



## Science content in the T Level Technical Qualification in Healthcare Science

**The Healthcare Science pathway is from the Health and Science route.**

This document refers to the Science content in section B2 Further Science concepts and the Occupational Specialisms from the T Level Technical Qualification in Healthcare Science, (Level 3) (delivered by NCFE) (603/7083/X)

The table below maps this Science content to that of the BTEC National Extended Diploma in Applied Science and the GCE AS and A level subject content for biology, chemistry, and physics.

All the T Level Science content in section B2 is mandatory. BTEC offers a mandatory and optional content structure. **BTEC optional content is shown in red type.**

### ***Science in the Occupational Specialisms***

Science content outlined for the T Level in section 3 relates to the Occupational Specialisms, one of which must be selected by students. Science content in section 3 can either be a development/extension of Science concepts from section B1 or B2 or new concepts which are relevant only to that Occupational Specialism.

### ***Assessment in T Levels***

T level students will need to undertake a variety of assessment types such as those that take place in Higher Education for Health-related courses including examinations, controlled assessments, and Objective Structured Clinical Examinations.

T Level Core assessment is an externally set written exam(s) and an employer set project: both sets of exams assess students' knowledge, understanding and application of contexts, theories and principles relating to the core content in the specification. The written exams assess route and pathway knowledge through 'unseen' examination (which samples content), meaning breadth can be assessed at appropriate level 3 depth, whilst limiting the overall duration of assessment. The written exam structure will provide students with relevant exam and revision skills for HE. The employer set project is a more substantial project-based assessment set by employers through the awarding organisation and will develop their critical thinking and problem-solving skills. The project will draw upon knowledge and understanding

from across the core content synoptically and will allow learners to effectively respond to a 'brief'. All science elements are assessed.

The occupational specialism components (**Section 3** below) are also externally assessed through synoptic assignments, except for the observation element, which takes place in a controlled environment is internally marked by providers and externally moderated.

BTEC assessment is external, internal, and synoptic. External and internal assessment is linked to a specific unit.

<b>Science</b>		
Specification content areas	Specification content by unit	Specification content by section
T Level <sup>1</sup>	BTEC in Applied Science <sup>2</sup>	A Level <sup>3</sup>
<b>1. B2 Further Science (mandatory)</b>		
<p><b>Components, location, function, structure and organisation of:</b></p> <ul style="list-style-type: none"> <li>• The endocrine system</li> <li>• The respiratory system</li> <li>• The nervous System</li> <li>• The musculoskeletal system</li> <li>• The digestive system</li> <li>• The cardiovascular system</li> <li>• The reproductive system in males and females</li> <li>• The renal system</li> <li>• The integumentary system</li> <li>• Normal expected ranges for physiological measurements (heart rate, temperature, blood pressure, respiratory rate)</li> <li>• Factors that contribute to measurements outside of normal parameters</li> </ul>	<p><b>Organs and systems (Unit 5-M)</b></p> <ul style="list-style-type: none"> <li>• The cardiovascular system</li> <li>• Ventilation and gas exchange in the lungs</li> <li>• Urinary system structure and function</li> <li>•</li> </ul> <p><b>Physiology of Human Body Systems (Unit 8-O)</b></p> <ul style="list-style-type: none"> <li>• Structure/function of the musculoskeletal system</li> <li>• Health matters and treatments related to the musculoskeletal system</li> <li>• Structure/function of the lymphatic system</li> <li>• Health matters and treatments related to the lymphatic system</li> <li>• Structure/function of the digestive system</li> </ul>	<p><b>Control Systems</b></p> <ul style="list-style-type: none"> <li>• Homeostasis</li> <li>• Dynamic equilibrium of systems, positive and negative feedback</li> <li>• Internal and external stimuli and system responses</li> <li>• Genome regulatory factors</li> <li>• Chemical and electrical coordination</li> </ul>

<sup>1</sup> [Healthcare Science \(qualhub.co.uk\)](http://qualhub.co.uk)

<sup>2</sup> [BTEC Level 3 National Extended Diploma in Applied Science](#)

<sup>3</sup> [GCE AS and A level subject content for biology, chemistry, physics and psychology](#)

<ul style="list-style-type: none"> <li>• Measuring physiological parameters</li> <li>• Principles of homeostasis</li> <li>• Failure of homeostasis mechanisms subsequent development of disorders</li> <li>• Body related classification systems and their purpose</li> <li>• Classification systems of diseases and disorders</li> <li>• Examples of diseases and disorders and their possible causes and symptoms</li> <li>• Injury and trauma and how the body reacts systematically as a response</li> <li>• Epidemiology and specific terminology</li> <li>• How epidemiology is used in disease prevention</li> <li>• How health promotion helps to prevent the spread and control of disease and disorder</li> <li>• Concept of genome and genomics and the difference to the concept of genetics</li> <li>• Study areas within genomics</li> <li>• The use of genomics to treat disorders</li> <li>• Applications of genomics to Healthcare Science</li> <li>• Bioinformatics</li> <li>• Medical Physics used to support the prevention, diagnosis and treatment of disease (ECG, X-rays, radio waves, ultrasound, radio-therapy)</li> </ul>	<ul style="list-style-type: none"> <li>• Health matters and treatments related to the digestive system</li> <li>•</li> </ul> <p><b>Human Regulation and Reproduction (Unit 9-O)</b></p> <ul style="list-style-type: none"> <li>• Nervous system organisation</li> <li>• Cardiovascular and respiratory system</li> <li>• regulation and control</li> <li>• Homeostatic mechanisms: feedback and control, glands and organs, homeostatic mechanisms, impact of an imbalance</li> <li>• Structure and function of reproductive anatomy</li> <li>• Reproductive processes</li> <li>•</li> </ul> <p><b>Biomedical Science (Unit 20-O)</b></p> <ul style="list-style-type: none"> <li>• The components of blood</li> <li>• Effects of diseases and disorders on the overall composition of blood</li> <li>• Diagnostic techniques used in haematology</li> <li>• Histology and cytology in medicine</li> <li>• Urinalysis as an analytical and diagnostic tool</li> </ul>	
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<p><b>2. Science in the Occupational Specialisms</b></p> <p><b>NB students study ONE Occupational Specialism in addition to core science and further science.</b></p>		
<p>2 a. Optical Care Services</p> <ul style="list-style-type: none"> <li>• The structure and function of all parts of the eye: eye lids/eye lashes, tear film, cornea, conjunctiva, sclera, aqueous humour, iris, ciliary body, crystalline lens, vitreous humour, retina, choroid, macula, optic nerve, extraocular muscles.</li> <li>• Principles of lenses and lens types, light pathways, magnification and minification, astigmatic lenses</li> <li>• Prescriptions and the relation to specific parts of the eye, e.g. myopia</li> <li>• Physical properties, benefits and limitations of frame/lens materials</li> <li>• Principles of measuring and correcting sight; optical prescriptions</li> </ul>		
<ul style="list-style-type: none"> <li>• 2 b. Assisting with Healthcare Science</li> <li>• The relationship between human anatomy and physiology to the methods used for the collection of clinical measurement data:</li> <li>• pulse oximeter, non-invasive blood pressure, electrocardiogram (ECG),</li> <li>• electroencephalogram (EEG),</li> <li>• spirometry, peak expiratory flow (PEF),</li> <li>• X-ray, MRI, ultrasound, nuclear medicine</li> </ul>		

<ul style="list-style-type: none"> <li>• Factors affecting normal physiological measurement values</li> <li>• Scientific principles of equipment and devices used for a range of common tests</li> <li>• Advantages and disadvantages of CT scanning, x-rays, ultrasound</li> <li>• Scientific calibration of equipment</li> <li>• Contraindications and other considerations associated with clinical measurement techniques</li> <li>• The purpose of a range of life science divisions e.g. genomic science</li> <li>• How underpinning knowledge of anatomy and physiology relates to the collection of specimens</li> <li>• Disease states and the collection of specimens</li> <li>• The functions of a range of laboratory equipment used in the processing of specimens</li> <li>• calibrate laboratory equipment</li> <li>• light microscopy techniques</li> <li>• separation techniques</li> </ul>		
<b>3.</b>	<b>Additional content</b>	<b>Additional content</b>
	Investigative Project (Unit 6-M)	
	Contemporary Issues in Science (Unit 7-M)	
	Astronomy and Space Science (Unit 16-O)	
	Forensic Evidence, Collection and Analysis (Unit 23-O)	
	Cryogenics and Vacuum Technology (Unit 24-O)	

	Forensic Fire Investigation Unit 25-O)	
	Forensic Traffic Collision Investigation (Unit 26-O)	
		Biodiversity
		Ecosystems
		Energy for Biological Processes
		Organic Chemistry
		Vectors and scalars
		Mechanics
		Matter

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