPE) appropriately following agreed procedures
S10	Apply manual handling techniques when lifting, carrying, handling and moving materials and equipment
Skill Topic 3: Use of Tools and equipment	
	Students must be able to:
S11	Apply techniques to effectively use tools to meet requirements of a task and situation
S12	Apply techniques to effectively use equipment to meet requirements of a task and situation

Skill Topic 4: Sustainability skills	
	Students must be able to:
S13	Use materials, consumables and reagents to minimise waste when performing laboratory analysis activities
S14	Dispose of waste sustainably when performing laboratory analysis activities
Skill Topic 5: Planning	
	Students must be able to:
S15	Identify discrete steps required to achieve an outcome
S16	Estimate time and resources required to achieve an outcome
S17	Prioritise activities required to achieve an outcome
S18	Sequence activities required to achieve an outcome
S19	Coordinate activities required to achieve an outcome
Skill Topic 6: Physical dexterity	
	Students must be able to:
S20	Apply precise and controlled movements when using equipment and materials
Skill Topic 7: Observing	
	Students must be able to:
S21	Identify relevant details of a situation and an environment
S22	Monitor the environment for changes that may affect performing a laboratory analysis activity
Skill Topic 8: Communicating	
	Students must be able to:
S23	Interpret information and data presented in different formats
S24	Apply written communication skills to create documents for different purposes with attention to detail
S25	Apply appropriate vocabulary and spelling to documents
Skill Topic 9: Recording	
	Students must be able to:
S26	Transcribe information from one source to another
S27	Capture laboratory analysis results data accurately

Skill Topic 10: Numeracy skills	
	Students must be able to:
S28	Calculate resource requirements to perform laboratory analysis activities
S29	Apply standard units of measure to perform laboratory analysis activities
Skill Topic 11: Measuring	
	Students must be able to:
S30	Measure materials to required level of detail
Skill Topic 12: Digital skills	
	Students must be able to:
S31	Organise digital information
S32	Store digital information securely
S33	Retrieve digital information
S34	Apply software functions to record results from laboratory analysis activities

Behaviours		
B3 Independent	**B4** Integrity	**B2** Focused

Outcome 3 (O3): Analyse information and data to highlight health and science issues

This outcome focuses on understanding how research investigations can be used to explore issues in health and science. Students will encounter information and data in these contexts, developing awareness of how evidence is gathered, analysed, and presented. While no specialist technical knowledge is required, students will draw on motivating and relevant contexts in health and science to inform their investigations and prepare for progression to T Levels.

Knowledge Topic 1: Information and data	
The student must understand:	
K1	Sources of data and information required to highlight issues: purpose, typical content, format, terminology, and differences between
K2	Types of information and data created and recorded when highlighting issues
K3	Factors to consider when using information and data: confidentiality, privacy, intellectual property, and security
K4	Types of documents used to record primary data
K5	Key elements of data: qualitative, quantitative, primary, secondary, discrete, continuous, structured, and unstructured
Tutor guidance:	

K1 Sources of data and information required to highlight issues:
The tutor should introduce students to a **range** of data and information sources required to highlight issues in a health and science context. Students should explore their **differences** and the **purpose, typical content, formats,** and **terminology** of each.

K2 Types of information and data created and recorded when highlighting issues:
Students should consider different **types** of **information** and **data created** and **recorded** when **highlighting issues** within a health and science context. The tutor could explain how each type is generated, recorded, and why particular forms are chosen to highlight specific issues.

K3 Factors to consider when using information and data:
Students should be introduced to the factors that must be considered when using information and data, within a health and science context, focusing on **confidentiality, privacy, intellectual property** and **security**.

K4 Types of documents used to record primary data:
Students should consider the different **types of documents** used to record **primary data** in health and science contexts.

K5 Key elements of data:
Students should explore the key elements of data and consider **qualitative** and **quantitative, primary** and **secondary**, and **discrete, continuous, structured** and **unstructured**. The tutor could explain how these types of data are used in health and science contexts.

Supplementary information to support stretch and challenge:

• Complexity of the information and data that is used from different sources to analyse

Knowledge Topic 2: Investigation	
The student must understand:	
K6	Data collection: methods, purpose, suitability and types of data
K7	Validity of information and data: accuracy, reliability, currency and bias
K8	Referencing of sources: techniques used to reference sources directly, paraphrasing and different types of sources
Tutor guidance:	
K6 Data collection: The tutor should introduce students to the types of data collection used in health and science. Contexts. Common examples may include (published journal articles, statistics, surveys). Explore the **methods, purpose, suitability** and **types** of data, making clear the distinction between qualitative and quantitative information. **K7 Validity of information and data:** Students should be introduced to the concept of data validity, focusing on the importance of **accuracy, reliability, currency** and **bias**. Explore what each of these terms mean in a health and science context. **K8 Referencing of sources:** Students should explore the techniques used to reference sources directly and through paraphrasing. Consider the different types of sources used when referencing.	

Knowledge Topic 3: Communication	
The student must understand:	
K9	Principles of effective oral communication: two-way process (send and receive messages), methods (verbal, non-verbal), styles (formal, informal), conventions of different types of written communication, suitability for different purposes and audiences
K10	Reading: principles, reading for comprehension, identifying salient points, summarising key points and synthesising information from different sources
K11	Listening techniques: active and deep
K12	Spelling, punctuation and grammar (SPAG): punctuation markers, grammatical conventions and spelling of key technical and non-technical terminology
K13	Vocabulary: technical and non-technical and use to achieve particular effects and for different purposes
K14	Non-verbal communication: meaning of different types of body language, types and value of images and support materials as visual aids and impact of non-verbal communication to support comprehension of key messages
K15	Oral communication: pitch, tone and intonation and their impact on how a message is received
K16	Positive communication: techniques and their application to supporting health and wellbeing of individuals
K17	Engaging with an audience: techniques for establishing rapport, in conversation, in discussion, in debate, obtaining and clarifying information and presenting proposals
Tutor guidance:	

K9 Principles of effective oral communication:
The tutor should introduce students to the principles of effective oral communication, emphasising that communication is a two-way process involving both **sending** and **receiving messages**. Explore various communication methods, including **verbal** and **non-verbal**. Discuss different communication styles, **formal** and **informal**, and explain how they are suited for **different purposes** and **audiences** within a health and science context.

K10 Reading:
Students should investigate the **principles of reading**, focusing on **reading for comprehension** to understand the text, and **identifying salient points** (key details). Explore how to **summarise** key points and **synthesise i**nformation from different sources. The tutor could emphasise how these principles are essential to condense complex information into manageable chunks within a health and science context.

K11 Listening techniques:
Students should consider **active** and **deep** listening techniques and how they are used in a health and science context.

K12 Spelling, punctuation and grammar (SPAG):
Students should consider the importance of spelling, punctuation and grammar (SPAG) when using **technical** and **non-technical** terminology and explore **punctuation markers** and **grammatical conventions.**

K13 Vocabulary:
Students should investigate vocabulary, focusing on both **technical** and non-**technical terms** used in health and science contexts. Explore how technical and non-technical vocabulary is used to achieve a **particular effect** and for **different purposes**.

K14 Non-verbal communication:
Introduce students to different **types** of body language and how this can convey messages without words. Explore the **value of images** and **support materials as visual aids**, and the **impact of non-verbal communication** to support understanding of key messages. The tutor may encourage students to consider the impact of non-verbal cues in both face-to-face interactions and presentations in the health and science contexts.

K15 Oral communication:
Students should explore the concepts of **pitch**, **tone**, and **intonation** in oral communication. Investigate how pitch (the highness or lowness of the voice), tone (the emotional quality of speech), and intonation (the rise and fall of voice) all affect **how a message is received** by the listener.

K16 Positive communication:
Introduce students to positive communication techniques. Explain how positive techniques help build rapport, reduce misunderstandings, and promote trust. Emphasise the application of positive communication in supporting the analysis of information and data to highlight health and science issues.

K17 Engaging with an audience:
Students should explore **techniques** used for **establishing rapport**, for example, active listening and respectful body language. Consider how to effectively engage and build a rapport during a **conversation,** a **discussion,** and **in debate**. Discuss the importance of **obtaining** and **clarifying**

information, and how to **effectively present proposals** that relate to the analysis of information and data to highlight health and science issues.
Supplementary information to support stretch and challenge:
• Suitability of issues presented in relation to purposes and audience, for example, technical and non-technical audiences

Knowledge Topic 4: Numeracy	
The student must understand:	
K18	Data analysis: techniques used to identify patterns and variances, trends, correlation, causation, interpolation, extrapolation and predictions
K19	Descriptive statistics: purpose, suitability for different situations, techniques – frequency, central tendency (mean, median, mode) and variation (range)
K20	Data presentation: techniques and formats
Tutor guidance:	
K18 Data analysis: The tutor should introduce students to data analysis **techniques** used to **identify patterns** and **variances**, **trends, correlation, causation**, **interpolation, extrapolation** and **predictions** when analysing data to highlight health and science issues. **K19 Descriptive statistics:** Encourage students to explore descriptive statistics and understand their role in analysing data. Discuss the **purpose** of descriptive statistics and when they are **suitable** for **different situations**. Introduce and explain key techniques: **frequency (**how often values occur), **central tendency** (mean, median, and mode), and **variation (**range). **K20 Data presentation:** Students should explore the **techniques** and **formats** used in data presentation that could relate to the analysis of information and data to highlight health and science issues.	

Knowledge Topic 5: Digital	
The student must understand:	
K21	Software: features, functions and applications to present highlighted issues
K22	Management of digital information and data: classification and organisation, naming conventions, storage systems, protection methods, accessibility and formats
K23	Online/internet searches: techniques used to carry out and refine searches, Search Engine Optimisation (SEO) and its implications for search results
Tutor guidance:	

K21 Software:
The tutor should introduce students to the software **features, functions,** and **applications** used to present and highlight issues in health and science.

K22 Management of digital information and data:
Students should explore the management of digital information and data, focusing on **classification** and **organisation** to ensure efficient retrieval and use. Explore **naming conventions**, **storage systems**, **protection methods**, **accessibility**, and **formats** used when analysing information and data to highlight health and science issues.

K23 Online/Internet searches:
Students should consider the **techniques** used for conducting **effective online/internet searches** and how to **refine** those searches. Explore **Search Engine Optimisation** (SEO) and the **implication** of its use in search results.

Outcome (O3): Analyse information and data to highlight health and science issues

Students will develop transferable skills in analysis, investigation, and critical thinking by interpreting information and data, identifying issues, and presenting findings. They will strengthen written communication through note-taking, synthesis, and clear documentation, and oral communication through presenting research outcomes to stakeholders. Numeracy will be applied to analyse and interpret data, using basic statistical techniques to create tables, charts, and graphs, while digital skills will support data presentation and secure documentation.

Skill Topic 1: Analysing	
	Students must be able to:
S1	Identify common features in information
S2	Organise common features into types
S3	Discern patterns in information
S4	Deconstruct information
S5	Classify information
S6	Order information
Skill Topic 2: Investigating	
	Students must be able to:
S7	Develop search criteria and queries to support an investigation to analyse data
S8	Identify sources of information and data required for an investigation
S9	Reference sources of information
S10	Interrogate information and data for validity
Skill Topic 3: Critical thinking	
	Students must be able to:
S11	Effective questioning to elicit information
S12	Evaluating pros and cons of information provided
S13	Review information from different perspectives
S14	Apply logic and reasoned argument to information presented
S15	Draw evidence-based conclusions

Skill Topic 4: Communicating	
Students must be able to:	
S16	Synthesise information and data from different sources
S17	Engage an audience
S18	Summarise information and data with attention to detail
S19	Apply technical language in relevant contexts
S20	Apply active listening techniques when presenting ideas
S21	Apply oral communication skills to clearly articulate a message with attention to detail
S22	Apply written communication skills to clearly articulate a message
S23	Apply non-verbal communication techniques to support communication
S24	Create documents appropriate to purpose and audience
S25	Write for impact
S26	Engage in discussion, debate and conversation listening to and responding to questions and feedback
S27	Show respect for others' views and opinions
S28	Apply communication techniques to secure audience understanding
S29	Interpret information and data presented in different formats
S30	Apply appropriate vocabulary, grammar, form, structural and organisational features to reflect audience, purpose and context
Skill Topic 5: Numeracy skills	
Students must be able to:	
S31	Construct tables, charts, graphs to present information and data
S32	Apply statistical techniques to analyse data
Skill Topic 6: Digital skills	
Students must be able to:	
S33	Organise digital information
S34	Store digital information securely
S35	Retrieve digital information
S36	Apply software functions to present highlighted issues

Behaviours			
B3 Independent	**B5** Respectful	**B6** Perceptive	**B2** Focused

Appendix 1

Level 2 Command Verbs

These command verbs require students to demonstrate their understanding of facts, ideas, or concepts.

Command word	Definition
Apply	Use knowledge or understanding in a familiar situation to complete a task
Assess	Make a judgement about the value or importance of something using simple reasoning
Calculate	Work out the value of something, showing relevant working out
Choose	Select the most appropriate option from a limited range
Classify	Group items based on shared features or characteristics
Compare	Examine in detail and identify similarities and differences between them
Define	Give a definition or specify the meaning of an idea or concept.
Demonstrate	Show understanding of a process or concept through simple examples, actions, or explanations
Describe	Give a detailed account of a subject or set out its characteristics or features
Discuss	Present key points about different ideas or strengths and weaknesses of an idea.
Estimate	Make an approximate judgement or calculation based on known information
Explain (why)	Set out purposes or reasons, or make something clear in relation to a particular situation.
Explain how	Provide a detailed account of a process or way of doing something.
Give examples	Provide specific cases or instances that support or illustrate a point.
Identify	Select from a list of options, point something out or give a list of main features.
Illustrate	Explain or clarify something using examples, diagrams, or comparisons
Interpret	Explain the meaning of information or data
List	Provide a series of items or points without explaining or describing in detail
Outline	Set out the main characteristics or features.
Plan	Outline basic steps or actions needed to achieve a goal, showing understanding of the order or purpose of each step.
Record	Accurately document information, actions, observations, or results
Select	Choose the most appropriate option from a limited range, showing understanding of why it fits the given purpose or situation.
Show	Present or demonstrate understanding through action, response, or simple explanation in a familiar setting
State	Express in clear, brief terms.
Suggest	Apply knowledge to a new situation to provide a reasoned explanation
Summarise	Give a brief account of the main points or ideas
Use	Apply a tool, technique or method correctly and safely in a familiar context, following set procedures or instructions